



# KOSHER FOOD PRODUCTION

SECOND EDITION

Zushe Yosef Blech

 WILEY-BLACKWELL

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Second Edition

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 **WILEY-BLACKWELL**

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**Rabbi Zushe Blech** is considered one of the world's leading experts in modern Kosher food production and technology, serving for over twenty years in administrative and field positions relating to all aspects of Kosher certification. He served for fourteen years as a regional director for the *Koshrus* division of the Union of Orthodox Jewish Congregations of America (the "OU"), and has since served as a technical and *Halachic* consultant to virtually all of the major *Koshrus* certifying agencies worldwide. He has written and lectured throughout the world on the entire gamut of Kosher issues, and has consulted with a number of major food manufactures to educate them on Kosher issues, obtaining certification, and resolving *Koshrus* issues.

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*To my wife, Vittie, without whose support, patience, and forbearance  
this book would not have been possible.*

שלי ושלכם, שלה הוא (כתובות ס"ג ע"א)

*"All that is mine and yours, is due to my wife."*

Rabbi Akiva, the great Talmudic sage, to his students  
(*Talmud, K'suvos 63a*)

*To my children, Ariella, Dalya, Benzion, and Daniel,  
who always missed their father when he traveled and hugged him  
when he came home.*

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# Foreword

The word *Kosher*, which means *fit* or *proper*, has become part of the American lexicon. Yet the laws of *Kosher* and their application in a modern industrial setting are often misunderstood.

Kosher has nothing to do with a Rabbi blessing food, but rather that the ingredients and the procedures are in accordance with Kosher law. The laws of Kosher are to be found in the Bible (*Leviticus*) and the subsequent interpretive text of Jewish law. Kosher food production is complex and interesting, for it represents the nexus of Jewish law, food production, and economics. Kosher is additionally complex because of the counterpoint between ancient Torah law and modern food technology; between the esoteric and the mundane; between holy writ and commerce.

*Kosher Food Production* by Rabbi Zushe Blech represents an important contribution to making *Kashrus* understandable to the contemporary reader. Rabbi Zushe Blech is superbly qualified for this task, for he is deeply grounded in the intricacies of Jewish law and the complexities of modern food production. The clarity of his writing reflects his total grasp of the subject in both its theoretical and practical aspects.

Rabbi Menachem Genack  
Rabbinic Administrator  
Union of Orthodox Jewish Congregations of America

# Acknowledgments

The *Talmud* (*Avodah Zarah* 5a) teaches us that Adam is called a *Ka'fuy Tov*—one who is unappreciative of the goodness bequeathed unto him. When confronted for having eaten the forbidden fruit, his first reaction was to blame Eve, the very gift that God had given him. We therefore strive to make up for this character flaw by giving due credit to all who provide us with assistance. First, I must thank the Almighty for having given me the ability to write this book, as well as having provided me with the help of all the individuals named below. Second, I must thank my wife, Vittie, for having put up with my travels and obsessions. She has truly been an *Ay'shes Cha'yil* (Woman of Valor) (*Proverbs* 31:10), without whose tolerance and encouragement this book would not have been possible. In a similar vein, I must also thank my wonderful children (Ariella, Dalya, Benzion, and Daniel) for their understanding when their father was away at many of the important moments as they were growing up. This book is ultimately a tribute to their love and support.

The articles on *Kashrus* and food science that form the second part of this book were originally published in many venues. Many were first published in the *Daf ha'Kashrus*, the monthly newsletter of the *Kashrus* Division of the Orthodox Union that is published for its *Mashgichim*. Having had the privilege of serving as an employee of the Orthodox Union for many years, I had the opportunity to contribute many articles to this publication. I therefore express my appreciation to Rabbi Yosef Grossman, editor of the *Daf ha'Kashrus*, for his support and editorial contributions to these articles. I also thank Rabbi Menachem Genack, *Kashrus* Administrator of the Orthodox Union, for his gracious permission to allow inclusion of these articles in this work and his kind support in this endeavor. Many of the more recent articles had originally appeared in *News & Views*, the *Kashrus* newsletter of the Jewish Community Council of Montreal. I thank its administrator, Rabbi Saul Emanuel, for his generous permission to allow inclusion of those articles in this work. I extend a special thanks to Mrs. P. Fuchs, editor of *News & Views*, for her painstaking work in ensuring their accuracy and clarity. I must also note with appreciation the efforts of Rabbi Yosef Wikler, editor of *Kashrus Magazine*, who has provided critical support for my work and in whose publication many of these articles have also appeared.

I also owe a tremendous debt of gratitude to Dr. Joe Regenstein, Cornell University, for both serving as a key resource about food technology information and spending innumerable hours proofreading this work. His invaluable suggestions, corrections, insight, and questions have made this book possible. I am also indebted to many friends and colleagues in the Rabbinic and academic disciplines for their suggestions and comments. I especially thank Rabbi Dovid Heber, Rabbi Chaim Cohn, Rabbi Dovid Cohen, and Dr. Avrohom Meyer for their assistance over the years, as well as to Rabbi Tzvi Liker and Dr. Sandy Wolgel for their corrections, comments, and suggestions in the preparation of the second edition. I also humbly ask forgiveness from all whose help is deeply appreciated but whose names would be too numerous to list.

Finally, I express my appreciation to Wiley-Blackwell, which has graciously agreed to undertake the publication of what is probably one of its most challenging projects. Many

aspects of this work, such as its format, subject matter, and style, pose unique challenges, and I thank Mr. Mark Barrett and the staff of Wiley-Blackwell for the confidence they have placed in me and for the patience, understanding, and perseverance they have shown in bringing this book to press.

Zushe Yosef Blech

# Preface to the First Edition

Researchers of food-marketing trends have noted that Kosher-certified foods have become increasingly ubiquitous. According to some accounts, more than 40 percent of the foods sold in mainstream retail outlets bear some type of formal Kosher certification, and many consumers consider a product's Kosher status to be a significant factor in their purchasing decisions. In North America, many food manufacturers consider a Kosher status for their products to be a critical part of their marketing strategy and invest significant resources and effort in managing the Kosher certification programs required to maintain such a status.

Interest in Kosher certification is not limited to food manufacturers who produce consumer products, however. Although Kosher regulations are based on religious precepts, their application is (in most cases) unrelated to any "blessings" or other sacramental procedures. With important exceptions duly noted, the Kosher status of a product is but a direct function of the Kosher status of the ingredients used in its manufacture, as well as the equipment on which they are produced. As such, the Kosher status for ingredients used as raw materials is often made a condition of purchase because, without such a status, the manufacturer of the finished food product is unable to produce a Kosher product.

To ensure that a product does indeed meet Kosher requirements, most manufacturers of Kosher products enlist the services of individuals or organizations to certify the Kosher status of their products. Such Kosher certification services have expertise in both Kosher law (*Halacha*) and the food industry, and work with the manufacturer to develop a Kosher certification program that allows for maintaining the Kosher status of the products in the context of the company's manufacturing system.

Although the decision to produce a Kosher product may be driven by the company's marketing division, a successful Kosher certification program requires its integration into many aspects of a company's operations. The purchasing division must be aware of Kosher requirements for the raw materials it orders, and the raw material receiving section must ensure that appropriate raw materials are received. Manufacturing must be aware of requirements attendant to the processing of the product, and marketing must be aware of packaging and labeling requirements that are part of the Kosher program. A successful Kosher certification program must therefore take a holistic approach to its implementation.

In the many years during which I have been involved in the food industry, I have often noted a significant lack of understanding of *Kashrus* and Kosher certification programs, even among those in the food industry who are involved in their implementation. When explanations of *Kashrus* are provided, however, I have invariably found people eager to understand and forgiving in their acceptance of those concepts considered a matter of religion. What has always been respected and appreciated is the logical presentation of the concepts of *Kashrus* and their application, however immutable they may be. Clearly, food technologists and manufacturers are not expected to be experts in the field of *Kashrus*. Indeed, the success of a Kosher certification program is ultimately based on the Rabbinic authority that establishes the standards, ensures their implementation, and vouches for the *Kashrus* of the certified product. Nonetheless, the greater the understanding of Kosher

requirements on the part of the manufacturer charged with following such regulations, the more smoothly and reliably such a program invariably functions.

This book is designed to provide food manufacturers with a broad understanding of all the factors relating to Kosher certification. In doing so, it deals with the conceptual aspects of *Kashrus*, as well as the practical applications and ramifications of a Kosher certification program. The book is structured in three broad sections. The first serves as an explanation of the concept of Kosher law and the mechanisms by which Kosher certification may be granted and administered. Recognizing that some of the customs and requirements of Kosher certification, and the Rabbis who implement them, are atypical to the norms of the food industry, I have included a chapter outlining and explaining the basis for many of these diverse customs and rules. I have also included a somewhat detailed explanation of the basic *Halachic* (relating to Jewish law) underpinnings of rules that govern the Kosher status of foods.

The second section of the book contains chapters dealing with Kosher issues relating to specific industries, as well as those relating to Kosher for Passover certification. Each chapter is designed to stand on its own, allowing the reader to choose those subjects that are of interest. Such a structure, however, creates a quandary in that many *Kashrus* concepts straddle more than one chapter or discipline. Incessant cross referencing detracts from the readability of the material, whereas wholesale repetition is awkward. I have therefore attempted to reference issues covered in other sections when they are not critical to the subject matter at hand and have repeated those that are intrinsic to the subject matter in any given chapter. For those wishing to read the entire work, I beg forgiveness for the duplication.

In dealing with any subject matter with which the reader may be unfamiliar, an author must balance the need to provide a clear and uncluttered overview of the material with the responsibility to be as accurate and comprehensive as possible. To avoid overburdening the reader with technical details not critical to the application of the points and concepts discussed, issues are discussed in the body of the text in detail sufficient to ensure a practical understanding of the material. More detailed discussion and background, however, are provided in the footnotes.

When discussing the purpose and focus of this book, however, a critical point is to make clear what the book emphatically is not. It is not a do-it-yourself Kosher certification manual, a scholarly treatise, or an arbiter of *Halacha* and *Kashrus* policies. The laws of Kosher food are immensely detailed and fill hundreds of volumes; they can be properly applied only after years of study of their intricacies. Rather, the *Halachic* points discussed are intended to provide the reader with a framework by which to understand the decisions and applications of Kosher law that govern a Kosher certification program.

The third section of the book is a collection of essays concerning Kosher food issues. They originally were printed in various publications, ranging from those geared to Rabbinic *Kashrus* professionals to the lay Jewish public and the food technologist. They are therefore written in several styles and levels of detail, spanning the disciplines of food science, history, *Kashrus*, and other aspects of *Halacha*. Their purpose was to interest the reader in understanding both food science and *Kashrus*, and it is my hope that they will similarly serve as a useful adjunct to the readers of this work. These articles provide an insight into the world of food science through the eyes of Jewish law, and may thus help the reader—whether the Kosher consumer, food technologist, or student of *Halacha*—gain an understanding of



the considerations on which Kosher certification is based in the context of modern food production. It is my hope and prayer that this book will do justice to all of these audiences.

\* \* \*

Accuracy involving *Kashrus* is critical, and food technology and its resulting *Halachic* applications are constantly changing. Although details relating to the *Kashrus* of ingredients and processes discussed in this work are accurate as of the date of publication, readers may access the book's Web site ([www.kosherfoodproduction.com](http://www.kosherfoodproduction.com)) for updated information. In addition, the site may be used to send questions to the author as well as to view new articles written subsequent to the book's publication.

# Preface to the Second Edition

King David (*Psalms* 107:1) extols us to “give thanks to G-d for He is good,” for it is our obligation to thank Him for every kindness He bestows unto us. I therefore thank the Almighty for the broad success of the first edition of *Kosher Food Production* and for the opportunity to complete its second edition. When I wrote the book, I was uncertain as to how it would be accepted. I had tried to write a text for “everyone”—Rabbinic scholars, food manufacturers, food scientists, and the layperson. Experience has shown, however, that such efforts seldom satisfy *anyone*, let alone be appreciated and valued by all, and I had no guarantee that this venture would, indeed, be successful. Thankfully, however, *Kosher Food Production* has succeeded and has been welcomed by all of these somewhat disparate groups. It has become a classic reference for *Kashrus* organizations throughout the world, providing a reference for both the food technology with which they must deal and the *Halachic* underpinnings with which to address it. Food manufacturers have appreciated the explanation of how Kosher processes work (even if the underlying rationale remains a mystery!). Food scientists have valued the explanation of Kosher concepts, helping them to address Kosher issues in the planning stage. And, finally, the Kosher consumer has been given an insight into the world of food manufacturing and how the *Kashrus* establishment works to ensure that modern production techniques meet traditional Kosher requirements. I am thankful and humbled by the vote of confidence my book has enjoyed.

The second edition expands on the original work, updating and correcting material originally published. In addition, chapters covering the snack food and candy industries have been added, covering ingredient and processing issues specific to them. New articles, such as the ones concerning insect infestation and *Bishul Akum*, have also been added, giving the reader an insight into both the *Halachic* and practical aspects related to such timely topics.

As before, the real credit for this work must be given to my wife, Vittie, for putting up with my absence when traveling and my preoccupations when home. She is my true *Ayshes Chayil* (woman of valor), and her support, patience, and encouragement know no bounds.

While it is impossible to list all of my colleagues, friends, and readers who have kindly commented and critiqued the original version, those acknowledged in the first edition have continued to provide valuable assistance in completing this version. In addition, special thanks is due to Rabbi Tzvi Liker, who has continuously encouraged me to pursue this project and provided invaluable assistance in it. I am mindful of the tremendous debt I owe to all who have helped me in this project, and I pray that this work will justify their efforts.

Zushe Yosef Blech

# Introduction

Kosher law is ultimately the application of a system of religious precepts and beliefs as they govern the types of foods that people of the Jewish faith may eat. This system is based on a number of verses throughout the Bible,<sup>1</sup> Rabbinic Biblical exegesis and ordinances as presented in the *Talmud*,<sup>2</sup> and the writings and decisions of Rabbinic authorities that continue to this day. The body of such law is prodigious in size and complex in its analysis, and its application is the purview of those who have been trained extensively in its mastery. It is, above all, an internally consistent logical system that can be applied to new situations and technologies. Jewish law can be divided into three types of rules: Biblical law (*d'Oryssa*), Rabbinic law (*d'Rabanan*), and customs (*Minhag*). Together, the three form the body of Jewish law known as *Halacha*—literally, “the path”—the laws and regulations that govern all aspects of the life of an observant Jew.<sup>3</sup>

For more than three thousand years, the Jewish people have followed a unique system of dietary laws, whether at home or away. Although the rules of *Kashrus* may be ancient, they are also timeless. For one who adheres to traditional Jewish law, the requirements of *Kashrus* apply to all foods. In all cases, their acceptability to the Kosher consumer is dependent on conformance to the same Kosher regulations.

Historically, the preparation of Kosher food had been limited to a few, relatively small, firms that served their niche Kosher market. During the past sixty years, however, the production of Kosher foods has been taken on by the major food manufacturers, and Kosher requirements and considerations have therefore been thrust upon the general food industry. This new reality presents the food technologist with a fresh challenge. In addition to mastering the intricacies of food safety, quality control, and production efficiencies, a food technologist is called upon to deal with Kosher laws, a field with which he or she may be completely unfamiliar.

To complicate matters, although the basic concepts of *Kashrus* may be settled law, their application to modern food production may raise new issues. Even “asking the Rabbi” is not so simple; technology may have created situations that require new assessments of *Kashrus* laws in ways that had never been previously addressed. The food technologist should not feel alone as he or she struggles to deal with *Kashrus* issues. The Rabbis charged with implementing Kosher law in the context of modern food technology may be equally

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<sup>1</sup> Primarily in the first five books of the Bible, known as the *Torah* (also referred to as the Written Law).

<sup>2</sup> The written record of the Oral Law as redacted in the fifth century of the Common Era.

<sup>3</sup> The Jewish community comprises many groups, each espousing different approaches to the acceptance of the primacy of *Halacha*. Orthodox Jewry, by definition, accepts the paramount position of *Halacha* in all aspects of life, which includes establishing and maintaining Kosher standards. Although other groups may approach Kosher issues in their own context, in practice, commercial Kosher certification is virtually always governed by standards accepted by Orthodox Rabbinic authorities. (Some Conservative Rabbis do provide certification, mainly on finished products, and the conservative movement has its own set of Kosher standards. Nevertheless, Kosher certification programs maintained by the industry virtually always follow Orthodox standards, and Orthodox Kosher supervision agencies generally do not accept products certified under such aegis.)

challenged, although they approach this challenge from the other side of the equation. Their training is rooted in basic Kosher law and its application to technology that remained relatively static for thousands of years. The incredible changes in food technology wrought over the past century have created new challenges, and critical to their ability to deal with these challenges is the ability to understand the new technology.

Before delving into the details of Kosher food production, the relation between *Halacha* and *Kashrus* must be made clear. The determination of the Kosher status of a food is based on the strict application of specific religious criteria according to *Halacha*. “Kosher style,” on the other hand, is a marketing term, often referring to a particular type of cuisine or a cursory application of Kosher law, and products so designated should not be assumed to comply with Kosher laws or considered “Kosher.”

Further, although delving into the intricacies of *Halachic* analysis and resolution is well beyond the scope of this work, reference in *Kashrus* literature is often made to the *Shulchan Aruch*,<sup>4</sup> the seminal work of the sixteenth-century *Halachic* authority Rabbi Yosef Karo. This work, along with subsequent commentaries and Rabbinic *responsa*, serves as the basic codification of all *Halacha*, and the terms *Shulchan Aruch* and *Halacha* are often used interchangeably. Most *Halacha* dealing with Kosher issues is contained in the section of the *Shulchan Aruch* known as *Yo'reh De'ah*,<sup>5</sup> and these two names have crept into the text and even into the requirements of secular “Kosher laws” in various states.<sup>6</sup>

Also important to note is that *Halacha*, and its application to specific situations, has been analyzed and interpreted for thousands of years. *Halachic* rulings based on these analyses have been recorded in literally thousands of Rabbinic works, often in the form of *responsa*—responses to questions concerning the application of *Halacha* to specific circumstances. Although alternative views are often proposed, they are united by their acceptance of the primacy of *Halacha* and its basic concepts. The challenge of applying *Halacha* in the context of modern circumstances (such as modern food-processing systems) requires the acumen to extrapolate existing *Halachic* rulings for use in new situations. In the case of the food industry, many of the administrators of Kosher certification programs are well versed in the intricacies of modern food technology as well as *Halacha*, and have the skill to address the needs of both. In addition, most Kosher-certifying agencies have made arrangements to refer question of *Halachic* import to highly respected independent Rabbinic authorities to ensure an unbiased determination of *Halachic* standards.

Differing customs may prevail and different rulings are often made by the different Rabbinic authorities, but these distinctions are usually minor in scope. However, of significance to Kosher food laws is the fact that, over time, *Halacha* has developed in two parallel and equally valid traditions, based on the areas where the various Jewish communities had lived. The Jewish communities in most of Europe, known as *Ashkenazim*,<sup>7</sup> followed the

<sup>4</sup> Literally, “The Prepared Table,” in which the entire breadth of *Halachic* requirements in all areas were organized clearly and methodically.

<sup>5</sup> Literally, “The Teaching of Knowledge,” based on *Isaiah* 28:9.

<sup>6</sup> Most prominent among these state laws was the Kosher enforcement statute of New York State, which specifically called for enforcement of Kosher standards that met “Orthodox Hebrew Requirements.” Other states actually refer to Kosher as codified in the *Shulchan Aruch*. This linkage, however, was recently (2003) rejected by the U.S. Supreme Court as an unconstitutional entanglement between church and state, and the New York statute has thus been overturned. Statutes in other states, notably New Jersey, have been drafted to avoid this constitutional defect.

<sup>7</sup> Based on the name of the nation mentioned in *Jeremiah* 51:27, generally accepted as the Hebrew word for Germany.

opinions and customs of its authorities; communities in the Mediterranean area, known as *S'phardim*,<sup>8</sup> follow the opinions and customs of their own leaders.<sup>9</sup> The relatively minor differences in the application of *Halacha* between *S'phardim* and *Ashkenazim* are noted in the text and articles when they are significant to practical *Kashrus* issues. Also significant is that *Ashkenazic* customs serve as the basis for most *Kashrus* decisions in North America. In Israel, an *Ashkenazic* and a *S'phardic* Chief Rabbi each sets standards for his respective communities according to their respective customs.

From a linguistic perspective, although the term “Kosher”<sup>10</sup> is often understood in terms of conformance with Jewish dietary laws, the word actually means “fit” or “appropriate” and is technically unrelated to any rules governing types of food that are permitted. The word “Kosher” appears only once in the Bible (*Esther* 8:8) and then only with respect to the appropriateness of a royal pleading. Indeed, this broad interpretation has been co-opted into the English language, in which it is taken as a synonym for something genuine and proper. These technical discussions of the word “Kosher” notwithstanding, the common use of the term is generally associated with the type of food permitted according to Jewish dietary regulations and is used as such throughout this book.<sup>11</sup>

One final linguistic observation should be noted. In discussing Kosher issues, one must recognize that the English language is but a shaky vehicle through which to present the terminologies and express the nuances of the original Hebrew in which *Halacha* is traditionally discussed.<sup>12</sup> Great effort, however, has been expended to explain and clarify the issues discussed. Still, many terms have no accurate, let alone succinct, translation; the most useful means of dealing with them is to identify, transliterate, and explain them—and then use them in transliterated form. Such an approach raises a significant technical hurdle, however, because there are marked differences between the *Ashkenazic* and *S'phardic* pronunciation of many Hebrew words.<sup>13</sup> Although the pronunciation of modern Hebrew follows the *S'phardic* model, the author has chosen to follow the *Ashkenazic* pronunciation that has traditionally predominated in Europe and North America. (Transliteration of Hebrew terms is based on English consonant and vowel structure, which provides a reasonably sufficient

<sup>8</sup> Based on the name of a nation mentioned in *Obadiah* 1:20, generally accepted as the Hebrew word for Spain.

<sup>9</sup> The codifications of the *Shulchan Aruch* (“The Prepared Table”) follow *S'phardic* opinions and customs. *Ashkenazic* norms are reflected in the glosses to the *Shulchan Aruch* written by Rabbi Moshe Isserles, who named his work the *Mappah* (*The Tablecloth*), the embellishment reflecting European customs. The *Shulchan Aruch* is invariably printed containing both works.

<sup>10</sup> Technically, the proper transliteration of the term is *Kasher* (accent on the second syllable). Common English usage, however, is based on a Yiddish corruption of the Hebrew, whose pronunciation more closely approximates the English Kosher. Modern English usage has also caused this word to assume a verb form, with the term “Kosherize” referring to the process of purifying equipment to make it usable for Kosher food production. (The proper Hebrew form for this word would be based on the *Hiph'il* [causative] grammatical construction of the verb root, *l'Hachshir*.)

<sup>11</sup> Interestingly, the commonly used term for non-Kosher, *T'reif*, is similarly less than precise. Technically, the word *T'reifah* refers to an animal that exhibits certain diseases or abnormalities that render it non-Kosher (see Chapter 12, “The Meat and Poultry Industries,” and “The Story of Kosher Meat,” in Chapter 17, for a more detailed explanation of this concept). The term has no technical relevance to any other non-Kosher situation. Nonetheless, the term *T'reif* in common parlance is nominally applied to all non-Kosher products (or equipment) regardless of basis of its non-Kosher status.

<sup>12</sup> A glossary of common *Halachic* and *Kashrus* terminology may be found at the end of this book.

<sup>13</sup> The most prominent difference is in the pronunciation of the soft form of the last letter of the Hebrew alphabet known as *Tes* (*Ashkenazic*) or *Tet* (*S'phardic*). As can be noted by the pronunciation of the last consonant of the name of the letter itself, the soft form of this letter is rendered as an “s” by *Ashkenazim* and a “t” by *S'phardim*.

repertoire with which to convey Hebrew articulation. The pronunciation of one particular Hebrew consonant form, however, has no close parallel in the English language. This sound is represented by “*ch*,”<sup>14</sup> and approximates the *-ch* in German words such as *Bach* and *brauchen*, or the Scottish *loch*.)

In the final analysis, the issues relating to the production of Kosher food pose unique challenges to the food-processing industry. Kosher law is ultimately a set of religious regulations, and companies that choose to produce Kosher products must be prepared to meet all the processing and ingredient requirements that determine a food’s Kosher status. A Kosher certification program is a partnership between the manufacturer and the Kosher certifier, and its successful implementation requires a commitment by both to understand Kosher requirements and the methods by which they may be applied to modern food-processing systems.

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<sup>14</sup> In common Hebrew usage, the eighth letter (*Ches*) and the soft form of the eleventh (*Chof*) share this sound. The pronunciation of the letter *Ches* technically differs from the *Chof*, with the *Ches* somewhat closer to the English “h” (as in *hard*)—hence the common English spelling of the holiday of *Hanukah*. For purposes of this work, however, both consonants are rendered as “ch,” as in *Chanukah*.

# 1 Kosher Certification: Theory and Application

## The Purpose of Kosher Certification

Kosher *certification* is a process by which the Kosher status of a product is warranted and guaranteed to the “customer.” Customers may be divided into two broad groups:

- **Kosher consumers:** Individuals or institutions that make the Kosher status a significant factor or a condition of purchase for the foods they consume.
- **Manufacturers of Kosher foods:** Food manufacturers or processors that provide Kosher products to their customers. Such customers may be producers of Kosher retail products or themselves manufacturers of ingredients that, in turn, are used for the production of other Kosher products. The Kosher status of a finished product is predicated upon the Kosher integrity of each ingredient therein. To maintain their own Kosher programs, manufacturing concerns involved in the production of Kosher retail products (or those that supply ingredients to them) must ensure that all ingredients they use meet relevant Kosher requirements.

Kosher law makes no distinction between the Kosher *status* of a “finished product” and an “ingredient”—it is either Kosher or non-Kosher. Practical differences exist, however, in the manner by which their Kosher status may be *verified*. In the case of *industrial ingredients*, many basic raw materials have been investigated and determined to be inherently Kosher and thus may be approved for use in the manufacture of Kosher products without any formal Kosher certification. The use of more complex raw materials, however, raises potential concerns about the Kosher status of ingredients and equipment used in their manufacture, and generally presupposes professional oversight to ensure their Kosher status—a “Kosher certification.” In the case of most *retail products*, formal Kosher certification is the only reliable means by which the customer may determine that a product meets Kosher requirements.

## Theory of Kosher Certification

The designation of a product as Kosher may involve three distinct, but interrelated, considerations:

- A. **Status:** The Kosher *status* of a food is nominally a function of the satisfaction of the following three requirements:<sup>1</sup>

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<sup>1</sup> Several significant extraordinary requirements, such as *Bishul Akum* and *G'vinas Akum*, apply to specific categories of foods. Such requirements may mandate various levels of direct involvement or participation in the manufacture of the product by the *Mashgiach* beyond his normative supervisory responsibilities.

- the Kosher status of the ingredients therein,
- the avoidance of proscribed mixtures (for example, milk and meat), and
- preparation of the food on equipment that has not been compromised by the production of non-Kosher foods.

Assuming compliance with these requirements—by any means recognized as efficacious in *Halacha*—a food so produced would de facto be considered Kosher.

- B. **Certification:** The Kosher certification of a product is granted by an organization or individual competent to determine that a product enjoys a Kosher status. The certification itself does not confer a Kosher status but merely serves as a warrant of compliance with Kosher requirements.

Ultimately, of course, the purpose of a Kosher certification is to assure a customer that a product complies with Kosher law. Products that are inherently Kosher, therefore, are technically deemed to have satisfied this requirement without any formal certification.<sup>2</sup> Nonetheless, manufacturers often procure a formal Kosher certification for such items for the following reasons: Customers may not be expert in determining which products may require a Kosher certification and which do not, and a Kosher certification is an efficient method for allaying customers' concerns. In addition, many industrial customers have created strict procurement procedures that encompass a variety of requirements, including compliance with Kosher requirements. It is often easier for such customers to require a Kosher certification for *all* products that they purchase as a matter of procedure, thus avoiding the complication of delineating which products require a certification and which do not. In the case of retail products, Kosher consumers have no ready means of determining that a product is acceptable other than by the appearance of a Kosher symbol on the label.

- C. **Supervision:** Kosher certification generally presupposes an inspection of the production of an item to be able to verify its Kosher status, as well as an ongoing supervision of the product to ensure that it remains Kosher. However, because *certification* and *supervision* are so closely connected, these terms are often used interchangeably; designating a product as “Kosher certified” or “Kosher supervised” means the same thing. Indeed, the Hebrew terms for these two concepts are used with similar imprecision. The Hebrew word for “certification” is *Hechsher* and that for “supervision” is *Hashgacha*, but both are commonly used to indicate that a product is Kosher certified.

In theory, a Kosher certification would therefore entail full-time, onsite supervision of the production of a food item to ensure that it complied with all Kosher regulations. Such supervision would be undertaken by a *Mashgiach* because *Halachic* norms stipulate that only one who personally adheres to Kosher regulations may verify compliance with Kosher law. In practice, Kosher certification of certain types of products must indeed be based on such an approach, and full-time *Mashgichim* supervise and control all aspects of the production, from the receiving of raw materials until the final packaging. Such supervision programs are typically found in meat-processing facilities and restaurants, as well as in situations in which both Kosher and non-Kosher productions of similar products take place.

*Halacha*, however, does recognize various other approaches to effect the supervision necessary to verify compliance with Kosher requirements, and these approaches form the

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<sup>2</sup> See Chapter 3, “Ingredient Management,” for a full discussion of the criteria for this category of foods.



basis on which modern Kosher certification systems are predicated. Recognizing that, in most cases, Kosher “supervision” is merely a method of assuring that Kosher requirements are met, the *Talmud* establishes the following theories for such verification:

- **Unfettered, unannounced inspections:**<sup>3</sup> *Halacha* recognizes the assumption of compliance with agreements whose fulfillment may be monitored at any moment.

The modern application of this concept is for representatives of the supervisory agency to have the right to inspect the production, ingredient inventory, and purchasing records relating to the Kosher-certified products *at any time*. The frequency of such supervision would be dependent on several factors, including the Kosher sensitivity of the ingredients used, the frequency of delivery of raw materials, and the need to monitor production records and other variables.

- **A professional does not compromise his reputation:**<sup>4</sup> *Halacha* further recognizes that professionals have a vested interest in maintaining their credibility, and it may therefore be assumed that agreements made with professionals will be honored.

The modern embodiment of this concept is the contract for Kosher certification, whereby a manufacturer accepts obligations that have both the force of contractual law and the implicit desire to maintain an exemplary corporate reputation.

By ensuring that an appropriate level of unannounced inspections occurs and a company’s recognition of its contractual obligation, such *virtual supervision* can be accepted as a *Halachically* viable method of Kosher supervision.

## The Kosher Certification Program

The decision to pursue Kosher certification is generally based on the perceived marketing advantages that a company’s products would enjoy as the result of a Kosher status. It does involve, however, a significant investment on the part of the manufacturer in time, effort, and costs associated with administering the Kosher program. By implementing a Kosher certification program, a food manufacturer obligates itself to abide by both the Kosher law and the regulatory mechanisms and procedures necessary to monitor compliance with them. Such requirements are certainly manageable within the context of normal plant operations, as evidenced by the explosive growth of Kosher programs in food manufacturing throughout the world. An awareness of the obligations entailed in such an undertaking is important, however.

A manufacturer will be expected to allow Rabbinic inspection of all aspects of the company’s operations relating to the manufacturing process on a regular basis and without prior notice. Such inspections may also include a review of ingredient inventories and labels, as well as processing and ingredient purchasing and receiving records. *Mashgichim* (plural of *Mashgiach*—Rabbinic inspector) make every effort to make such inspections in the least intrusive manner possible. However, staff personnel must typically be available to

<sup>3</sup> In *Talmudic* terminology, this concept is known as *Yo’tzeh v’Nichnas*—literally, “walking out and walking in.” This type of oversight is routinely used by services such as the FDA and USDA to monitor compliance with regulatory requirements.

<sup>4</sup> In *Talmudic* terminology, this concept is known as *U’man Lo Ma’ra Ummuso*—literally, “a craftsman does not engage in activities that besmirch his reputation.” In the context of modern food production, companies are similarly assumed to attach great importance to their good name and reputation.

facilitate such inspections by escorting the *Mashgiach* and providing him with appropriate documentation.<sup>5</sup>

In addition, the implementation of a Kosher certification program may involve modifications to ingredient procurement, product manufacturing, and packaging practices unrelated to the final marketing of the product. In addition to a Kosher program's benefits, a company must understand the ramifications for its daily operations.

### **Restrictions on Raw Materials**

By implementing a Kosher certification program, a manufacturer agrees to adhere to a system of ingredient management encompassing the following components:

- a. All ingredients used in the production of Kosher-certified products must meet the Kosher requirements appropriate to the Kosher status of the certified product (that is, Pareve, Meat, Dairy, and Passover). As such, an integral part of the agreement between a manufacturer and a Kosher-certifying agency is an approved ingredient list,<sup>6</sup> which enumerates all ingredients approved for use in certified products. By agreeing to the terms of the Kosher certification agreement, the manufacturer explicitly agrees to limit itself to using only those ingredients that are specifically approved (as per any restrictions regarding their sources), as well as the methods by which they must be delivered to the factory.<sup>7</sup> Further, the manufacturer is responsible for ensuring compliance with any Kosher identification or documentation requirements indicated on the approved ingredient list before such ingredients may be used.
- b. Regardless of any Kosher certification enjoyed by an ingredient, its acceptability for use by the manufacturer is the *sole* prerogative of the *Kashrus* authority responsible for the certification of the final product. Although many certifications of Kosher status are generally considered reliable and meeting normative Kosher standards, a manufacturer may not assume that the existence of a Kosher certification for a particular ingredient from another Kosher-certifying agency constitutes presumptive approval for its use. The manufacturer therefore explicitly agrees that it may not substitute or add ingredients to the approved ingredient list without prior approval of the Kosher-certifying agency, even if such ingredients carry a Kosher<sup>8</sup> certification.
- c. For situations in which a manufacturer produces both Kosher-certified and -noncertified products, the use of non-Kosher ingredients may also be subject to review and approval by the *Kashrus* authority. Although the use of a non-Kosher ingredient in a product that is not Kosher certified may theoretically be of no consequence, appropriate oversight of such ingredients is necessary to ensure that they cannot be used in the Kosher-certified products or the equipment on which Kosher-certified items are produced. In such cases, an approved ingredient list may indeed contain non-Kosher ingredients, with

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<sup>5</sup> A manufacturer is also typically required to maintain updated documentation confirming the Kosher status of ingredients it uses (see Chapter 3, "Ingredient Management").

<sup>6</sup> See Chapter 3, "Ingredient Management," for a detailed discussion of the Approved Ingredient List, which may also encompass restrictions for ingredients that are not used in Kosher productions.

<sup>7</sup> Products delivered in bulk (such as corn syrup, oils, and so on) must be transported in Kosher-approved tankers or similar transport.

<sup>8</sup> Ingredients that are deemed "inherently Kosher" and so indicated on the Approved Ingredient List are generally not subject to this restriction.

their “approval” being geared to their appropriate use in non-Kosher products, and the manufacturer may be bound by notification and approval requirements similar to those relating to Kosher ingredients. Such oversight also ensures that Kosher and non-Kosher versions of functionally compatible raw materials will not be used in the production facility, because such a situation may lead to the inadvertent use of the non-Kosher ingredient in Kosher productions.

### **Restrictions on Production**

The methods by which products are manufactured are also subject to approval by the Kosher-certifying authority, with such approval being necessary to address the following concerns.

Equipment may not be used to process both Kosher and non-Kosher products (without appropriate cleaning or Kosherization<sup>9</sup>). A similar concern exists with equipment used in the production of Pareve, Dairy, and Meat products. If a manufacturer processes only Kosher products—and of only one category (Pareve, Dairy, or Meat)—such issues pose no concern. For situations in which such conflicting productions take place, however, plant operations may need to be adjusted to ensure an acceptable segregation of equipment and processing lines.

If equipment must be *Kashered* between productions of conflicting products (for example, between Kosher and non-Kosher, or Dairy and Pareve, items), scheduling flexibility is effectively restricted because of the inability to produce a given type of product during the period when the equipment has a conflicting status. In addition, equipment may have to remain unused for twenty-four hours prior to Kosherization, resulting in the possibility of lost production capacity for the equipment. Such Kosherization may also entail other expenses, such as those relating to the Kosherization process and the cost of any Rabbinic supervision required. In addition, the Rabbinic supervision required for Kosherization may not be available on certain dates or at certain<sup>10</sup> times, a factor that must be taken into account in production scheduling.

In certain situations, the use of a common steam and hot-water heating system for the production of conflicting types of products may not be<sup>11</sup> acceptable. In such situations, a manufacturer may be required to modify such existing utility systems.

Certain types of food are subject to the rules of *Bishul Akum*,<sup>12</sup> which requires that the *Mashgiach* be involved in the cooking process. In such cases, the heating system in a boiler or oven may need to be modified in order to ensure compliance with this rule. Similar modifications to bakery ovens may be required in order to address concerns of *Pas Yisroel*.<sup>13</sup>

Productions subject to certain extraordinary rules, such as those involving meat, *S'tam Yaynam*<sup>14</sup> (relating to wine and grape juice) and *G'vinas Akum*<sup>15</sup> (relating to cheese), may require the full-time supervision of a *Mashgiach*. The scheduling of such productions must therefore consider this requirement in determining production schedules.

<sup>9</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a detailed discussion of the theory behind such restrictions and methods by which they may be addressed.

<sup>10</sup> See Chapter 4, “Rabbinic Etiquette.”

<sup>11</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

<sup>12</sup> *Ibid.*

<sup>13</sup> See Chapter 7, “The Baking Industry.”

<sup>14</sup> See Chapter 6, “Fruits and Vegetables.”

<sup>15</sup> See Chapter 9, “The Dairy Industry.”

In addition to *Kashrus* issues relating to the production, a Kosher certification program presupposes that all such production takes place in a facility that is monitored for compliance with Kosher requirements. Consequently, a manufacturer may not contract production of Kosher-certified products to outside processors without prior approval of the Kosher certifier. If such contracting were desired, a Kosher certification program would be required for that facility. Indeed, even if the outside manufacturer has no interest in obtaining Kosher certification for other products it produces, production of Kosher products in its facility would be subject to the same requirements and constraints applicable to the manufacturer for whom the product is being produced.

Further, a food manufacturer that maintains a Kosher certification program may not undertake the production of products for an outside contracting entity—even if the contractor has no interest in obtaining a Kosher product—without ensuring that such production would not compromise its ongoing Kosher program. When such production follows approved Kosher guidelines (that is, it is limited to ingredients on the approved ingredient list and processed in a manner consistent with the Kosher program), it poses no significant concern.<sup>16</sup>

The use of ingredients *not* previously approved, however, is subject to the same approval process as any other ingredient used in the factory, even if the product in which they are to be used is not certified. Gaining such approval may be complicated, however, if the contractor wishes to maintain the confidentiality of its formula and ingredients and does not wish to submit them to Kosher review, especially where Kosher certification is not being sought. When the Kosher status of such ingredients cannot be adequately established, their use may prevent the production of products containing them in a Kosher<sup>17</sup> facility.

### **Restrictions on Packaging**

According to *Halacha*, products that require Kosher certification may be considered Kosher only if they can be reliably identified as such.<sup>18</sup> A Kosher designation may take many forms, such as a Kosher symbol, *Mashgiach*'s signature, or specific letter of Kosher certification. In all cases, however, the integrity of such Kosher identification presupposes the maintenance of a “Kosher chain-of-custody” from manufacture through final packaging. Therefore, products manufactured under Kosher certification may be packaged only in those facilities that are subject to Kosher oversight. In general, *any* packaging that bears the Kosher symbol may be used only in facilities authorized as part of the Kosher Certification Agreement.<sup>19</sup>

For products destined for use in an industrial setting, quality control systems may make the tracking and verification of a Kosher status workable, without the need for a Kosher symbol to be printed on the packaging. Many industrial ingredients—especially bulk items—are

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<sup>16</sup> In such a case, the product would be inherently Kosher regardless of whether it were marked as such or not. Such products could also be eligible for formal Kosher certifications, subject to the concerns outlined in the “Private Label Agreements” section of this chapter.

<sup>17</sup> In certain limited circumstances, the use of such non-Kosher ingredients may nonetheless be permitted in non-Kosher-certified products (for example, when used at very low levels and when considered functionally incompatible with Kosher productions; see Chapter 3, “Ingredient Management”).

<sup>18</sup> In most cases, a single means of identifying is sufficient, such as a printed Kosher symbol on a label. In certain situations, such as with meat, *two* independent identifying seals may be required.

<sup>19</sup> When a Kosher-labeled product is subsequently packaged in a manner that leaves the original Kosher labeling undisturbed (and the additional packaging does not bear a Kosher designation), such additional packaging typically need not be subject to Kosher oversight.

especially amenable to such a system. Ingredients produced under special supervision, however, may require a more secure method of designation.

In dealing with *retail* products, reliance on a letter of certification would be ineffective. Shoppers do not come to the supermarket armed with such documents, and retailers would be overwhelmed if required to provide them. It has therefore become common to mark retail products with an appropriate Kosher designation.<sup>20</sup> Indeed, in North America and Israel, most Kosher-certifying agencies will decline to certify a retail product unless the company is willing to place a Kosher symbol on the package. The reasoning behind this requirement is that it serves to protect the consumer from incorrectly assuming the Kosher status of products not so labeled, as well as to ensure that information relating to its Dairy or Meat status is readily available. Food manufacturers in North America, Israel, and much of Europe have recognized the importance of this approach, and it has become standard industry practice. Indeed, the inclusion of the Kosher symbol on the package is the preference of many manufacturers because it serves to publicize the Kosher status of the product and thus makes it more appealing to the consumer.

In many other areas of the world, however, Kosher certification has not achieved the broad acceptance enjoyed in North America, Israel, and parts of Europe. Although many manufacturers in such countries may agree to have their products certified as Kosher, they may nonetheless be reluctant to print a Kosher designation on the product. In such situations, *Kashrus* authorities are forced to rely on the dissemination of “Kosher products’ lists,” in which the Kosher status of products is publicized.

To ensure the accuracy of the Kosher information appearing on the label, a Kosher Certification Agreement will typically stipulate that all such labels must be reviewed and approved by the Kosher-certifying agency. The Kosher symbol is the property (usually trademarked in the United States) of the agency that authorizes its use, and exercising such an oversight of the use its symbol serves to ensure that the Kosher designation properly reflects the Dairy, Pareve, or Meat status of a certified product.

Because a Kosher designation on a product implies that *everything* included in that package is indeed Kosher, marketing programs that include samples of unrelated products pose a *Kashrus* concern. For example, manufacturers of breakfast cereals often enter into promotional agreements that include samples of candies, cookies, or other foods in the package of cereal. If the promotional sample is a non-Kosher food item, the use of the Kosher symbol on the package of cereal will not be allowed, irrespective of the inherent Kosher status of the cereal itself.<sup>21</sup> In a similar vein, “multipacks” of Kosher and non-Kosher products may not bear a Kosher designation, although the individual units of Kosher items may retain their individual Kosher designations.

An additional restriction involves identical versions of Kosher and non-Kosher retail products.<sup>22</sup> To avoid consumer confusion, most Kosher-certifying agencies will decline to certify food items produced in *identical* Kosher and non-Kosher versions, even though the

<sup>20</sup> See the section “Letter of Certification and Labeling Requirements” concerning the types of Kosher designations that may be used.

<sup>21</sup> Recognizing that such a lapse in Kosher designation is transient in nature, agencies may publicize the fact that the product itself remains Kosher certified.

<sup>22</sup> Industrial products, however, are often produced in virtually identical Kosher and non-Kosher versions. The distinction between retail and industrial products is based on the inherent ability of industrial processors to order specific products and monitor the status of the items that are being used.

non-Kosher versions will obviously not bear the Kosher designation.<sup>23</sup> Differing varieties of the same product *line*, however, are generally not considered subject to this concern. For example, a soup company may produce both Kosher and non-Kosher varieties of soups under the same brand name, provided that *all* production of the Kosher varieties is maintained as Kosher.

## The Certification Process

After the decision to obtain a Kosher certification has been made, a company will generally need to contact an individual or agency that specializes in Kosher food certification. Many such certification services are available, and the choice of which certification service to employ is the next critical decision in the Kosher certification process.

### Choice of Certification

Although Kosher certification may be granted by any Rabbinic authority,<sup>24</sup> the complexities of modern food production demand specialized expertise in both the *Halachic* and technical arenas. Rabbinic services that specialize in such matters can be divided into the following broad categories:

- **Kosher certification agencies:** Organizations have been established that specialize in Kosher certification services. Some are divisions of national or local Rabbinic organizations, and generally operate as nonprofit entities. Others are privately held and profit based. In all cases, the fees charged by these organizations are used to cover the costs of providing the professional services necessary to administer the Kosher certification program. Such organizations also typically invest significant resources into research to stay current with changes in the food industry that may affect Kosher standards and practices. Many such organizations are international in scope and have large staff and specialized services. Along with their ubiquitous Kosher symbols, they are typically well recognized by Kosher consumers, based on the stated policies of the organization, the reputation of their staff, and the *Halachic* authorities that they consult.<sup>25</sup>
- **Communal organizations:** These are typically Rabbinic organizations responsible for the religious needs of individual Jewish communities, including local *Kashrus* issues. They generally provide Kosher certification for local establishments (for example, restaurants, caterers, and bakeries), and many also provide Kosher certification services for retail

<sup>23</sup> In most cases, no exception is made for different-size packages of the same product (for example, a 10-ounce and a 20-ounce can), nor is an allowance made for products having different distribution patterns.

<sup>24</sup> In contradistinction to other religious systems, Judaism has no formal ecclesiastical or hierarchical structure. The term *Rabbi* means *teacher*, and any male of the Jewish faith who has mastered aspects of Jewish law may rule on matters in which he has demonstrated competence. Although Rabbinic ordination (*S'michah*) is generally conferred by a respected authority to formalize the use of the term *Rabbi*, no formal mechanism exists to establish standards or requirements for such a designation. The determination of the Kosher status of a product is ultimately a religious function and thus amenable to the decision of any Rabbi. As in any human endeavor, however, some individuals possess greater competence than others, in both the *Halachic* and technical spheres, and the acceptability of any Kosher certification is thus a function of the reputation of the individual or organization granting it.

<sup>25</sup> In most organizations, the *Halachic* review and adjudication processes operate independently of the administrative/operational aspects of the organization to assure the integrity of the *Halachic* decisions.

and industrial establishments both inside and outside their nominal geographical base.<sup>26</sup> They are generally smaller organizations than the major Kosher certification agencies, and the retail products certified by them are often geared to the geographic area in which they are located. They typically enjoy the recognition of the local community.

- **Private certification:** Historically, Kosher certification was routinely granted by individual Rabbis, relying on their reputation to assure the acceptance of their certifications by the Kosher consumer. Today, many individuals provide such services, which often enjoy excellent acceptability in the marketplace based on their personal reputation, competence, and the standards to which they subscribe. Indeed, many of the *M'hadrin* certifications (those adhering to exceptionally strict standards; see the section “*M'hadrin* Certifications”) are administered by individual Rabbis who have a reputation for very strict *Halachic* interpretation and supervisory standards. Some certifications, on the other hand, are not well respected and may not adhere to the standards expected by a significant segment of the Kosher-consuming public. Although compliance with the programs administered by such certifications may prove easier for the manufacturer, they may not provide the broad acceptability in the Kosher market, which is the purpose of such certification. Of critical importance, therefore, is that the manufacturer establishes the reputation and effectiveness of the Kosher supervision service that it chooses to employ.

The lines of distinction between these categories often blur considerably, however. Some communal organizations have developed Kosher certification divisions that rival the national *Kashrus* organizations in size and breadth. Private certifications, on the other hand, may be perceived as “organizations” in the sense that they often use trademarked Kosher symbols (rather than their name) to indicate their Kosher certification, and may certify a sizable number of products or companies.

The decision of which Kosher certification service to employ is an individual one because each may provide significant advantages for the manufacturer. Factors to consider include:

- **The reputation of the certification:** Although some certifications may be “easier” to deal with, such ease may be a function of less-than-stellar Kosher standards. Many consumers are quite perceptive in divining the competence and *Halachic* reliability of a certifying entity, and a company will not realize the full benefit of a Kosher program if the certification is not respected by the consumer.
- **The standards of the certification:** Some organizations follow more stringent guidelines, such as requiring that all Dairy products be *Cholov Yisroel*<sup>27</sup> and all baked products be *Pas Yisroel*.<sup>28</sup> Although adherence to such standards may make the certified products acceptable to a wider range of customers, they may not be appropriate for certain manufacturers.
- **The size of the organization:** Larger organizations may be able to provide greater depth of service and recognition in larger markets. On the other hand, smaller organizations or individuals may be able to provide more personalized service and be more flexible in meeting the scheduling needs or special requests of a manufacturer.

<sup>26</sup> This expansion often occurs simply because local companies with which they work expand their operations and choose to maintain the existing Kosher certification service as they grow.

<sup>27</sup> See Chapter 9, “The Dairy Industry.”

<sup>28</sup> See Chapter 7, “The Baking Industry.”

- **Fees and expenses:** Fees charged for Kosher certification may vary significantly from one certification to another. Often, a higher fee reflects a higher level of service and competence, which may prove worthwhile in the long term. In addition, the greater acceptability by the consumer of certain certifications over others may outweigh the importance of a higher fee charged for them.
- **Projected Kosher customer base:** Kosher certification symbols command significant consumer recognition and are often regarded by manufacturers as important marketing tools in both the Jewish and non-Jewish Kosher market. Manufacturers of retail products should consider such product recognition when determining which certification service best fits their needs. Products with national distribution may benefit from the brand recognition of a national certification service, whereas products geared to a regional market may benefit from a local service.

Products marketed to food manufacturers, on the other hand, require a Kosher certification that is well regarded in the industry. In such a context, the size or regional base of the certification is far less important. What is critical, however, is for the certification to be accepted by the Kosher certification services employed by the potential customers of the product.

## **Labeling**

Historically, many systems have been devised to label products as Kosher, with some creating as many problems as they were designed to resolve:

- **The letter *K*:** The word *Kosher* (at least in the English language) begins with this letter, and including a *K* on a product's label is an efficient, if not terribly prominent, means of indicating a Kosher status. Unfortunately, such a system tends to suffer from a number of deficiencies, not the least of which is that it has no legal standing. A consumer should be entitled to expect that any claim that appears on a label be accurate and enforceable. The letter *K*, however, has never been vested with the implication of a Kosher status in the context of secular labeling law (it is, after all, merely a letter of the alphabet) and for this reason (as well as others noted later), it serves as a very poor warrant of any Kosher status.

The use of the *K* does not ipso facto imply a *Kashrus* deficiency. Some manufacturers who use the *K* maintain appropriate Kosher programs administered by competent Rabbinic authorities, and these products may indeed meet the highest Kosher standards. However, many Kosher consumers shy away from such products because the *K* affords them no ready means of being assured of any Kosher claim or of identifying the individual or organization that vouches for the Kosher status of that product. For this reason, most of the major Kosher-certifying agencies insist that their unique Kosher symbol (discussed shortly) be used on products that they certify.

- **The word *Kosher*:** An improvement over the simple *K* was the use of the word *Kosher* because, at a minimum, it clearly implied that the manufacturer was making some kind of Kosher claim. Placing a "Kosher" designation on a product that was patently non-Kosher (for example, pork) could be considered fraudulent and thus enforceable.<sup>29</sup>

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<sup>29</sup> Prosecution of patently offending labeling could be pursued under standard consumer protection and fraudulent labeling statutes or as a violation of specific "Kosher laws" in many states.



This approach, however, raised another significant issue: the basis on which the Kosher claim itself was made. Anyone may *claim* that a product is Kosher, and manufacturers, distributors, or lay people with limited or no knowledge of Kosher law may innocently (or otherwise) declare something that is not Kosher to be Kosher that is not. The “word” Kosher, therefore, had no accountability, and conscientious Kosher consumers found this designation almost as wanting as the *K*.

- **The name of the Rabbi:** To address the concerns of its customers and the need for an accountable method of advising them of the Kosher status of their products, companies began printing the name of the certifying Rabbi or organization on the label. This system is the precursor of the system of Kosher symbols we often see today, and indeed does adequately address most labeling issues. It does suffer, however, from two drawbacks. First, a Rabbi may be well known in his immediate area, but his name recognition may not extend much beyond. Potential customers in other parts of the country (or the world) may not be familiar with the Rabbi or the standards that he employs. In addition, the use of a fictitious name has not been unknown. Second, names are hard to read and recognize, especially in small print, and, of course, more than one Rabbi can have the same name. In addition, that may bring undue attention to the Kosher status of a product whose primary market has no interest in such a status.
- **Kosher symbols:** To provide a readily recognizable system of labeling products as Kosher, as well as to ensure the accountability of the claim of a Kosher status, Kosher certification services have developed unique symbols by which to mark products they certified as Kosher. These symbols, trademarked by their respective Kosher certification services, have become well known to consumers interested in purchasing Kosher products. By agreeing to place such symbols on their products that are Kosher certified, manufacturers avail themselves of the marketing advantage of well-known symbols and, because the use of these symbols must be authorized by the Kosher-certifying service, the symbols convey a sense of security about the Kosher claims for their products.

### **Application**

After a choice of certification services has been made, the next step is the formal application process. Because a Kosher review will probe into virtually all aspects of ingredients and production systems relating to the products to be certified, such an application may be viewed as an opportunity to conduct an extremely thorough self-audit. It may also involve a review of any non-Kosher productions taking place in the manufacturing facility, in order to ensure that they do not impinge on the Kosher program.

An application for Kosher certification entails submission of the following:

- **Corporate information:** This should include the name, address, and contact information of the company making the application. It should also include the names of the personnel who will be involved in the Kosher certification program, including the plant manager, raw-material manager, and the contact person who will be responsible for the handling of Kosher project. If the applicant is an entity other than the actual manufacturer, information for both parties should be included.
- **Manufacturing location:** When the manufacturing site differs from corporate headquarters, of critical importance is listing the contact information for *all* manufacturing locations that will be used for Kosher production.

- **List of products to be certified:** This includes a complete list of all products for which certification is being requested, as well as a brief description of the processing system. If non-Kosher products will also be manufactured at this site, their production should also be noted.
- **Ingredients:** A list of all ingredients used in the facility should be included, along with their sources and Kosher certification, if any. If possible, documentation supporting the Kosher status of these ingredients (letters of Kosher certification) should be appended, although this can be done at a later time as the program moves forward.
- **Labels:** A list of all labels under which the products are to be packaged should be included. If the product is to be packaged under a label not owned by the company (“private label”), this should also be noted. (Certification of such labels may be subject to a private label agreement; see the section “Private Label Agreements.”)
- **Application fee:** Most Kosher-certifying agencies require the payment of a fee to cover the cost of processing the application. Unless the parties have otherwise agreed, this fee does not cover expenses related to the subsequent inspection of the manufacturing facility.

### ***Initial Inspection***

After the application is received, it is reviewed by the certifying agency to make a preliminary determination of the feasibility of granting Kosher certification. If no significant impediments are noted, the company will be contacted to arrange for an inspection by a Rabbinic representative to conduct a thorough inspection of the facility and ingredients. In certain situations, however, the review of the application will reveal Kosher issues relating to ingredients or processes that, unless rectified, would preclude the granting of Kosher certification. In such cases, the Kosher-certifying agency will advise the manufacturer of these issues and discuss possible solutions to them. If no solution seems probable, the application may be rejected or withdrawn. Alternatively, a manufacturer may nevertheless request an inspection of the facility, with the hope that solutions to outstanding issues may be developed based on a hands-on review of the situation.

The Rabbinic representative assigned to conduct an initial inspection typically possesses significant experience in Kosher certification, allowing him to accurately assess all issues relevant to the prospective Kosher program. His inspection may address the following points:

- Verification of the accuracy of the application and the ingredient list submitted.
- An assessment of the production system, including the possible need to Kosherize the equipment and the method by which this may be accomplished. Included in this review would be a determination as to whether any recirculating steam or hot-water issues pose a Kosher concern.<sup>30</sup>
- A determination of whether issues pertaining to *Bishul Akum* are relevant to the products in question.<sup>31</sup>

If the certification is to be granted by an individual Rabbi, he will typically inspect the facility and make all necessary determinations regarding the requirements for certification.

<sup>30</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

<sup>31</sup> *Ibid.*

When an agency or organization provides this service, the inspecting Rabbi will prepare an initial inspection report, which will contain the Rabbi's initial determinations and recommendations regarding plant operations. (It will generally not deal with the *acceptability* of ingredients; that function is usually subject to separate administrative review.) This report is a confidential document and, although instructive to the Kosher certification service to which the inspector reports, it is not determinative. Rather, it is designed to provide sufficient information for the Rabbinic authority charged with managing this application to properly assess the situation and make final decisions as to the potential Kosher program that may be administered.

Generally, the applicant is responsible for all direct costs necessary to the inspection (travel, lodging, and so on) incurred by the inspecting Rabbi. The fee for this inspection may be included in the application fee, or it may be billed separately. Payment of an application fee, as well as any subsequent charges for inspection, should not be assumed to automatically guarantee a Kosher certification. These services are exploratory in nature and, if Kosher certification is subsequently determined to be inappropriate, the fees usually are not refundable.

### ***Review of Ingredients and Other Issues Relating to the Certification***

The next step in the certification process is to review all the information relating to the potential certification to determine whether and how Kosher productions may be certified. The initial inspection report is analyzed, as is the Kosher status of all ingredients on the submitted list. Just as every food manufacturer operates in its unique manner, so must the Kosher certification program for each manufacturer be tailored to meet issues specific to that situation. On review of the application, certain changes may be required before Kosher certification may be granted. In most large organizations, a Rabbinic administrator (often called a Rabbinic coordinator) works with the manufacturer to resolve these issues and to effect the changes necessary to allow for Kosher certification. Such issues may include:

- **Changes in ingredients:** Certain ingredients currently used by the manufacturer, or that had been submitted for approval, might be deemed unacceptable for Kosher production. The company and the certification agency will typically work together to identify suitable alternatives.
- **Changes in production systems:** Conflicts between Dairy and Pareve productions, as well as between Kosher and non-Kosher productions, may require changes in production systems or Kosherization of equipment for certain productions.
- **Changes in record keeping:** Appropriate systems of documentation must be put into place to allow for the verification of compliance with the Kosher Certification Agreement. The Kosher certification agency typically works with the company to develop protocols for monitoring critical points of compliance, such as methods of documenting the Kosher status of raw materials at the point of arrival into the plant and adherence to production-scheduling requirements. In addition, procedures will be developed for approving new ingredients and products.
- **Changes in steam or other utilities:** If a common steam or hot-water system is used in the processing of Kosher and non-Kosher or Dairy and Pareve products, modifications in such systems may be required.

- **Type of supervision:** Most Kosher programs operate based on periodic inspections and audits, the anticipated frequency of which must be determined by the Rabbinic coordinator in order to determine appropriate fees. In certain situations, however, Kosher certification may be appropriate only with full-time supervision. The agency will generally try to inform the company of such a requirement at the earliest point at which they are able to determine that this might be the case.

## **Contract**

On satisfactory resolution of all issues relating to the Kosher program, a contract for Kosher certification may be prepared that provides for a formal summary of the basic points of the Kosher program. The contract for Kosher certification is perhaps the single most important element in a Kosher certification program because it provides the *Halachic* basis by which such certification may be granted.<sup>32</sup> In addition, it recognizes the unique nature of Kosher certification in that it is based on the satisfaction of religious, rather than financial, commitments, although these must obviously also be dealt with satisfactorily. The contract will therefore stipulate that all terms of the contract relating to the Kosher status of the product are subject to their complete and specific performance, with no monetary equivalence being recognized as an acceptable alternative to full compliance. As such, in the event of egregious breaches of the terms of the contract that affect the Kosher status of the product, a recall of such product or other remedial action may be mandated.

A typical contract covers the following salient points:

- **Products:** All products that are to be certified are specifically listed in the contract or its annexes. The contract further stipulates that no additional products may bear the Kosher designation unless approved and registered, even if they bear identical ingredients and are produced under identical Kosher conditions. The contract also stipulates that the company will not produce non-Kosher versions of products identical to those bearing the Kosher designation, even though they will not be labeled as Kosher products.
- **Labeling:** The contract stipulates that the Kosher symbol authorized by the certifying agency remains the property of that agency and may be used only when specifically authorized. To minimize the possibility of its inappropriate application, the use of rubber stamps or generic stickers bearing the Kosher symbol is generally prohibited. Stickers that bear the name of the manufacturer and specific product identification in addition to the Kosher symbol, however, may be allowed under special circumstances.

In addition, the contract requires that only approved Kosher products may be included in packaging that bears the Kosher symbol; samples of non-Kosher products may not be included as promotional items, even if separately wrapped.

- **Ingredients:** Certified products may contain only ingredients specified in the list of approved ingredients, which forms a part of the contract. Additional provisions include:
  - Approval of all ingredients is subject to the conditions indicated on the approved ingredient list, including requirements relating to their labeling, documentation, and sources.

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<sup>32</sup> That is, (1) the right of unfettered inspections of production, ingredients, and records, and (2) establishing the acceptance by the manufacturer of the terms of the agreement, which would then presuppose the manufacturer's desire to maintain its good reputation in abiding by them (see the section "Theory of Kosher Certification").

- Any changes in ingredients or suppliers are subject to *prior* approval, unless otherwise stipulated.
- Any change in the status of ingredients noted by the manufacturer must be brought to the attention of the certifying agency.
- *All* ingredients in the production facility must be registered on this list, even those not intended for use in Kosher productions.
- Ingredients used for R&D purposes are also subject to the above requirements, unless stipulated otherwise in writing.

The contract also stipulates that the certifying agency reserves the right to terminate approval of any ingredient at the agency's sole discretion.<sup>33</sup>

- **Locations:** All production and packaging sites must be specifically approved, including sites for trials, temporary or seasonal production, and packaging.
- **Equipment:** The company agrees to advise the certifying agency before using any previously used equipment that may be introduced into the production of Kosher product, because such equipment may require a Kosherization prior to use in Kosher productions.
- **Inspection and review of records:** The company agrees to allow unfettered inspections by duly authorized representatives of the certifying agency at any time during normal business hours, as well as whenever production takes place. Such inspections may cover raw-material inventories and purchasing records, production systems, and other areas of plant operations that have a bearing on Kosher production. Details concerning ingredient proportions<sup>34</sup> and recipes are generally not germane to establishing the Kosher status of a product.<sup>35</sup>
- **Confidentiality:** The certifying agency agrees to maintain the strict confidentiality of all information provided to it by the company, as well as any observations it makes as part of its supervision or administration of the Kosher program.<sup>36</sup>
- **Special clauses and production requirements:** The contract will outline any special requirements relating to Kosher productions. These may include requirements for Kosherization of equipment, special supervision, and segregations of non-Kosher and Kosher productions, or Dairy/Meat/Pareve segregation.
- **Fees and expenses:** Charges for Kosher certification should be regarded as a fee for service, regardless of the financial structure of the certification service. Fees cover many expenses, including overhead, salaries, and research, and may vary significantly from one certification service to another.<sup>37</sup> In general, however, they are grouped as follows:

<sup>33</sup> Many factors may cause a previously approved ingredient to lose its acceptable status. For example, ingredients heretofore assumed to be inherently Kosher may be determined to pose a *Kashrus* concern. In addition, manufacturers of certain ingredients may choose to discontinue their Kosher certification or to change the certification to one that is not acceptable to the certifying agency of the finished product.

<sup>34</sup> The ratio of fish in a product, however, may be significant in determining whether it will be labeled as "Fish" (see Chapter 3, "Ingredient Management").

<sup>35</sup> Although the usage level of ingredients is generally not significant in determining the status of the product itself, it may be significant in determining the status of the *equipment* on which such products are processed (see Chapter 2, "Basic *Halachic* Concepts in *Kashrus*," and Chapter 3, "Ingredient Management").

<sup>36</sup> Manufacturers may also choose to draft additional nondisclosure agreements to be executed with each individual *Mashgiach*.

<sup>37</sup> Fees charged for modern Kosher certification programs designed for mass production are typically based on a fixed fee, exclusive of special charges for ongoing supervision and Kosherization. Fees are generally considered payment for services rendered and are not tied to the volume of production. Historically, however, fees for Kosher productions undertaken for a limited Kosher market were based on production volumes, reasoning that such an arrangement would allow for the cost of the Kosher certification to be directly

- *Certification fee.* This is typically an annual fee that covers the routine costs of administering the Kosher program. In most cases, it will cover the costs of routine inspections by the *Mashgiach* and will therefore reflect the projected costs of the *Mashgiach*'s time and expenses involved in making such inspections. It will also cover the operating overhead of the certification service and the administrative resources necessary to administer the program for the manufacturer.
- *Set-up fee.* Some Kosher certification services will also charge a one-time fee to defray the administrative costs of establishing the certification program.
- *Special production fees.* When special supervision is required, a fee is stipulated to cover such costs, usually on a per-shift basis. This fee excludes travel and lodging expenses.
- *Kosherization expenses.* When either a one-time or an ongoing Kosherization is required, a fee is stipulated to cover the supervision of this process. Again, this fee excludes travel and lodging expense.
- *Annual or periodic reviews.* To ensure the ongoing integrity of the Kosher program, provision is typically made for an annual review of the manufacturing facility by an administrative member of the Kosher certification staff. The purpose of this review is to ensure that close levels of cooperation are maintained between the *Mashgiach* assigned to make regular inspections and the administration and that the administrator is intimately familiar with plant operations and issues relating to the Kosher program at each facility. The manufacturer is typically responsible for the costs of such reviews.<sup>38</sup>
- **Term of the agreement:** Most agreements for Kosher certification have a term of one year. However, they typically allow for automatic renewal of the agreement unless either party provides timely notification to the contrary. In such cases, the contract will automatically renew itself for another year as per the terms of the agreement, although the annual fee and associated expenses may be reasonably adjusted with appropriate prior notice.

The Kosher certification agency, however, retains the right to terminate certification at any time that it feels unable to reasonably guarantee the Kosher status of the product, such as when the manufacturer has exhibited a wanton disregard for adherence to Kosher requirements (see the next item in this list).

The manufacturer also agrees that, on termination of the Kosher agreement for any reason, it will destroy any labels bearing the Kosher certification or fully obliterate the Kosher symbol from them. In addition, it will discontinue the use of the Kosher symbol in any advertising.

- **Enforcement and violations:** Although the contract calls for specific performance relating to *Kashrus* issues, it also recognizes that violations may nevertheless occur. In the event of willful intent to violate Kosher guidelines, certification may be subject to summary termination. If such violations are due to errors or negligence, however, the contract makes provisions for correcting the deficiency and ensuring that the program may continue. The following is a list of typical responses to violations in the Kosher program, some or all of which may be implemented as warranted:

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related to the cost of the product. Although some specialty Kosher certifications still rely on such a formula, the cost of most Kosher programs is amortized as part of general overhead and is not tied to production volumes.

<sup>38</sup> Every effort is made to keep such costs to minimum. Typically, several reviews are scheduled in a given area, allowing travel and lodging costs to be divided among the companies involved.

- Equipment that has been rendered non-Kosher must be Kosherized under supervision of the *Mashgiach*, the cost of which is borne by the manufacturer.
- Items that had been produced and determined to be non-Kosher, owing to non-Kosher ingredients or equipment, must be recalled from the marketplace.<sup>39</sup>
- The level of inspections and supervision may be increased, either temporarily or permanently, to prevent future violations. The costs of such increased supervision are borne by the manufacturer.
- Financial penalties may be assessed against the company as provided in the contract.
- The company may be required to alert the Kosher-consuming public of non-Kosher products that had been distributed.
- Any other remedy permitted by equity or law.
- **Legal:** The contract will also typically provide for its legal validity, recognizing that the parties regard it as reasonable to ensure the Kosher status of certified products and to provide for adjudication of any disputes.

### ***Inspections***

After both parties sign the contract, the Kosher program comes into force, subject to fulfillment of any outstanding requirements such as Kosherization of equipment and verification of, or changes in, ingredients. Typically, the Kosher certification agency will require a final inspection to verify that all such requirements have been met, after which the company may begin producing Kosher products as stipulated in the contract and labeling them as such. Unless the certification program calls for ongoing supervision, a *Mashgiach* will be assigned to make regular, unannounced visits to the factory. The *Mashgiach* will typically prepare a written report during each visit and may ask the plant manager or other responsible individual in the factory to sign it, confirming his visit and his findings (or indicating any disagreement with them). (The company can retain a copy of the document should it choose to do so.) This report is then forwarded to the Rabbinic coordinator handling the certification.

It is important to recognize that the *Mashgiach* and the Rabbinic coordinator perform separate, but complementary, functions in the administration of the Kosher program. The *Mashgiach* is charged with reviewing compliance with the terms of the certification and reporting on any deviations or new situations. He is *not* charged with approving new ingredients, products, or procedures. His purpose is to serve as the eyes and ears of the Rabbinic coordinator, and it is to the Rabbinic coordinator that all requests for changes in ingredients or production issues should be addressed. The *Mashgiach* is an excellent resource from whom to request explanations or information, but all significant decisions relating to the certification are the province of the Rabbinic coordinator, acting in consultation with other members of the administration, and the Rabbinic authorities of the certification service.

### ***Letter of Certification and Labeling Requirements***

The Kosher status of a product is typically confirmed by a document, known as a letter of certification, which is issued by the Kosher-certifying agency. This document generally contains the following information:

<sup>39</sup> When the violation is unintentional, every effort is typically made to determine whether the product may nevertheless be considered Kosher post facto, thus avoiding a product recall (see the section “*Bitul* (Nullification)” in Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”).

- The name of the certified company.<sup>40</sup>
- The brand name under which the products are sold.
- The specific names of the products that are certified.<sup>41</sup>
- The Kosher status of each product (such as Pareve, Meat, or Dairy).<sup>42</sup>
- Requirements for identification of the Kosher-certified product, such as the presence of a specific Kosher symbol,<sup>43</sup> stamp, or *Mashgiach*'s signature on the label. Alternatively, certification may be limited to specific production lot numbers or, in the case of bulk shipments, to product shipped in tankers sealed with specifically numbered seals.<sup>44</sup>
- Whether the product is certified for year-round use (not for Passover) or certified for Passover use.
- Additional *Kashrus* information, such as *Cholov Yisroel*,<sup>45</sup> *Pas Yisroel*, or *Yoshon*.<sup>46</sup>

The letter of certification is signed by the Rabbi responsible for certifying the products' Kosher status and is typically valid for one year.

Many letters of certification stipulate that the Kosher status of the certified product is valid only when it is labeled with a specific Kosher symbol. In many countries (such as the United States, Canada, Israel, and parts of Europe), *Kashrus* agencies often require that all retail products bear a Kosher designation on their label because the retail consumer is ill equipped to consult letters of certification to verify the Kosher status of an item. Even when a product is sold for industrial use, many *Kashrus* organizations—and customers—may prefer to have the Kosher symbol appear on the label.<sup>47</sup> Regardless of the rationale for such a requirement, the Kosher status of a product is subject to compliance with the terms of certification stipulated in the letter of certification, and failure of a product to bear the required symbol may be grounds to reject the Kosher status of the product.<sup>48</sup>

In addition to establishing that a product is certified as Kosher, symbols are also used to indicate the *category* of certification. Generally, this is accomplished by printing the certifying agency's Kosher symbol together with a modifying letter (or letters). Table 1.1 provides a list of symbol constructs commonly used for such purposes. In all cases, the full designation, such as "Pareve" or "Dairy," may be printed alongside the Kosher symbol instead of the mnemonic abbreviation of its status.

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<sup>40</sup> In the case of products produced under private label (see the section "Private Label Agreements"), the name of the distributor may replace that of the actual manufacturer.

<sup>41</sup> In situations in which *all* products manufactured by a specific company are Kosher, a letter of certification may be issued for that company, without listing each certified product individually. Most *Kashrus* organizations, however, avoid issuing such letters, preferring to document each specific certified product (with its specific Kosher status).

<sup>42</sup> See text that follows, concerning labeling requirements for a complete list of status categories.

<sup>43</sup> See text that follows, concerning the general requirement for a Kosher symbol to appear on the product label.

<sup>44</sup> See Chapter 3, "Ingredient Management," for a detailed discussion of the various requirements and methods by which products may be labeled or marked as Kosher.

<sup>45</sup> See Chapter 9, "The Dairy Industry," for a description of this term.

<sup>46</sup> See Chapter 7, "The Baking Industry," for a description of these terms.

<sup>47</sup> See the section "Restrictions on Packaging," earlier in this chapter.

<sup>48</sup> When the Kosher symbol is affixed by the *Mashgiach*, it is generally considered critical to establishing the Kosher status of the product. When the symbol is routinely affixed by the manufacturer, its inadvertent absence may be less of a concern. In all cases, however, failure to comply with any of the terms of the letter of certification is a serious matter, and such product should not be accepted as Kosher unless its Kosher status is verified by the certifying agency.



**Table 1.1.** Symbols used to indicate the category of Kosher certification

Symbol	Designation	Definition
***	Pareve	By default, an unmodified Kosher symbol indicates a Pareve status (unless it appears on milk, meat, or other similar, obviously non-Pareve item). Often, however, the manufacturer may choose to include the word “Pareve” along with the Kosher designation to ensure to avoid any confusion
*** D	Dairy	Product is certified as Dairy due to the inclusion of a dairy component. Many <i>Kashrus</i> organizations will certify a product as “D” even though it may contain no dairy ingredients but was produced on dairy equipment (see “DE,” below)
*** DE	Dairy Equipment <sup>49</sup>	Product contains no dairy ingredients, but is produced on dairy equipment (This designation is used by some, but not all, <i>Kashrus</i> organizations <sup>50</sup> )
*** M	Meat	Product contains a meat ingredient. Many <i>Kashrus</i> organizations will certify a product as “M” even though it may contain no meat ingredients but was produced on meat equipment (see “ME,” below)
*** ME	Meat Equipment	Product contains no meat ingredients, but is produced on meat equipment (This designation is used by some, but not all, <i>Kashrus</i> organizations)
*** P	Passover	Virtually all <i>Kashrus</i> agencies use the letter “P” to indicate Passover approval (not “Pareve”)
*** F	Fish	Product contains fish as an ingredient <sup>51</sup>

### “Dairy” versus “Dairy Equipment”

Several significant *Halachic* distinctions are made between products that are “Dairy”—those containing dairy components—and products that are inherently Pareve produced on dairy equipment.<sup>52</sup> Many Kosher-certifying agencies have chosen to differentiate their “Dairy” certifications on this basis, generally by appending a “D” to their symbol to indicate a truly Dairy status and a “DE” to indicate that the product is inherently Pareve but is produced on dairy equipment. Other organizations, however, have taken the position that such information may be confusing, misleading, or difficult to monitor properly, and make no distinction between “Dairy” and “Dairy Equipment”—all products are certified as “Dairy.”

Products certified by such organizations as “Dairy,” however, may technically qualify for a “Dairy Equipment” status, irrespective of their formal designation, and consumers often attempt to divine their true status by examining the ingredient declaration. Such attempts must be taken with caution, however, for while some ingredients are obviously Dairy (for

<sup>49</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a discussion of the *Halachic* status of inherently Pareve products processed in dairy or meat equipment.

<sup>50</sup> See below for a discussion of the application of this policy.

<sup>51</sup> Some *Kashrus* organizations require the use of a fish designation only if the percentage of fish is above the level of *Bitul* (1/60). Others, however, require the use of this designation regardless of the amount of fish used (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” in the section “Fish and Meat”).

<sup>52</sup> For example, inherently Pareve products cooked in dairy equipment may be eaten immediately after (but not together with) a meat meal, as opposed to products containing dairy ingredients that may not be eaten for a certain period of time after a meat meal (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for additional distinctions).

example, milk, butter, whey, and casein),<sup>53</sup> the status of others may be hidden behind terms such as “flavors” or “stabilizers,” leaving the consumer without a reliable means of ascertaining the product’s true status.

The Food Allergen Labeling and Consumer Protection Act, however, may provide a useful tool in determining whether a product actually contains even a minor amount of dairy material. This law, which became effective January 1, 2006, required all food manufacturers to declare even trace amounts of the following eight major food allergens:

- Milk
- Eggs
- Fish
- Crustacean shellfish
- Peanuts
- Tree nuts
- Wheat
- Soybeans

Food manufacturers generally err on the side of caution, and will indicate that a product “Contains Dairy” even if only in trace amounts or a component of a flavor or other processing aid. As such, a product labeled “Dairy”—but not listing “Dairy” as an allergen—may indeed be considered to have a “Dairy Equipment” status. In case of doubt, however, the consumer should always err on the side of caution and consider the product to be Dairy.

### ***Private Label Agreements***

Kosher programs involving only the manufacturer and the certification agency may be administered in a reasonably straightforward manner. All ingredient, production, and labeling issues are the province of the manufacturer, who can coordinate issues relating to *Kashrus* directly with the certification agency. As such, the accountability and traceability of a product bearing a specific company and Kosher label are clearly established.

“Private labeling” refers to a situation in which one company contracts with an independent manufacturer to produce goods under the label of that company. Indeed, the contracting company may have no manufacturing base whatsoever, relying exclusively on outside contractors to produce its products. When the contracting company desires a Kosher status for its products, the Kosher certification model involves *three* independent parties: the manufacturer, the owner of the label, and the Kosher certification agency. In many cases, the contracting company may wish to avail itself of the existing Kosher certification established by the manufacturer and to merely add a Kosher designation to the product under the terms of the existing Kosher program (using ingredients and processes previously or newly approved for these products). Although the Kosher status of product is nominally a function of manufacturing and not the owner of label, such an arrangement raises several issues in the administration of the Kosher program:

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<sup>53</sup> Casein is a milk protein and is a quintessential dairy ingredient, irrespective of political considerations in the United States that accord it a “Non-Dairy” status (see “The Story of Cheese and Casein” in Chapter 17 for a full discussion of this subject).

- The Kosher symbol is the property of the Kosher certification agency and may not be used without its permission. Indeed, certification agencies are constantly on guard lest the symbol appear on products that it does not certify, because customers rely on appropriate use of Kosher symbols to maintain their adherence to a Kosher diet. If the label is owned by the manufacturer, it will typically bear the legend “Manufactured by [the name of the company],” and any Kosher symbol on such a package may be easily traced back to the manufacturer. If the production takes place by an entity other than the owner of the label, however, it will typically bear the legend “Manufactured for . . .” or “Distributed by . . .” In such cases, no clear relationship between the Kosher symbol and the company listed may exist. Such indiscriminate appearance of Kosher symbols on products for which no Kosher agreement exists—and thus lack any record of appropriate use—would serve to undermine the entire program of Kosher labeling, even if the product technically was Kosher.
- The owner of a private label may seek to have several manufacturers produce the same item. Some of these manufacturers may be under Kosher certification, whereas others may not. If the label printed by the company bore the Kosher symbol, its use in non-Kosher production facilities would pose a major concern. Even if two separate stocks of labels are printed, errors in label distribution may cause a label bearing the Kosher designation to be used in a non-Kosher facility. In addition, the mere existence of Kosher and non-Kosher versions of identical products is not permitted under normative Kosher procedures (see the earlier section “Contract” that addresses the Kosher contract).
- Because no formal relationship exists between the owner of the label and the Kosher certification, no agreement would be extant to govern the resolution of *Kashrus* issues were a product mislabeled or subject to a Kosher recall.

To address these issues, Kosher certification agencies have developed a “Private Label Agreement” that serves to authorize the use of a Kosher designation on products manufactured in a facility that is already subject to ongoing Kosher certification. This document is a three-party covenant that creates a contractual relationship between the certified manufacturer, the owner of the private label, and the Kosher certification service. The following are its salient points:

- All private label products that will bear the Kosher symbol must be subject to all relevant Kosher requirements stipulated in the master Kosher agreement between the manufacturer and the Kosher-certifying agency. The validity of the Private Label Agreement is contingent on the ongoing validity of the master contract for Kosher certification, and automatically terminates should that master contract lapse for any reason.
- Each label that will bear the Kosher symbol must be registered with the certifying agency and subject to its approval.
- The owner of the private label agrees that it will not contract for the production of any items identical to those listed in the Private Label Agreement at any other facility, whether labeled as Kosher or not, without the express approval of the Kosher-certifying agency.
- The owner of the private label agrees that the disposition of labels bearing the Kosher symbol is subject to the terms of the master agreement and may not be used by another manufacturer without the express authorization of the certifying agency. Further, in the event that the product loses its certification for any reason, the owner of the private label agrees to destroy all labels bearing the Kosher certification or fully obliterate the Kosher symbol from them.

- The Private Label Agreement also establishes the privity between the owner of the private label and the certifying agency such that issues relating to the Kosher status of the product, if any, are a mutual responsibility.
- A Private Label Agreement is required only when the manufacturer requests the use of the Kosher symbol on the private label. If the private label will not bear the Kosher symbol, no agreement or approval is required, provided that such productions comply with the Kosher requirements of the ongoing Kosher program.
- A nominal processing fee is typically assessed for each Private Label Agreement, which is generally charged for the agreement itself and not for each label covered.

### **M'hadrin Certifications**

The rules that regulate a Kosher certification program are based on *Halachic* requirements that have been codified over centuries. Kosher food production in the context of modern processing systems involves the application of these rules in a manner that is consistent with *Halacha* while simultaneously allowing the food industry to operate as efficiently as possible. Such a synthesis allows for the broadest availability of reliably certified Kosher products in the most cost-efficient manner. To this end, *Kashrus* authorities have been remarkably successful in developing programs and procedures that satisfy both requirements. We shall call this the *normative* approach to Kosher certification, and there is indeed broad unanimity on the part of *Kashrus* authorities as to the methods by which Kosher programs should be administered. The approaches and theories expounded in this book are based on such normative Kosher standards, which serve as the basis for most of the major Kosher certification programs, and such programs meet the needs of the vast majority of Kosher consumers.

A significant segment of the Kosher-consuming public, however, prefers or demands a more stringent level of supervision. The term *M'hadrin* is Hebrew for *scrupulous*, and a distinctive subset of Kosher certification has developed to address this need. It is critical to note that *M'hadrin* certifications do not impugn the integrity of mainstream Kosher programs. Indeed, they often work in concert with one another and recognize the validity of each other's approach. Rather, *M'hadrin* certifications provide an additional service to meet the needs of a particular market segment.

The difference between normative and *M'hadrin* Kosher certification may be noted in their respective approaches to both the method by which certification programs are administered and the standards employed. *M'hadrin* certifications typically require full-time supervision for most productions and do not rely on the periodic inspection system on which many normative Kosher programs are based. In addition, virtually all *M'hadrin* certifications eschew products that are not *Cholov Yisroel* and *Pas Yisroel*. All ingredients used in the production of a *M'hadrin* product must meet similar *M'hadrin* standards, and some *M'hadrin* certifications will also avoid the use of ingredients that are produced on equipment requiring *Kashering*. Based on these restrictions, many products that are certifiable under normative Kosher standards may not be eligible for a *M'hadrin* certification.

From the perspective of the manufacturer, most Kosher production will be undertaken in the context of mainstream Kosher certification. The key to the success of large-scale Kosher food production is its ability to forge a reliable Kosher program that meshes relatively seamlessly with the requirements of the general food industry. Many of the requirements of *M'hadrin* certification, however, would pose too great a burden on the industry for it to undertake them on a widespread basis.

*M'hadrin* certification may be practical on a limited basis, though. Indeed, many of the companies that specialize in selling *M'hadrin* products arrange for the production of their products in facilities that enjoy mainstream Kosher certification. To effect such production, manufacturers may be asked to change certain ingredients and procedures to satisfy *M'hadrin* requirements, and be subject to special supervision during those productions. In such cases, products may bear both the mainstream and *M'hadrin* Kosher certification symbols.

# 2 Basic *Halachic*<sup>1</sup> Concepts in *Kashrus*

Kosher law is a subset of *Halacha*, the vast body of rules and regulations that govern every aspect of Jewish life and action. In any given situation, *Halacha* functions as an essentially logical application of a system of religious principles. By definition, however, religious precepts are metaphysical and not necessarily subject to human understanding. Kosher laws, however, operate in an additional dimension, as they often involve the application of scientific and technical concerns within the context of a series of religious principles.

Although these basic *Halachic* concepts have not changed since Biblical times, their application to issues presented by new food-processing technologies requires an expertise in both *Halacha* and modern food technology. To appreciate the regulations attendant to the implementation and management of a Kosher program in a contemporary food-processing environment, an understanding of the *Halachic* concepts that form the basis of their practical application is helpful.

## Food Sources

The first factor governing the Kosher status of a food is its source.<sup>2</sup> The following is a brief outline of Kosher food sources:<sup>3</sup>

- **Minerals:** All products from nonliving sources are inherently Kosher. From a *Halachic* standpoint, petroleum is also considered a mineral.
- **Microorganisms:** Organisms, whether members of the plant or animal kingdom, are subject to *Halachic* guidelines that define their Kosher status. The classification of an “organism” in the context of *Halacha*, however, is presumptive of its being visible to the naked eye. All authorities concur that any organism too small to be so observed is *Halachically* insignificant and is not subject to any *Kashrus* restrictions (for example,

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<sup>1</sup> This section of the book is not intended to serve as a Kosher primer or even as an introduction to *Kashrus*. A scholarly exposition on the finer points of the laws of *Kashrus* and their applications are far too intricate and detailed for the scope of this work. Rather, this chapter is intended to provide insight into the issues relating to the implementation and maintenance of a Kosher certification program. Most of the concepts and rules noted have been simplified to reflect the normative standard as applied in such a context, with the understanding that their application in real-world situations must be addressed on a case-by-case basis by the *Kashrus* authorities responsible for the Kosher certification program.

<sup>2</sup> All food sources listed refer to *pure, unadulterated* forms. Added non-Kosher components would compromise the inherently Kosher nature of any category listed.

<sup>3</sup> This listing is intended as a very brief summary of Kosher foods and serves only as an introduction to the application of the *Halachic* concepts discussed further in this chapter. For a detailed treatment of the Kosher issues relating to each of these categories, please see Chapter 3, “Ingredient Management,” as well as the other references noted.

the prohibition against eating insects). As such, *naturally occurring* microflora (such as bacteria, yeasts, molds, and fungi) pose no *Kashrus* concern. *Cultures* of such strains that are grown on specific nutritional media, however, assume the Kosher status of such media.<sup>4</sup>

- **Agriculture:** Although most foods that derive from plant sources are considered inherently Kosher, several factors may compromise their Kosher status.<sup>5</sup> From a food-manufacturing perspective, the primary areas of concern involve produce from the Land of Israel<sup>6</sup> and special rules governing wine and grape juice.<sup>7</sup>
- **Invertebrates:** Most insects and other invertebrates are Biblically forbidden. Exempted from this prohibition are four species of grasshoppers specially enumerated in the Bible,<sup>8</sup> as well as species that are not visible to the naked eye (such as microscopic mites).
- **Fish:**<sup>9</sup> Kosher species of fish are defined as those that have *Halachically* defined scales. Shellfish, shrimp, catfish, sturgeon, swordfish, and shark are non-Kosher species.
- **Fowl:** Only nonpredatory species that enjoy a tradition of meeting Kosher requirements may be eaten (for example, chicken, turkey, duck, and domestic geese).<sup>10</sup> Kosher species of fowl must be slaughtered in a Kosher manner (*Sh'chitah*) and processed to remove blood.
- **Meat:**<sup>11</sup> Only those animals that are ruminants and have cloven hooves may be eaten (for example, beef, lamb, goat, buffalo, and deer). Kosher animal species must be slaughtered in a Kosher manner (*Sh'chitah*) and processed to remove blood, as well as forbidden fats and nerves.
- **Dairy products:**<sup>12</sup> Only milk from a Kosher species of animal is Kosher. In countries where milk is exclusively derived from cows, many authorities consider milk inherently Kosher.<sup>13</sup> Special rules govern cheese.<sup>14</sup>

## Prohibited Mixtures

The second critical rule governing Kosher foods concerns the prohibition of *combining* certain otherwise Kosher foods.

<sup>4</sup> See Chapter 8, “The Biotechnology Industry,” and “The Story of Enzymes” in Chapter 17.

<sup>5</sup> See Chapter 6, “Fruit and Vegetables,” for a full discussion of such rules.

<sup>6</sup> These involve special rules relating to tithes (*T'rumos u'Ma'asros*) and the Sabbatical Year (*Sh'mitah*), as well as *Orlah* (fruit of the first three years) and *Kil'ayim* (ibid.).

<sup>7</sup> See Chapter 6, “Fruit and Vegetables,” in the section “Wine and Grape Juice—*S'tam Yaynam*.”

<sup>8</sup> *Leviticus* 11:22. Kosher grasshoppers may be eaten only when a reliable tradition exists by which to identify the Kosher species. The exact translation of the species listed in the Bible has been lost, and most Jewish communities have lost the tradition by which to identify such species. Grasshoppers are therefore not in the Kosher diet (except for certain Yemenite communities that have maintained a tradition for identifying Kosher grasshoppers).

<sup>9</sup> See Chapter 10, “The Fish Industry,” and “The Story of Fish” in Chapter 17.

<sup>10</sup> In general, only those species for which a reliable tradition as to their Kosher status exists may be eaten (see Chapter 12, “The Meat and Poultry Industries,” and “The Story of Kosher Poultry” in Chapter 17).

<sup>11</sup> See Chapter 12, “The Meat and Poultry Industries,” and “The Story of Kosher Meat” in Chapter 17.

<sup>12</sup> See Chapter 9, “The Dairy Industry.”

<sup>13</sup> See Chapter 9, “The Dairy Industry,” concerning *Cholov Yisroel*.

<sup>14</sup> See Chapter 9, “The Dairy Industry,” and “The Story of Cheese and Casein” in Chapter 17, concerning *G'vinas Akum*.

## Milk and Meat— Ba’sar b’Cholov

A cardinal rule in *Kashrus* is the prohibition of products that contain both milk and meat, a law called *Ba’sar b’Cholov*.<sup>15</sup> All Kosher foods therefore fall into one of the following three classifications:

- **Meat:** Includes both domesticated and wild animals, as well as fowl.
- **Dairy:** Includes milk, as well as all its derivatives (such as casein,<sup>16</sup> whey, and lactose).
- **Pareve:** Includes foods that are neither milk nor meat. All fruit, vegetables, and minerals are considered Pareve, as are eggs and fish. By definition, Pareve foods may be combined with either meat or dairy products.<sup>17</sup>

The laws of *Ba’sar b’Cholov* encompass the following Kosher restrictions:

- Milk and meat (as well as their derivatives) may not be mixed together.<sup>18</sup> The combination of otherwise Kosher meat and milk—even inadvertently—may cause the entire mixture to be considered non-Kosher.<sup>19</sup> In many cases, usually when cooking or heating is involved, equipment used to process meat may not subsequently be used to process dairy products<sup>20</sup>—or, conversely, equipment used to process dairy may not subsequently be used to process meat products—without an appropriate Kosherization.<sup>21</sup> Should such prohibited cooking take place, the food may be deemed non-Kosher and the equipment unfit for *any* Kosher production until it has been Kosherized.

<sup>15</sup> This rule is based on the verse “Thou shalt not cook a kid in its mother’s milk,” which appears three times in the Bible (*Exodus* 23:19 and 34:26; *Deuteronomy* 14:21). Based on the rules of Biblical exegesis, this is interpreted to prohibit cooking, consuming, and deriving benefit from meat and milk derived from Kosher domesticated animals that have been cooked together. Rabbinic rulings extend this prohibition to include the meat of other Kosher animals (such as deer) and fowl, as well as to mixtures of meat and milk that do not involve cooking. Fish are not considered “meat” for purposes of *Ba’sar b’Cholov*.

<sup>16</sup> In one of the ironic twists of U.S. labeling regulations, casein is considered “Non-Dairy” because of political considerations, relating to the conflict between the interests of domestic milk producers and the economic advantages of imported casein. Such linguistic gerrymandering notwithstanding, casein is quintessentially “dairy” from virtually all other perspectives—*Halachic*, scientific, medical, and nutritional.

<sup>17</sup> Fish are, however, subject to additional restrictions (see the section “Fish and Meat”).

<sup>18</sup> Resourceful chefs have devised interesting means of providing ostensibly unattainable Kosher products, however. Cheeseburgers can be made using soy burgers, or a Pareve soy-based cheese may be used with meat. (As noted, however, “non-dairy cheese” based on casein is *not* considered a “non-dairy” food in Kosher law.) Imitation “ice cream” may also be inherently Pareve, although it may be so designated only if it is processed on equipment dedicated to Kosher Pareve products or if such equipment has been properly Kosherized after dairy productions or non-Kosher productions.

<sup>19</sup> Four exceptions to the prohibition of using milk and meat derivatives together are as follows: (1) rennet may be used to coagulate cheese, even though it is derived from the stomach of a (Kosher-slaughtered) calf (see Chapter 9, “The Dairy Industry,” and “The Story of Cheese and Casein” in Chapter 17); (2) lipase enzymes derived from an (Kosher-slaughtered) animal’s oral gastric tissue may be permitted as a flavoring in cheese (see “The Story of Enzymes” in Chapter 17); (3) gelatin produced from (Kosher-slaughtered) beef hides may be considered Pareve (see “The Story of Gelatin” in Chapter 17); and (4) enzymes produced through the fermentation of lactose may be considered Pareve (see Chapter 8, “The Biotechnology Industry,” and “The Story of Enzymes” in Chapter 17).

<sup>20</sup> See the section “*B’lios* (Absorbed Flavors),” concerning the concept of *B’lios* (flavor transfer) and the conditions under which such transfers take place.

<sup>21</sup> See the section “*B’lios* in Equipment,” concerning the rules relating to the status of equipment and methods of Kosherization.



- Those adhering to a Kosher diet may not consume dairy and meat products at the same time. In addition, after eating meat one must wait a certain period of time before consuming dairy products.<sup>22</sup> A similar restriction applies after eating certain types of sharp cheese before eating meat products.<sup>23</sup>
- Inherently Pareve (neutral) foods cooked on “dairy” equipment are considered Dairy and may not be eaten together with meat. Similarly, Pareve foods cooked on “meat” equipment assume a Meat status and may not be eaten together with milk.<sup>24</sup> However, the consumption of such foods will not occasion a waiting period before eating dairy products.<sup>25</sup>

### ***Fish and Meat***<sup>26</sup>

Although the prohibition of *Ba'sar b'Cholov* does not apply, mixtures of fish and meat are nevertheless proscribed because of concerns relating to health.<sup>27</sup> The prohibition of mixtures of meat and fish differ from those of *Ba'sar b'Cholov*, however, in the following aspects:

- The same equipment may be used to process meat and fish without undergoing a Kosherization process, provided that it is cleaned so that no residue carries over from one product to the other.<sup>28</sup>
- Although it is generally forbidden to intentionally create unacceptable mixtures,<sup>29</sup> many authorities permit Pareve mixtures containing small amounts of fish (below the level of *Bitul*) to be combined with meat.<sup>30</sup>

<sup>22</sup> The exact length of this waiting period is subject to various customs. Most authorities require a six-hour period, although many follow the custom of waiting for three hours. (A one-hour and three-hour period are also recognized by some authorities.)

<sup>23</sup> See “The Story of Cheese and Casein” in Chapter 17.

<sup>24</sup> These rulings follow *Ashkenazic* custom and serve as the normative policy of *Kashrus* organizations in North America at this time. Many *S'phardim*, however, follow the custom that allows such foods to be eaten with the opposite product, which is based on the concept of *Na'ti bar Na'ti d'Heteira* (literally, “the flavor of a permitted flavor”). All agree, however, that the inadvertent (*b'dieved*) mixing of a Pareve food cooked in dairy equipment with meat does not create a prohibited mixture, and vice versa.

<sup>25</sup> For this reason, some *Kashrus* organizations distinguish between products that actually *contain* meat or dairy ingredients (which are marked “Meat” or “Dairy”) and those that are merely *produced* on meat or dairy equipment (“Dairy Equipment” or “Meat Equipment”). Others feel that such distinctions are confusing and difficult to monitor, and choose to certify products as either “Meat” or “Dairy” regardless of whether such a status is occasioned by their ingredients or equipment.

<sup>26</sup> Although most authorities place no restrictions on mixtures of fish and milk, some customarily avoid eating certain types of dairy products with fish. This is especially true in *S'phardic* communities (see *Pischei T'shuvah* Y.D. 87:9) and among some *Chassidic* groups. All agree, however, that such a policy does not affect the status of the equipment on which those products are processed.

<sup>27</sup> See Chapter 10, “The Fish Industry,” and “The Story of Fish” in Chapter 17.

<sup>28</sup> Some authorities require separate utensils to cook (*Ta'z*, Y.D.95:3 and *Sh'vus Yaakov* 3:70), but all agree that they may be washed together and that maintaining separate serving dishes is unnecessary. Most authorities, however, make no such distinction and permit all equipment to be used interchangeably between fish and meat.

<sup>29</sup> See the section “*Bitul*,” concerning the laws of *Bitul*.

<sup>30</sup> Although classic Worcestershire sauce contains anchovies, some authorities certify such brands as Pareve where the anchovies are *Bitul* (less than 1/60 of the Worcestershire sauce). The rationale for this approach is that conventional rules of *Bitul* apply to health concerns as well as *Kashrus* issues. This approach would be viable, however, only where the anchovies were added only for “labeling” purposes and impart no discernible flavor (which is often the case). As noted earlier, the 1/60 rule is based on the

- No waiting period is required between the consumption of fish and meat, or vice versa.<sup>31</sup>

### **Bitul (Nullification)**

Mixtures of foods with differing Kosher status assume the status of the most restrictive component. When a non-Kosher ingredient is combined with a Kosher one, the entire mixture is considered non-Kosher. Similarly, a mixture of milk (or meat) with Pareve ingredients renders the entire mixture Dairy (or Meat). Kosher law, however, recognizes a concept of nullification, known as *Bitul*.<sup>32</sup> In certain situations, the inclusion of small amounts of nonacceptable (or dairy/meat)<sup>33</sup> material may be considered insignificant and therefore does not compromise the normative Kosher status of mixture. The rules governing *Bitul* form one of most complex branches of *Halacha*, and it is well beyond the scope of this work to provide a detailed exposition on the subject. However, an understanding of the following basic concepts is important in dealing with a Kosher program:

- *Bitul* applies only in post facto situations in which a non-Kosher ingredient is mistakenly or unintentionally added to a product. Kosher certification may not be granted where a non-Kosher material<sup>34</sup> is intended as an ingredient, regardless of amount added.<sup>35</sup> Similarly, products certified as Pareve may not intentionally include dairy or meat ingredients at any level.
- *Bitul* is based on the theory that mixtures containing non-Kosher ingredients are prohibited only when the non-Kosher material can be perceived.<sup>36</sup>
- The general level used with the concept of *Bitul* is 1/60 (volume/volume, approximately 1.6 percent), which is based on an assumption that the flavor of most ingredients cannot be detected at such low levels.<sup>37</sup>

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assumption that the offending ingredient could not be detected at such levels. This would therefore preclude its application where anchovies that are actually added for flavor, regardless of the usage level.

<sup>31</sup> To prevent mixing any residues left over in the mouth, however, one should eat or drink a neutral food in between.

<sup>32</sup> *Bitul* is the passive or adjective form of this word.

<sup>33</sup> In most cases, the rules governing the *Bitul* of dairy and meat ingredients (both in terms of their compromising a Pareve status and relating to the prohibition of mixing milk and meat [*Ba'sar b'Cholov*]) mirror those relating to non-Kosher ingredients. To avoid redundancy, *Bitul* is explained in this text in terms of non-Kosher ingredients, with the understanding that these explanations apply equally to dairy and meat issues unless otherwise noted.

<sup>34</sup> The *Bitul* of Kosher fish, as in the case of the inclusion of anchovies in Worcestershire sauce as discussed previously, is not subject to this concern because the anchovies are Kosher; also, the sauce into which they are mixed poses no inherent concern because it contains no meat. The *subsequent* use of this mixture with meat may therefore be permitted.

<sup>35</sup> This concept is known as *Ayn M'vatlin Issur l'Chatchilah*—literally, “one may not intentionally nullify a prohibited item.” Some authorities do, however, permit the use of minor amounts of non-Kosher material as a processing aid if it is subsequently removed, such as in the case of using gelatin for clarifying fruit juice (see “The Story of Wine, Beer, and Alcohol!” in Chapter 17).

<sup>36</sup> In certain extraordinary cases, non-Kosher materials are prohibited even when they cannot be perceived. The application of *Bitul* must therefore be based on the rulings of a Rabbinic authority that is competent to evaluate all the factors on which such decisions must be based.

<sup>37</sup> Under certain circumstances, unpalatable flavors may be considered inherently insignificant and thus *Bitul* at any level (a concept known as *Pagum*), provided that they do not otherwise contribute a positive flavor to the final product.

- The level of *Bitul* is determined on a *volumetric* basis, contrary to most industry measurements that are based on weight.<sup>38</sup>
- Flavors or spices designed to impart a flavor at usage rates of less than 1.6 percent cannot be considered *Batul* as long as their presence is noticeable.
- In many situations, the inclusion of a non-Kosher ingredient that is not *Batul* confers a “non-Kosher”<sup>39</sup> status on the entire mixture,<sup>40</sup> such that any future *Bitul* of that mixture would require a sixtyfold nullification of the entire mixture, not just its non-Kosher component.<sup>41</sup>
- Ingredients designed to change the physical characteristics of a product (for example, gelling agents or rennet) are not considered *Batul* at any level because their presence is noticeable.<sup>42</sup>
- Ingredients that impart a distinct *color* to a product (such as carmine and enocianina)<sup>43</sup> may not be considered *Batul* at any level because their presence is noticeable.<sup>44</sup>
- Solid items that are “complete” are not considered *Batul* at any level, regardless of the ratio involved.<sup>45</sup> Because insects are prohibited, their presence in products made from insect-infested fruit and vegetables may render the entire mixture unfit for Kosher use.

From the perspective of the food manufacturer, *Bitul* has very limited application because products may not be formulated with non-Kosher ingredients at any level. The laws of *Bitul* do, however, have the following practical applications:

- If a non-Kosher ingredient is *Batul* in a noncertified product, such a product may be processed on equipment, without compromising the otherwise Kosher status of the equipment.
- Similarly, a product certified as Dairy because of the inclusion of dairy ingredients at levels below *Bitul* may be processed on Pareve equipment, without compromising the equipment’s Pareve status.

<sup>38</sup> The volume of powders, for example, is calculated as measured in a container, even though a substantial part of the volume may be air. A significant discrepancy between the volume and the weight of an ingredient in calculating ratios of *Bitul* is therefore common.

<sup>39</sup> This concept is known as *Cha'tichah Na'asis N'veilah* (literally, “the entire mixture becomes a prohibited item”).

<sup>40</sup> Meat (or dairy) and Pareve combinations are not considered “prohibited” mixtures and thus not subject to this concern. If a Pareve and meat mixture is inadvertently combined with milk, only sixty times the volume of the meat would be required for it to be considered *Batul* (and vice versa). However, one may not intentionally dilute dairy or meat ingredients to create a Pareve status.

<sup>41</sup> Certain exceptions to this rule may exist, however (see Chapter 9, “The Dairy Industry,” footnote 36).

<sup>42</sup> This concept, known as *Da'var ha'Ma'amid* (literally, “an ingredient that physically sustains a product”), may differ somewhat from conventional non-*Bitul* situations, as noted later in the discussion of practical applications of *Bitul*.

<sup>43</sup> See “The Story of Colors” in Chapter 17, for a full discussion of the *Halachic* status of these and other coloring agents.

<sup>44</sup> Inherently, Kosher colors that contain noncoloring additives (for example, beadlets containing non-Kosher gelatin) would be considered *Batul* because the non-Kosher component would not be perceptible. As in all cases of *Bitul*, however, the intentional use of such ingredients is not permitted in Kosher-certified products.

<sup>45</sup> This concept, known as *Beryah* (literally, a “whole unit”), is based on the understanding that complete items are inherently significant and thus not subject to *Bitul*.

- If a non-Kosher ingredient is used at a level below 1.6 percent but not considered *Batul* because of its physical impact on the product (*Da'var ha'Ma'amid*), many authorities nonetheless rule that the Kosher status of equipment on which such products are processed is not compromised. Most *Kashrus* agencies follow this interpretation.<sup>46</sup> If a non-Kosher color is used at a level below 1.6 percent but not considered *Batul* because of its evidence in the product, the Kosher status of equipment on which such products are processed is similarly not compromised.
- Products containing small amounts (less than 1.6 percent) of insects and other non-Kosher items that are not *Batul* because of the rule of *Beryah* (whole items) may be processed on equipment without compromising its Kosher status. Furthermore, such insects may be considered *Batul* when normal processing ensures that their physical integrity is compromised. For example, if jam is processed through a sieve whose pores are too small for an entire insect to pass through them, any insect material remaining in the product would perforce be only a broken part of the insect. Such insect pieces would no longer be classified as a *Beryah* and thus subject to conventional rules of *Bitul* (that is, *Batul* at levels below 1.6 percent).<sup>47</sup>
- If a non-Kosher ingredient has inadvertently been added to a Kosher product, a Rabbinical authority must be consulted to determine whether the product may be considered Kosher with regard to *Bitul* considerations.<sup>48</sup>

### **B'lios (Absorbed Flavors)**

Kosher law postulates that, under certain circumstances, contact between two foods allows for the transfer of flavor between them. Such absorbed flavors—known as *B'lios*—have a status similar to that of the original food. In situations involving Kosher and non-Kosher foods, the transfer of flavor from one non-Kosher food may compromise the erstwhile Kosher status of the other.<sup>49</sup> Similarly, a transfer of flavor between meat and milk can create a prohibited mixture of *Ba'sar b'Cholov*.<sup>50</sup>

### **B'lios in Foods**

The rules involving flavor transfer among foods involve the following considerations:<sup>51</sup>

<sup>46</sup> When a non-Kosher ingredient is used at a level below 1.6 percent but not considered *Batul* because of its potent flavor (for example, flavorings and spices), some authorities rule that the Kosher status of equipment on which such products are processed is similarly not compromised. A manufacturer must work with its Kosher certification agency to determine its policies in this regard.

<sup>47</sup> Such a process would not contravene the prohibition of intentionally nullifying a prohibited item (*Ayn M'vatlin Issur l'Chatchilah*—the intentional inclusion of a prohibited ingredient) when such processing was part of the routine preparation of the food, but may not apply when such processing is being done only to satisfy *Kashrus* concerns.

<sup>48</sup> Factors other than Kosher considerations may also be significant, especially as they relate to potential allergen issues. For example, trace amounts of dairy ingredients may be *Halachically* inconsequential in a product certified as Pareve, yet pose serious risk to those who are severely sensitive to milk protein.

<sup>49</sup> In most such circumstances, the absorbed flavor is assumed to permeate the entire piece of food.

<sup>50</sup> The transfer of a fish flavor into meat, or vice versa, would similarly create the *Kashrus* concern of mixing fish and meat.

<sup>51</sup> Even when flavor transfers do not take place, a concern nevertheless exists with possible *surface* contamination from residue that may rub off from one piece of food onto the other.

- *B'lios* will transfer between foods that are heated together to a temperature known as *Yad Soledes Bo*, which is the *Halachic* definition of “cooking.”<sup>52</sup> For most issues involving *B'lios*,<sup>53</sup> the normative temperature is assumed to be between 110 and 115°F.<sup>54</sup>
- Soaking foods continuously in the same liquid for twenty-four hours, a process known as *Ka'vush*, is considered equivalent to heating, and flavors will transfer after that time.
- Sharp or very salty foods (such as onions, horseradish, and pickled fish) fall under the category of *Cha'rif* (sharp), and may be able to transfer flavors rapidly even in the absence of heat. *Solid* foods that are considered *Cha'rif* will transfer *B'lios* when subjected to physical processing, such as cutting. The status of *liquids* that are considered *Cha'rif*, however, may differ. Some authorities rule that such liquids may transfer flavors in as little as six to eighteen minutes (*b'Ch'dei she'Yarsi'ach* [literally, the amount of time needed to heat the product]). Others distinguish between the impact of the flavors involved with foods and those involved with equipment, and may permit the processing of sharp liquids in common equipment, provided that they do not remain in the equipment for twenty-four hours (*Ka'vush*).
- Under certain circumstances, hot *vapors* from foods, known as *Zei'ah*, may carry *B'lios* from one product to another.

### ***B'lios in Equipment***

Were the concept of *B'lios* limited to foods, its application in the food industry might be of less than pressing concern. *Halacha* stipulates, however, that concerns over *B'lios* extend to the *equipment* on which products are processed. The basis of this concern is the assumption that most types of material<sup>55</sup> have some degree of porosity, which allows *B'lios* to be absorbed.<sup>56</sup>

<sup>52</sup> The term *cooking* in the context of *B'lios* is unrelated to its use as a means of food preparation. Any heating to the designated temperature is considered cooking for this purpose, regardless of whether the food is still considered raw from a gastronomic perspective.

<sup>53</sup> Two exceptions significant to Kosher productions should be noted. The first involves issues of *G'vinas Akum* (non-Kosher cheese) when the generally accepted temperature level for cooking is 120°F (see Chapter 9, “The Dairy Industry”). The second involves the temperature to which wine and grape juice must be cooked (*M'vushal*) to obviate concerns of *S'tam Yaynam* (non-Kosher wine) when the minimum acceptable temperature is approximately 175°F (see “The Story of Wine, Beer, and Alcohol” in Chapter 17).

<sup>54</sup> The term *Yad Soledes Bo* literally means “(the temperature at which) a hand ‘shirks,’” that is, the temperature of water from which a person would instinctively withdraw his or her hand. Recognizing that such a benchmark is of limited utility in a scientific and industrial setting, many attempts have been made to quantify this level, using both empirical analysis and cross referencing to other indicators mentioned in the *Talmud*. Results from such analyses have ranged from 113° to 175°F, with most authorities assuming the lower number for general application regarding issues of *B'lios*.

<sup>55</sup> Some authorities rule that glass is not porous and thus not subject to the concern of *B'lios*. See the section dealing with material subject to *Hag'olah* for a discussion of the *Halachic* status of various types of materials in this regard.

<sup>56</sup> The concept of the absorption of *B'lios* into equipment is derived from *Numbers* 31:22-23. A scientific rationale for such flavor transfers may be based on recognition that metals are not amorphous but have a definite crystalline structure with observable porosity. Indeed, poorly smelted black iron is notoriously porous, as evidenced by the oil “seasoning” with which such material is treated prior to use for cooking. *Halacha* further stipulates that because we are not in a position to determine the individual porosity of different types of materials, we must assume the most stringent possibility and consider the *entire* piece of equipment to be completely infused with *B'lios*. Ultimately, however, the concept of *B'lios* must be accepted as a religious mandate, although its application is based on the postulation of scientific mechanisms for certain reactions.

The conditions under which *B'lios* transfer between foods and equipment are essentially the same as those governing transfers of *B'lios* between foods, and manifest themselves as follows:

- **From food to equipment:** The equipment assumes the *Halachic* status of the food from which it absorbed *B'lios*. (Equipment has no innate flavor.)
- **From equipment to food:** The equipment transfers the *B'lios* previously absorbed in the new food, which then assumes the *Halachic* status of those flavors.<sup>57</sup>
- **From one food to another through a common piece of equipment:** Two compartments in a piece of equipment that share a common wall may allow *B'lios* to transfer between products in both directions simultaneously.
- **No transfer between two pieces of equipment:** *B'lios* will transfer between two pieces of equipment only if there is liquid in between, which allows the *B'lios* to transfer from the equipment to the liquid and thence from the liquid to the second piece of equipment.

### ***Practical Applications of the Concept of B'lios***

The following are common applications of the concept of *B'lios* as they relate to food processing:

- If non-Kosher food is cooked or heated to a temperature above *Yad Soledes Bo*<sup>58</sup> and comes into *direct* surface contact with the equipment,<sup>59</sup> such equipment is deemed “non-Kosher” and may not be used for the cooking or heating of Kosher products. Such equipment includes cooking pots, sheet pans, baking pans, grills, griddles, steam-jacketed kettles, spray and roller dryers, fryers, distillation equipment, pasteurizers, and homogenizers.
- Similarly, Kosher meat and dairy productions may not share equipment in which food is cooked or heated and comes into direct surface contact with the equipment. Further, equipment dedicated for Pareve productions may not be used in this manner for the production of either Kosher meat or dairy products. This restriction also applies to ancillary equipment that comes into contact with hot food, such as mixers, cooking utensils, trays, conveyor belts, tanks that store hot liquids, hot liquid fillers, and any other equipment used to handle the product while hot (above approximately 110°F).
- Processing non-Kosher products on such equipment will render such equipment unfit for Kosher use, and any products produced on such equipment may be considered non-Kosher.

<sup>57</sup> Although the rules of *Bitul* do come into play regarding *B'lios* (both between foods and equipment), several factors preclude a reliance on *Bitul*. First, *Bitul* may not be relied on in the first instance, and one may therefore not allow non-Kosher *B'lios* to transfer into a Kosher food by cooking it in a non-Kosher pot. Second, the amount of *B'lios* that had been absorbed into a piece of equipment cannot be quantified with certainty, and *Halacha* therefore dictates that we must be stringent and consider the *entire* pot to be saturated with such *B'lios*. Any application of *Bitul* must involve calculating the entire volume of the contaminated vessel's walls as consisting of 100 percent prohibited flavor.

<sup>58</sup> All sources of heat—for example, electricity, gas, hot water, steam, friction, or thermal fluid—create a transfer of *B'lios*.

<sup>59</sup> After *B'lios* are absorbed at one contact point, they are considered to have permeated the entire vessel, even if the food did not actually come into contact with it.

- Products that had been rendered non-Kosher by dint of their having absorbed non-Kosher *B'lios* from non-Kosher equipment are considered inherently non-Kosher. They therefore have the ability to compromise the Kosher status of other equipment on which they are subsequently processed as if they contained actual non-Kosher ingredients.
- The processing of Kosher dairy products on equipment that had been used to process meat products (or vice versa) will render such products non-Kosher, because they now contain a mixture of both meat and dairy flavors (*Ba'sar b'Cholov*).
- Equipment on which both meat and milk were processed in this manner would be considered non-Kosher because it would now contain a non-Kosher mixture of *B'lios* of both meat and milk. Foods subsequently processed on such equipment would therefore be considered non-Kosher because of their absorption of its non-Kosher mixture of *B'lios*.
- Equipment (such as kettles or storage tanks) with two or more compartments sharing a common wall may transfer *B'lios* between the products in the compartments.
- Processing Pareve products on such equipment that had been used to process Kosher dairy (or meat) products will confer a Dairy (or Meat) status to such products.<sup>60</sup>
- Equipment that handles products at temperatures below *Yad Soledes Bo* (approximately 110°F) may be used for both Kosher and non-Kosher (or Dairy, Pareve, and Meat) productions.<sup>61</sup> In such cases, the equipment must be cleaned to the point at which no physical residue remains that could be transferred from one type of product to another.<sup>62</sup>
- In addition, the cross utilization of equipment may be acceptable when only one category of product is heated but the other is handled at temperatures below *Yad Soledes Bo*. For example, a mixer may be used to blend *cold* non-Kosher products and then cleaned<sup>63</sup> and used to process *hot*<sup>64</sup> (or *Cha'rif*) Kosher items (or vice versa). The same would hold true with the cross utilization of equipment between dairy, meat, and Pareve items.
- Liquids in which foods are soaked or washed may not be used for both Kosher and non-Kosher productions (or Dairy/Meat/Pareve) regardless of the temperature of the liquid.<sup>65</sup>
- An oven *chamber* (as opposed to an oven belt) in which Kosher and non-Kosher products are cooked or baked is subject to concerns of *Zei'ah* (vapors), which have the ability to convey flavors between foods as well as between a food and the equipment.<sup>66</sup> Generally, both types of products may not be processed concurrently, and the oven may require a

<sup>60</sup> See footnote 24.

<sup>61</sup> This rule, however, is subject to considerations of *Da'var Cha'rif* (see the section on “*B'lios* in Foods”).

<sup>62</sup> According to many authorities, the type of cleaning required is defined as the standard generally accepted in the food industry. Such “industry standard” cleaning, whether wet or dry, may therefore suffice even if it may allow an insignificant amount of residue to remain. Such an approach, however, does not negate other valid considerations relating to product carryover, such as possible allergen concerns or claims of vegan standards.

<sup>63</sup> In such cases, hot water may not be used to clean the equipment because the heat from the water can infuse non-Kosher *B'lios* from the residue of the cold non-Kosher material into the equipment. In such cases, however, removing the physical residue by dry cleaning or by the use of cold water is acceptable, after which the equipment can be subjected to a hot-water cleaning without being compromised.

<sup>64</sup> Heat created by friction, as in the case of vigorous mixing, is sufficient to transfer *B'lios* when the process raises the temperature of the equipment or the product to above *Yad Soledes Bo*.

<sup>65</sup> If a product remains immersed in the liquid for twenty-four hours, *B'lios* will transfer on the basis of the concept of *Ka'vush* (soaking). If the liquid is spicy, such as in the case of strong salt brines, *B'lios* also will transfer on the basis of the concept of *Cha'rif*. Even if the liquid were cold, bland, and not used for extended periods, a concern would nevertheless exist that *physical* non-Kosher residue in the liquid would contaminate the Kosher product.

<sup>66</sup> Baking pans or oven bands (solid- or mesh-metal conveyor belts that traverse an oven) on which the food is actually placed will transfer *B'lios* directly, without recourse to *Zei'ah*.

Kosherization after baking non-Kosher products. Similar concerns exist regarding dairy and Pareve productions, although many authorities permit the baking of nonliquid<sup>67</sup> (such as bread and cake) dairy and Pareve products *consecutively* (but not concurrently) without an intervening Kosherization.

- Tanks in which liquids are stored at ambient or refrigerated temperatures are subject to the rules of *Ka'vush*, which assume that *B'lios* may be transferred if a liquid remains in a tank for an extended period. Because the time needed to effect such a transfer is twenty-four hours,<sup>68</sup> tanks may therefore be used to store Kosher and non-Kosher liquids on an alternative basis, provided that neither remains in the tank for a continuous twenty-four-hour period. Further, it may also be permissible to store Kosher liquids in a non-Kosher tank for less than twenty-four hours.
- Non-Kosher equipment may not be used to cut or grind sharp (*Cha'rif*) items (such as horseradish and onions) because the sharpness of these items will transfer *B'lios* from the equipment to the product immediately. Furthermore, non-Kosher sharp items have the ability to transfer their non-Kosher flavor to equipment, thereby rendering it unfit for Kosher use. Similar concerns apply to equipment used to process sharp dairy or meat items.
- Many authorities permit the processing of *liquid* sharp items (strong vinegar and salt brine, as well as liquid mustard and horseradish) in non-Kosher equipment, provided that the liquids do not remain in the equipment for twenty-four hours. A similar approach may be taken between dairy, meat, and Pareve productions, such as in the case of creamed horseradish (dairy) and beet horseradish (Pareve).
- Retorts (autoclaves) that cook foods sealed in metal or glass containers assume the *Halachic* status of such food, because it is assumed that *B'lios* from the food transfer through the containers, into the steam or hot water, and then to the walls of the retort itself. Further, the process will reverse with the subsequent use of the equipment, allowing flavor previously absorbed into walls of the retort to transfer to the subsequently processed canned product. (This concern also applies to any baskets or spacers that hold the containers while they are being processed in the retort.)
- Equipment used to transport bulk liquids, such as truck trailers, barges, and ships' holds, assume the *Halachic* status of the products transported in them.<sup>69</sup> The Kosher status of such transport must therefore be maintained.<sup>70</sup>
- Refrigerators and freezers, as well as storage lockers, may be used to store Kosher and non-Kosher (as well as dairy/meat/Pareve) products without restriction, provided that the products are wrapped or otherwise protected from incidental contact. Shelving in such equipment similarly poses no concern, provided that foods do not touch the shelves in a manner that allows residue to be transferred between foods.

<sup>67</sup> Liquid products that create *Zei'ah* include soups and, according to some authorities, fluid batters. Bread dough or meats (even if a small amount of gravy is present) are considered solid foods for this purpose.

<sup>68</sup> According to some opinions, the addition of fresh liquid to the tank during this period restarts the twenty-four-hour counting period.

<sup>69</sup> Such liquids are often transported under heated conditions, allowing for the transfer of *B'lios* between them and the walls of the container. Even when such liquids are transported at ambient temperature, such transfers nonetheless occur after twenty-four hours (*Ka'vush*).

<sup>70</sup> See Chapter 13, "The Oils, Fats, and Emulsifier Industries," for a review of the methods by which such issues may be addressed.



- According to many opinions, non-Kosher and Kosher pieces of equipment may contact one another and will not transfer *B'lios*, provided that no intervening liquid is present.

### ***B'lios and Utilities***

An extension of the concept of *B'lios* involves its application to the various utilities used in a food-manufacturing facility. Although the heat used in food processing must ultimately be produced by the burning of fuel or electric resistance, such energy creation often takes place separately from the food-processing equipment. Central boilers are used to produce steam and hot water, which are in turn plumbed to steam-jacketed kettles, pasteurizers, heated storage tanks, and similar equipment throughout the plant. In many situations, steam and hot water assume a non-Kosher, Meat, or Dairy status by dint of the *B'lios* they absorb from the heating of non-Kosher, meat, or dairy products, respectively. The Kosher status of such utilities may be affected in any of the following ways:

- Hot water used to heat products through *indirect* heat transfer (for example, using heat exchangers, plate pasteurizers, or heating coils) will absorb *B'lios* through the barrier that separates the water from the product.<sup>71</sup> Such water will therefore assume the status of the product being heated.
- Water vapor removed from a product during condensation may be recovered. Although such “distilled” water may be of very high purity, it nonetheless retains the *Halachic* status of the product from which it was derived. Condensate recovered from non-Kosher sources (such as concentrated non-Kosher grape juice) is considered non-Kosher, whereas condensate derived from dairy sources (such as from condensed milk)—otherwise known as “cow water”—is considered Dairy.
- Steam may be used to heat products indirectly (using, for example, steam-jacketed kettles and steam coils). In such cases, the steam condenses into water as its heat is transferred to the product. Because such hot condensate forms on the inside surface of the heating chamber (that is, on the jacket or coil) and the outside surface is in direct contact with the product that is heated, *B'lios* transfer from the food to the condensate, which then assumes the status of the food.
- High-pressure steam can be used to heat the product indirectly, after which the steam may retain sufficient heat to remain as low-pressure steam. This steam may, in turn, be used to heat other products. If the high-pressure steam was used to heat a non-Kosher product, the resulting low-pressure steam assumes the status of the product being heated, even though it has not condensed into water.<sup>72</sup>

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<sup>71</sup> Because *B'lios* do not transfer between pieces of equipment (in the absence of a liquid between them), the liquid or steam in heating coils that are merely wrapped around equipment do not absorb *B'lios* from the material in the tank. In most cases, however, heating coils attached to the walls of equipment are not separate units because such an arrangement does not provide for the most efficient heat transfer. Rather, they are half coils that are welded onto the outside of the vessel, thereby allowing the heating medium to have direct contact with the walls of the vessel, allowing for the most efficient transfer of heat. In such cases, the heating medium would indeed absorb *B'lios* from the product “directly” through the walls of the vessel.

<sup>72</sup> Dry air (or any other gas) will not transfer *B'lios*. Theoretically, “dry” steam (in which mist is not discernible) may be considered a gas, not a vapor, and thus is not subject to concerns of *B'lios*. However, the difficulty in ascertaining the “dryness” of steam makes all steam generally considered as vapor and subject to the concerns of *B'lios*.

## Practical Utilities Issues

When hot water and steam are considered non-Kosher (or dairy or meat), they may have the ability to affect the Kosher status of products in the following ways:

- Hot water mixed *directly* into food would be considered as any other ingredient, and such food would assume the status of the water directly added to it.
- Steam injected *directly* into food (direct steam injection) would be considered as any other ingredient, and such food would assume the status of the steam directly added to it.
- Hot water used to heat foods *indirectly* would confer its status to the food being heated through *B'lios* passing through the barrier walls. Recirculating hot-water<sup>73</sup> loop systems therefore pose the following concerns:
  - a. When the hot water is used to heat both Kosher and non-Kosher products, *B'lios* transfer from the non-Kosher food into the water, thereby rendering it non-Kosher. *B'lios* would then transfer from the water into the Kosher food product, rendering it non-Kosher.
  - b. When both dairy and meat products are so heated, the dairy and meat *B'lios* that enter into the water create a non-Kosher mixture of *Ba'sar b'Cholov*, which, in turn, would transfer back to the dairy and meat products and render them non-Kosher.
  - c. When inherently Pareve products are heated concurrently with a dairy or meat product, the water absorbs the dairy or meat *B'lios* and confers them to the Pareve products, rendering them dairy or meat, respectively.
- Water may be used to cool liquids in heat exchangers, equipment involved in exothermic reactions, and hot, filled bottles and cans. When such water recirculates and the temperature exceeds *Yad Soledes Bo* (prior to cooling), it has the same *Halachic* status as a recirculating hot-water heating system. Cooling systems in which the water never exceeds this temperature, however, pose no such concerns.
- Steam used to heat foods *indirectly* also confers its status to the food being heated through *B'lios* passing through the barrier walls. Closed steam systems in which condensate is recovered, returned to the boiler, and used to produce fresh steam (recirculating steam systems) pose concerns virtually identical to those of recirculating hot-water loops (explained previously in this list).<sup>74</sup>
- Heating systems that use a combination of steam and hot water are dealt with as follows:
  - a. Hot water heated by steam (either directly or indirectly) assumes the status of that steam, and any food heated with this water (either directly or indirectly) similarly assumes that status.
  - b. When a recirculating hot-water loop heats a Kosher dairy (or meat) product, many authorities rule that condensate generated from steam used to heat the (non-Kosher) hot-water loop does not compromise an otherwise Pareve status of the steam

<sup>73</sup> All potable liquids are subject to the same concerns as water. Unpalatable liquids, such as certain types of thermal fluid, cannot transfer *B'lios* because they are considered *Pagum* (see later discussion of solutions to utilities issues).

<sup>74</sup> Most authorities, however, do not consider the flowing steam itself to be a connection between products. A common source of steam may be used to heat non-Kosher, meat, and dairy products concurrently, provided that the resulting condensate is not recirculated (see the section "Practical Utilities Issues" for other means of addressing recirculating hot-water and condensate issues). Some *Kashrus* organizations, however, follow the opinion that a common source of steam serves as a connection to transfer *B'lios* from one product to another.

system.<sup>75</sup> A common example involves the steam used to heat the hot-water loop in a pasteurizer used to process milk. Although the hot-water loop in such a pasteurizer may attain a Dairy status, the condensate generated from the steam used to heat this hot-water loop would not.

- Thermal fluid-heating systems, such as those used in fryers and oil-distillation processes, pose concerns similar to those of recirculating hot-water systems.

#### Practical Solutions to Utilities Issues

Many food-production facilities share common hot-water and steam systems, often creating significant difficulties for the implementation and maintenance of a Kosher program. Common examples include:

- Steam-jacketed kettles, in which steam condensate from non-Kosher products is returned to a common boiler to be converted into steam to be used to heat Kosher products.
- Blanching and steam-peeling systems, which produce steam or hot water from non-Kosher sources (for example, condensate recovered from non-Kosher sources).
- Pasteurizers used for both non-Kosher and Kosher productions, which are powered by a recirculating closed-loop hot-water system.
- Hydrostatic retorts, in which pressurized hot water is used to sterilize Kosher and non-Kosher products, either consecutively or concurrently.
- Cooling water systems used to cool cans or bottles filled with hot Kosher and non-Kosher foods, consecutively or concurrently.

Many of these concerns can be resolved, however, by applying solutions based on the concepts described next.

*Bitul* (Nullification). *B'lios*, as do most other non-Kosher components, lose their ability to compromise the Kosher status of a product if their ratio in the hot water or steam is small enough to be considered *Halachically* insignificant. Most *B'lios* are considered *Batul* if their ratio is less than one to sixty. Such calculations, however, must consider the following factors:

- Computations must be based on the amount of non-Kosher material being heated at any given time versus the total amount of water in the recirculating hot-water or steam system (including pipes, boiler, and holding tanks).
- Although *Bitul* generally assumes a nullification ratio of one to sixty, some authorities rule that *B'lios* in a recirculating heating system transfer at only one-sixth of their available material, rendering the effective ratio of *Bitul* in such cases as ten to one.
- *B'lios* from most non-Kosher products accrue *cumulatively* in the heating water—the heating of fresh non-Kosher product by the same water or steam mandates that the ratio of water to product must be ten times the *total* amount of product heated over time. As

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<sup>75</sup> This ruling is based on the assumption that any secondary *B'lios* that may enter the steam system would be *Batul*.

such, *Bitul* is generally ineffective, unless water is constantly being replaced in the steam or hot-water system at a sufficient rate.<sup>76</sup>

Some authorities rule, however, that the concept of cumulative *B'lios* does not apply to non-Kosher grape juice.<sup>77</sup> As such, the Kosher status of the recirculating hot-water loop in a juice pasteurizer used for non-Kosher grape juice would not be compromised.<sup>78</sup>

- A mixture of Kosher and non-Kosher ingredients is considered a single, non-Kosher product. Computations of *Bitul* must therefore be based on the entire mixture, not just its non-Kosher component (a concept known as *Cha'tichah Na'asis N'veilah*, whereby the entire product assumes a prohibited state).
- Kosher dairy or meat ingredients are not subject to the rules of *Cha'tichah Na'asis N'veilah*, and mixtures containing them will affect only hot-water loops and the like, according to the ratio of the dairy or meat ingredients themselves.<sup>79</sup> According to this approach, the recirculating hot-water loop in margarine and egg-processing facilities handling both Pareve and dairy products are not compromised, because the dairy components in these products are sufficiently minor for their *B'lios* to be considered *Batul* in the water.<sup>80</sup>

*P'gimah* (Unpalatable Taste). A second factor that may serve to mitigate utilities issues involves a concept known as *P'gimah*.<sup>81</sup> Kosher law stipulates that flavors that are *Pagum* (foul tasting) cannot be considered non-Kosher even if they are derived from otherwise non-Kosher materials. As such, a *Pagum* flavor cannot compromise the Kosher status of equipment into which it is absorbed. A corollary of this rule would stipulate that hot water or steam that is *Pagum* could not convey non-Kosher *B'lios*, because any such *B'lios* imparted into the water or steam would perforce become *Pagum*. Ensuring that hot-water or steam systems are *Pagum* may therefore serve to resolve many of the issues involving utilities.

Based on this concept, recirculating heating or cooling systems in which the water is *Pagum* may be used to produce both Kosher and non-Kosher products, either consecutively or concurrently. In addition, the condensate created from steam used to heat such *Pagum* hot-water systems would not be compromised.

Similarly, boiler systems that are *Pagum* may recover condensate from non-Kosher productions for use in the creation of steam for use in Kosher productions. The use of a *P'gimah*

<sup>76</sup> Although this process is no longer common in North America, municipal utilities may provide steam to customers through a system of pipes, the condensate from which is then returned to a central facility to be converted back into steam. Although some of the returned condensate may have been used for non-Kosher purposes, the use of such steam has been permitted based on the fact that the rate of fresh water in such a system would easily outweigh the amount of non-Kosher *B'lios* that would be returned.

<sup>77</sup> The basis of this ruling is that the grape juice is considered *Batul* at a ratio of one to six and thus operates under *Halachic* guidelines that differ from conventional rules of *Bitul*.

<sup>78</sup> Based on the previously stated assumption that *B'lios* compromise a heating liquid only at a ratio of one to six, a ratio that is inherently sufficient for grape juice is considered *Batul*.

<sup>79</sup> Many authorities extend this concept to non-*Cholov Yisroel* milk, ruling that although such milk may be prohibited according to some opinions, this prohibition is not sufficiently stringent to create a situation of *Cha'tichah Na'asis N'veilah*.

<sup>80</sup> The dairy component is always less than 10 percent of the mixture, and because *B'lios* compromise a heating liquid only at a ratio of one to six, the dairy *B'lios* would be *Batul* at a ratio of one to sixty.

<sup>81</sup> *P'gimah* is the noun form; *Pagum* is the adjectival form of this word (see "The Story of Steam" in Chapter 17, for additional background regarding this concept).

in such systems, however, poses the following concern. Many authorities rule that it is not sufficient for boiler water alone to be *Pagum*. Rather, the *P'gimah* must also be discernible in the steam itself. As such, many of the bittering chemicals that are efficacious in treating hot-water systems are considered ineffectual in boiler systems because they do not volatilize into the steam. On the other hand, the use of chemicals that do volatilize into the steam (for example, pine oil and Bitrex<sup>®</sup>, as explained shortly) are precluded when steam is injected directly into the food. Other authorities, however, rule that a *P'gimah* of the boiler water is sufficient to neutralize any *B'lios* that such water may have absorbed, and pure steam subsequently derived from such water is acceptable for Kosher use even when the steam is no longer *Pagum*.

The application of the concept of *P'gimah* involves the following considerations:

- **Definition of *Pagum*:** Some authorities rule that to obviate concerns of *B'lios*, the water or steam must be foul to the point that it is no longer drinkable.<sup>82</sup> Others, however, rule that it is sufficient if the water or steam has a slightly unpleasant taste, which is defined as a taste that a person would prefer not to drink.
- **Methods of creating a *P'gimah*:** The choice of a suitable agent to effect the desired *P'gimah*, as well as the amount needed, depends on several factors. The first consideration involves ascertaining the level of *P'gimah* required (see previous explanation). The second consideration involves choosing the appropriate agent to effect the desired *P'gimah*.<sup>83</sup> The following chemical agents are often used for this purpose:
  - *Boiler treatment chemicals:* The water used in modern boiler and hot-water systems is typically treated with various types of chemicals to protect the boiler from corrosion. Such chemicals include oxygen inhibitors, antiscaling chemicals, and other agents to control corrosion. In many situations, the types and amounts of such chemicals added to the boiler are sufficient to effect an adequate level of *P'gimah*.<sup>84</sup>
  - *Pine oil:* This material is miscible in water, nontoxic, and readily available. It also volatilizes easily into steam, which offers a certain *Halachic* advantage (see previous explanation). However, this property also makes it unsuitable for use in production systems in which some of the steam is injected directly into products. This property also causes pine oil to dissipate quickly in an unsealed system, and it must therefore be reintroduced on a regular basis.
  - *Denatonium benzoate (Bitrex<sup>®</sup>):* This nontoxic chemical is considered the bitterest substance known and is marketed for use as a denaturant in alcohol and as an additive to toxic chemicals to deter children from drinking them. Its use in exceedingly tiny amounts (on the order of 10 ppm) is usually sufficient to impart a perceptibly bitter taste. Note that this chemical is not stable at high temperatures, however, although it has been used successfully in many hot-water and boiler applications. Indeed, sufficient levels of Bitrex<sup>®</sup> in boiler water have been used successfully to impart a bitter flavor to the steam derived from it, and is now available in a form designed for this purpose.

<sup>82</sup> This concept is referred to as *Nifsal*—literally, “inedible.”

<sup>83</sup> If the water in a recirculating system has an innate stale or brackish taste, no additional bittering chemicals may be required.

<sup>84</sup> Because the determination of an adequate level of *P'gimah* is based on its organoleptic properties and not a chemical assay, a sensory evaluation by a *Mashgiach* must generally be undertaken.

- *Propylene glycol*: Although not suitable for use in boiler systems, this is a very practical agent for use in recirculating hot-water systems. At levels above 10 percent, propylene glycol imparts an unpleasant taste, yet is food grade, and actually increases the thermal efficiency of the heating medium.
- *Thermal fluid*: A thermal fluid may be composed of inedible petroleum products, in which case the fluid may be used for Kosher and non-Kosher productions, either consecutively or concurrently. If such fluid is edible mineral oil, the addition of an appropriate bittering agent may be required. (Such a chemical must be miscible in the fluid and able to withstand the high temperatures typically associated with these processes.) In many cases, however, such mineral oil is degraded as it is used, and the oil actually in the system may have become *Pagum* without the need for any additional chemicals.

### Kosherization (*Kashering*) of Equipment

Although non-Kosher *B'lios* may render equipment unfit for Kosher use, such equipment may be purged of such compromising *B'lios* through a process called “Kosherization,” or “*Kashering*,”<sup>85</sup> and subsequently used for Kosher productions. Kosherization may also be used to purge dairy or meat *B'lios* from equipment, and thus allow its use for the opposite type<sup>86</sup> or Pareve productions.

There are two basic processes by which equipment may be *Kashered*, each operating under a separate theory and appropriate in different situations. One process is called *Libun* (literally, to heat [until white-hot]), by which *B'lios* are incinerated in situ. The second is called *Hag'olah* (literally, to purge something repugnant), by which *B'lios* are removed from the equipment.<sup>87</sup> Both processes have practical application in the food industry.

### Libun

When equipment is heated to a sufficiently high temperature, any *B'lios* that had been absorbed will be incinerated and lose their prohibited status. Two levels of *Libun* exist.

#### *Libun Chamur*

*Libun Chamur* (literally, “severe *Libun*”) involves heating equipment to approximately 900°F and is effective for all types of *B'lios* absorbed into all types of equipment. Given the extreme temperatures involved, other methods of Kosherization (such as *Libun Kal* and *Hag'olah*; see later) are generally employed. Its use may be mandated, however, when *B'lios* have been absorbed by cooking foods without liquids under a direct flame, such as a grill or spit. In such cases, the equipment must generally be heated with a blowtorch or hot coals. According to many authorities, the cleaning cycle of a self-cleaning oven is also considered

<sup>85</sup> The term *Kosherization* is a creation of modern English, as is the quasi-Hebrew term *Kashering*. The correct Hebrew verb is *L'Hachshir*, which literally means “to make proper.” Because of the prevalent use of the terms *Kosherization* and *Kashering*, however, both are used interchangeably.

<sup>86</sup> Although refraining from routinely *Kashering* equipment between meat and dairy productions is customary, some authorities rule that this custom applies only for personal use, not in factory situations.

<sup>87</sup> The concepts of both *Hag'olah* and *Libun* are based on the Biblical injunction to *Kasher* the pots and pans that the Children of Israel captured from the *Midianites* (see *Numbers* 31:22–23).

a *Libun Chamur*. *Libun Chamur* is also the only method by which pottery may be *Kashered*, and the pottery must be placed in a kiln (see the section “Materials Subject to *Hag’olah*,” concerning the *Halachic* status of differing types of material). *Libun Chamur* is also not subject to certain restrictions that apply to *Hag’olah*, such as that equipment be clean<sup>88</sup> and unused for twenty-four hours prior to *Kosherization* (see the section that follows, regarding *Hag’olah*).

### *Libun Kal*

*Libun Kal* (literally, “lesser *Libun*”) involves heating equipment to the point at which it begins to ignite straw or paper, generally assumed to be approximately 450°F.<sup>89</sup> *Libun Kal* is not considered as effective as *Libun Chamur* and is not acceptable for the *Kashering* of earthenware or equipment such as grills and spits. It is, however, at least as effective as *Hag’olah* and may be more practical to implement than *Hag’olah* in certain situations. It also has the advantage of not requiring a twenty-four-hour downtime prior to *Kashering*.

## Hag’olah

*Hag’olah* operates under the theory that equipment will expel any absorbed flavors under the same conditions by which it absorbed them (*k’Bol’o Kach Polto*). For example, a pot in which a non-Kosher product had been cooked absorbs non-Kosher *B’lios* through boiling. If the pot were filled with fresh water and brought to a boil, the non-Kosher *B’lios* would be desorbed into the water and no longer present in the pot. The non-Kosher water could then be discarded, after which the pot could be used for *Kosher* production.

Such a process, however, raises an obvious conundrum. If we accept the fact that the boiling water serves to remove the non-Kosher *B’lios* from the pot, would not these very same *B’lios* then be reabsorbed into the pot by the same mechanism? In dealing with this concern, early *Halachic* authorities provided two basic solutions. The first assumes that *Hag’olah* would take place in a volume of water that was sixty times as great as the volumetric displacement of the material of the pot.<sup>90</sup> In such a case, the *B’lios* would become *Batul* in the water as they left the pot, and once *Batul*, they could not recontaminate the vessel. Such an approach, however, suffers from two drawbacks. First, it is limited to situations involving sufficient water. Second, many authorities rule that the *B’lios* expelled *accumulate* in the water as each individual item is immersed, thus limiting the number of items that could be *Kashered* in a vat of boiling water.

### *Ayno Ben Yomo*

A second solution to the problem of *B’lios* reabsorption involves the interaction of two other *Halachic* concepts. Although normal *B’lios* of prohibited foods require nullification in a ratio of one to sixty to be considered *Batul*, foul-tasting *B’lios* are considered insignificant

<sup>88</sup> The incineration of *Libun Chamur* serves to destroy *B’lios* as well as any residual non-Kosher material on the surface of the equipment.

<sup>89</sup> Some authorities permit slightly lower temperatures for an extended period of time.

<sup>90</sup> Because the actual amount of *B’lios* in a pot is unknown, we must assume that the entire material of the pot is completely imbued with such *B’lios*.

at any level. Further, *Halacha* assumes that any *B'lios* that had remained in a clean, empty vessel for twenty-four hours would automatically become foul tasting. Such a vessel is referred to as an *Ayno Ben Yomo* (literally, “not of the same day”<sup>91</sup>).<sup>92</sup> As such, were a vessel left undisturbed for twenty-four hours from the time it had absorbed non-Kosher *B'lios*, it could be *Kashered* with *Hag'olah*, without concern that such flavors would be reabsorbed into the vessel. *Kashering* of equipment that is *Ayno Ben Yomo* is therefore free of the need to maintain a minimum amount of water as part of the Kosherization process. Because such an arrangement is the safest means of ensuring a proper Kosherization, the custom is to require an *Ayno Ben Yomo* status for all equipment<sup>93</sup> that is *Kashered* with *Hag'olah*. (See the next section concerning the use of a chemical *P'gimah* as an alternative to requiring an *Ayno Ben Yomo* status.)

### *P'gimah*

A significant extension of the *Ayno Ben Yomo* concept, however, may be appropriate when allowing for a twenty-four-hour period prior to *Kashering* is not possible. According to some authorities, an equivalent *P'gimah* can also be effected by adding a bitter chemical to the water used for the *Hag'olah*. By so doing, the *B'lios* that desorb from the equipment into the water would immediately become *Pagum* from the bitter chemicals in the water and therefore *Batul* and incapable of being reabsorbed into the vessel. Such chemical *P'gimos* should take place at a temperature at least as hot as that of production. In practice, however, most authorities do not rely on such arrangements except under exceptional circumstances. Others, while allowing for the use of a *P'gimah*, will require that a second Kosherization follow that with the *P'gimah* to ensure that all *B'lios* had been removed.<sup>94</sup>

### Temperature

Another significant factor in the *Hag'olah* process involves the temperature that the water must reach to effect a *Hag'olah*. *Halacha* refers to this temperature as *Roschim*, which is loosely defined as “boiling.” Although many *Kashrus* agencies conveniently ascribe a temperature of 212°F to *Roschim*, such an expedient may be neither physically nor *Halachically* accurate. The temperature at which water boils is subject to a number of significant variables, such as altitude and barometric pressure. As such, the preferred parameters for *Hag'olah* involve heating water to a rolling boil, regardless of the actual temperature.

<sup>91</sup> Some authorities rule that an *Ayno Ben Yomo* status may be achieved even if the vessel had been left undisturbed only for a full *overnight* period (*Linas Lei'lah*), defined as from sunset to sunrise. Although most authorities require a full twenty-four-hour waiting period, this opinion may be taken into account by Rabbinic authorities in certain situations.

<sup>92</sup> Although foul-tasting *B'lios* that issue from such a vessel would be *Batul*, one is not allowed to use such a vessel without first *Kashering* it.

<sup>93</sup> An *Ayno Ben Yomo* status is theoretically not required when *Kashering* from Kosher dairy (or meat) to Pareve because of the concept of *Na't bar Na't d' Heteira* (literally, “the flavor of a permitted flavor”). Most *Kashrus* organizations, however, consider non-*Cholov Yisroel* milk to be a “prohibited” item vis-à-vis Pareve items; they therefore require an *Ayno Ben Yomo* status when *Kashering* from regular milk to Pareve (see Chapter 9, “The Dairy Industry”).

<sup>94</sup> This is based on a concern that the bittering chemicals in the water change the status of the “water” into “other liquids,” which are considered questionable for use for *Hag'olah*; see the text that follows, concerning water versus other liquids.



Further, most authorities will accept a somewhat lower temperature as *Roschim*, reasoning that even the small bubbles that begin to form at lower temperatures are an acceptable indicator of *Roschim*.<sup>95</sup>

Another approach to determining the temperature required for *Hag'olah* derives from the premise upon which the concept of *Hag'olah* itself is based. *Hag'olah* is considered efficacious to remove all *B'lios* through the concept of *K'bol'o Kach Polto*—literally, “in the same manner that it (the vessel) absorbed the flavors, so too will it desorb them.” Some authorities posit that this concept of equivalence extends to the *temperature* of the *Hag'olah*; that is, *B'lios* absorbed at a temperature lower than boiling may be purged with water at the same temperature. Although most authorities prefer to use *Roschim* for *Hag'olah*, many will accept an equivalent temperature in certain situations. When the operating temperature is higher than boiling (for example, water under pressure or liquids with a boiling temperature higher than water), all agree that boiling water is sufficient to effect a *Hag'olah*.

Water versus other liquids. The concept of *Hag'olah* is predicated upon the action of hot liquids and their ability to absorb *B'lios* from vessels; solids do not effect a *Hag'olah*. Some authorities also posit that only boiling *water* has the ability to remove all *B'lios* and that *Hag'olah* is ineffectual with any other liquid. As such, most *Kashrus* authorities insist that plain water be used for *Hag'olah* whenever possible. Under certain circumstances, however, *Hag'olah* may be performed with oil or other fluids, based upon the consensus of *Halachic* authorities.<sup>96</sup>

Cooking versus broiling. Because *Hag'olah* is based on the equivalence between cooking and *Kashering*, it is generally effective only for *B'lios* from prohibited foods that had been absorbed by cooking with water or other liquids. *B'lios* absorbed by grills and spits *directly* from food under a direct flame are considered more thoroughly embedded in the equipment and may therefore be *Kashered* only by *Libun Chamur*.<sup>97</sup>

Certain types of equipment exhibit characteristics of both cooking and broiling. Spray dryers produce hot powders that contact parts of the equipment without the benefit of the liquids that would clearly qualify them for *Hag'olah*. Some authorities therefore contend that a *Libun Chamur* is required, a procedure that is clearly impractical. Many authorities, however, note that spray dryers use air that is heated externally to the dryer. Such indirect heat is not considered the type of “fire” that incurs a requirement for *Libun Chamur*, and authorities therefore have ruled that such a device may be *Kashered* with *Hag'olah* or

<sup>95</sup> The relationship between *Roschim* (boiling) and *Hag'olah* has other interesting ramifications. Boiling water is sufficient to *Kasher* a deep fryer, even though the temperature of frying oil is typically 300–400°F. Similarly, a pot in which a non-Kosher product was boiled at the Dead Sea (where water boils at 213.8°F) can be *Kashered* with boiling water in Denver, CO, where it boils at 203°F. (Indeed, an even lower temperature may be acceptable, which is based on the acceptance of the creation of small bubbles at even lower temperatures.)

<sup>96</sup> Some authorities also consider oils that are solid at room temperature to be in the category of solids and thus unsuitable for use in *Hag'olah*.

<sup>97</sup> Kosher *B'lios* (for example, Kosher meat or milk) absorbed without liquid under a fire may theoretically be *Kashered* by *Hag'olah*. However, see footnote 93 regarding the status of non-*Cholov Yisroel* milk products and *Kashering* standards related thereto.

*Libun Kal*.<sup>98</sup> The use of *Hag'olah* does pose certain practical problems in that the unit can obviously not be *filled* with boiling water. Most authorities have concluded, however, that flushing the unit with boiling water until the temperature of the water as it exits the chamber is close to boiling suffices as a *Hag'olah*. (Preheating the drying chamber usually expedites this process.) Alternatively, many authorities rule that if sufficient steam is injected into the unit to the point at which substantial hot condensate actually forms on all product contact surfaces, such a steaming is equivalent to *Hag'olah* (see the section “Steam”).

Primary, secondary, and tertiary vessels. The concept of equivalence in *Hag'olah* has another practical application. *Halacha* recognizes that although “cooking” and the transfer of *B'lios* require a *temperature* of *Yad Soledes Bo*, the *type* of vessel is also significant. A vessel in which a food is heated is called a *K'li Ri'shon* (primary vessel); the vessel into which such hot food is poured is called a *K'li She'ni* (secondary vessel); and a vessel into which food from a *K'li She'ni* is poured is called a *K'li Sh'lishi* (tertiary vessel).<sup>99</sup> *Halacha* assumes that the degree to which *B'lios* are embedded in equipment is directly related to the *severity of conditions* under which they had been absorbed. It is therefore posited that *B'lios* may not desorb except under conditions identical to (or more severe than) those under which they were absorbed. A vessel in which a non-Kosher product was *heated* therefore requires a *Hag'olah* involving the *boiling* of water in it. However, *B'lios* absorbed into a vessel from hot liquids *poured* into it may be dislodged by *Hag'olah* involving the *pouring* of boiling water into it (a process known as *Iruy*).

Practical examples of this concept include:

- Cooking pots and steam-jacketed kettles must be *Kashered* by boiling water in the vessel. When possible, the boiling water should overflow the vessel to ensure that all surfaces the product touched are *Kashered*.
- Tanks that store hot liquids for fewer than twenty-four hours may be *Kashered* by filling the tank with boiling water. Boiling the water in the tank is not necessary.
- *B'lios* absorbed through processes other than heat (for example, *Ka'vush* and *Da'avar Cha'rif*) are considered as having been absorbed through cooking and therefore require *Hag'olah* as a *K'li Ri'shon*.
- Pipes through which hot liquids are pumped may be *Kashered* by pumping hot water through them (*Iruy*). (The *Kashering* water should come from the same, or higher, level of vessel as the original non-Kosher liquid.)

Clean in Place. Equipment in many food-production installations is cleaned with the “clean-in-place” system, known as a CIP. Such a system involves the flushing of the food-production equipment with cleaning and rinsing solutions, thus obviating the need to disassemble and manually clean the equipment. Such a cleaning system is generally considered an *Iruy* (flushing) and thus insufficient to effect a *Hag'olah* of cooking vessels. Some authorities posit, however, that a *continuous* flushing with boiling water is equivalent

<sup>98</sup> Although raising the temperature of the spray-dryer chamber to 450°F may also be impractical, some authorities may allow a lower temperature for an extended period of time; see the section *Libun Kal*, which appears previously in this chapter.

<sup>99</sup> The basic theory behind these distinctions is that secondary and tertiary vessels tend to cool the hot liquid quickly and thus offer less of opportunity for *B'lios* to embed themselves as firmly.

to cooking the water in the vessel, in which the exit temperature of the CIP water is close to boiling. They therefore would approve the use of such a CIP system for *Hag'olah* under certain circumstances.<sup>100</sup>

Steam. *Hag'olah* assumes the use of hot water. Most authorities rule that steam, although as hot as (or hotter than) boiling water, is not an acceptable medium for *Hag'olah*. Steam may be acceptable, however, in the following situations:

- When the *B'lios* were originally absorbed through steam, steam may be used as a *Hag'olah* to purge them.
- When a vessel is steamed for a prolonged period of time such that significant amounts of water condense on all internal surfaces (for example, the product side of cooking vessel), such a steaming may be considered equivalent to boiling water therein.

Cleanliness of Equipment. *Hag'olah* is effective only in removing *B'lios*; it cannot remove flavors from food itself. Indeed, any residue left on the surface serves as a barrier to the removal of *B'lios* from the equipment surface underneath. As such, *Hag'olah* presupposes thoroughly clean equipment. Further, the twenty-four-hour waiting period required prior to *Hag'olah* begins *after* the equipment has been cleaned.

Similarly, equipment to be *Kashered* must be smooth and free of cracks or grooves where food residue may remain.

Materials Subject to *Hag'olah*. Certain materials are deemed acceptable for *Hag'olah*, whereas others are not. The following is a list of materials that may be *Kashered* with *Hag'olah*:

- Metal<sup>101</sup>
- Stone, granite, and marble
- Wood (must be free of cracks)
- Fabric (must be thoroughly cleaned with detergent and seams must be checked or opened to ensure that no residue is entrapped)
- Horn and bone
- Plastics,<sup>102</sup> rubber (natural and synthetic),<sup>103</sup> and Teflon<sup>®</sup>

<sup>100</sup> CIP systems typically use chemical solutions as part of their cleaning process, which are subject to the rules of *P'gimah* discussed previously.

<sup>101</sup> Generally, issues relating to *Kashering* equipment apply to equipment known and suspected of having been used to process non-Kosher products. By definition, *new* equipment requires no *Kashering* prior to Kosher use. Certain types of pots, however, are polished with non-Kosher animal fats in the course of their manufacture, and some authorities require that such new pots be *Kashered* prior to use. Others find that since such pots are subjected to intense heat subsequent to the use of the offending fats, they are automatically considered *Kashered* (*Libun Chamur*). A similar issue had been raised regarding the status of much of the steel plate used to produce tins cans and other food-related equipment, because non-Kosher oils and fats are often used in their manufacture and may be washed off only in a manner that is not considered a *Hag'olah*. Most authorities, however, have discounted this concern (see “The Story of Release Agents” in Chapter 17).

<sup>102</sup> Although many authorities have ruled that plastic may be *Kashered*, some are less sanguine on this point. As such, some Kosher-certifying agencies will not permit the *Kashering* of any type of plastic or Teflon<sup>®</sup>.

<sup>103</sup> Some authorities have noted that stearates are routinely added to plastics, many of which are derived from animal fats. They have therefore worked to ensure that only vegetable-based versions are used in the production of food-grade material. Most authorities have discounted this concern.

The following materials may normally not be *Kashered* with *Hag'olah* (or *Libun Kal*)<sup>104</sup> because it is assumed that *B'lios* cannot be completely removed from them:

- Pottery, cement, porcelain, and china (glazed or unglazed)
- Glass, Pyrex<sup>®</sup>, CorningWare<sup>®</sup>, and porcelain enamel<sup>105</sup>
- Ceramics

### ***Bishul Akum***

The Kosher status of a food is generally a function of the Kosher status of the ingredients therein as well as the equipment on which it was produced. Several extraordinary rules, however, affect the Kosher status of certain types of foods. Of these, the rule with the broadest application across a variety of industries is called *Bishul Akum*.<sup>106</sup>

The concepts of *Bishul Akum* (literally, “cooking by a non-Jew”) and its converse “*Bishul Yisroel*” (literally, “cooking by a Jew”) are based on a Rabbinic requirement that someone who personally adheres to Kosher law be involved in the cooking of certain categories of food. This rule is particularly significant for two reasons. First, ongoing Kosher certification programs in factory settings<sup>107</sup> are typically designed to allow for Kosher production without the continuous presence of a *Mashgiach*. Whenever *Bishul Yisroel* is mandated, failure to secure such a status would preclude the Kosher certification of a product. Second, even when the *Mashgiach* is in attendance at all times, such as in a restaurant or food-service setting, it is often difficult or impossible for him personally to perform all the cooking. The successful implementation of a Kosher certification program therefore requires an understanding of the mandates of *Bishul Akum* and the methods by which they may be met.

By definition, only “cooked” foods are subject to the rule of *Bishul Akum*, adherence to which is mandatory as per the guidelines discussed shortly. *Baked* products made from the five major grains (wheat, rye, oats, barley, and spelt) are considered exempt from all requirements of *Bishul Akum*, and bread, cake, and other types of baked pastries may therefore be produced without Jewish involvement. (Such products may be subject to concerns of *Pas Yisroel* that are, however, quite similar in application to *Bishul Akum*. Nonetheless, a *Pas Yisroel* status is not considered obligatory,<sup>108</sup> and many *Kashrus* organizations certify products that are not *Pas Yisroel*.) Cooked grain or dough products are subject to the same requirements and exemptions as those for other cooked products, as are baked products made from corn, rice, and other types of flour.

<sup>104</sup> All products are theoretically amenable to *Libun Chamur*, although materials must be returned to the kiln to ensure that they are heated properly.

<sup>105</sup> According to *S'phardic* customs, glass may indeed be *Kashered* with *Hag'olah*. *Ashkenazic* customs, however, generally preclude the *Kashering* of glass, although exceptions may be made in specific circumstances.

<sup>106</sup> Other examples of such extraordinary requirements include *G'vinas Akum* (see Chapter 9, “The Dairy Industry”) and *Pas Yisroel* (see Chapter 7, “The Baking Industry”).

<sup>107</sup> Some authorities posit a distinction between food cooked in a home setting and that cooked in a factory, ruling that the latter is not subject to the rules of *Bishul Akum*. Most authorities reject this distinction *per se*, although they may accept it where the cooking process in the factory is unlike that undertaken in a home environment (for example, commercial canning systems).

<sup>108</sup> See Chapter 7, “The Baking Industry,” concerning *Pas Yisroel*.

The factors governing the application of *Bishul Akum* can be divided into three categories:

- The *types* of food subject to this requirement
- The *methods of cooking* subject to this requirement
- Techniques by which a *Bishul Yisroel* status may be created

Failure to satisfy the requirements of the laws of *Bishul Akum* may render both the food itself and the equipment on which it is produced non-Kosher—even if all the ingredients and equipment<sup>109</sup> used are otherwise acceptable.

### **Types of Food Subject to Bishul Akum Concerns**

The rule of *Bishul Akum* applies when “important” cooking takes place. Important cooking is defined as meeting the following two requirements:

- The food is *considered* important. The *Halachic* standard for designating a food as important for purposes of *Bishul Akum* is “*O’leh al Shulchan M’lachim*” (literally, “fit for a king’s table”). According to many authorities, this designation refers to foods that might be served at an important occasion, such as a state banquet. According to this approach, only foods that are inherently important *and* prepared in an important manner are considered subject to the rules of *Bishul Akum*.<sup>110</sup> For example, *canned* sardines may be considered exempt from the rules of *Bishul*, because sardines prepared in this manner are not considered appropriate to be served at a state dinner. *Fresh* fish that is cooked in a sophisticated manner, however, is subject to this rule. Conversely, types of food considered inferior are also exempt, regardless of how they are prepared. This is the normative approach taken by most Kosher certification agencies.<sup>111</sup> Based on this consideration, snack foods and breakfast cereals do not require *Bishul Yisroel*.
- The food *requires* cooking. When dealing with foods that are generally eaten in their raw state, the act of cooking them is not considered important, and such foods are thus not subject to the rules of *Bishul Akum*. Foods *normally* eaten raw, as determined by customary culinary habits in any given area, are therefore exempt from concerns of *Bishul Akum*.<sup>112</sup> Most types of fruit and vegetables are thus free of *Bishul Akum* concerns, with the notable exceptions of potatoes<sup>113</sup> and asparagus that must be cooked to be considered edible.

<sup>109</sup> Although such equipment would require a *Kashering* before it could be used to process Kosher food, the method of such Kashering may be less rigorous than would otherwise be required when *Kashering* equipment from other non-Kosher products.

<sup>110</sup> The determination of an “important” food is subject to the norms of the culture where the food is prepared.

<sup>111</sup> Some authorities rule that only the *type* of food is considered significant, not the method of its preparation. For example, potato chips may be subject to the rules of *Bishul Akum*, even though they would not be served at a state dinner, because other forms of potatoes would be. Further, some authorities rule that the concept of food “fit for a king” refers to foods that a king might eat in private, even if they would not be served at a royal banquet. Canned sardines may be subject to the rules of *Bishul Akum*, even though they would not be served at a royal banquet, because a king may well eat them for breakfast. Most *Kashrus* authorities, however, follow the lenient approach noted in the text.

<sup>112</sup> The status of fish is therefore questionable because many people eat raw sushi and sashimi, even in Western countries. In practice, however, most authorities still consider fish a food that requires cooking. The *Talmud* notes that eggs are considered a food that requires cooking—and thus subject to *Bishul Akum* concerns—because most people do not eat raw eggs.

<sup>113</sup> See “The Story of Potatoes” in Chapter 17.

Water and products based on water, such as coffee, tea, and beer, are also considered exempt from *Bishul Akum* concerns. Cooked dairy products are also considered exempt because the original milk had been edible prior to cooking.

Cooked foods that do not exhibit *both* of the preceding characteristics are considered inherently exempt from the rules of *Bishul Akum*.

### **Types of Cooking Subject to Bishul Akum Concerns**

The rules of *Bishul Akum* apply to foods that are boiled, broiled, fried, or baked, regardless of whether the heat derives from burning fuel or electric resistance. Sun-cooked foods,<sup>114</sup> pickled foods, and smoked<sup>115</sup> foods are not subject to this rule. *Halachic* authorities disagree as to whether *direct steam* fits into the category of smoke for such purposes. From a practical perspective, however, most Kosher-certifying agencies follow the opinion that steam is equivalent to conventional heating and thus creates a concern of *Bishul Akum*.<sup>116</sup>

Rules of *Bishul Akum* apply to products that are fully cooked as intended to be eaten by most people. After a product has been cooked to such a level, the subsequent cooking by a *Mashgiach* would not remove its prohibited status. However, foods that are only *partially* cooked are not subject to this rule, even if the partially cooked product is technically edible, provided most people do not consider it fully cooked.<sup>117</sup> In addition, foods that are partially cooked by a *Mashgiach* are also considered exempt, even if the final cooking and preparation were done by a non-Jewish chef.

### **Methods of Creating a Bishul Yisroel Status**

To maintain the Kosher status of cooked foods considered subject to *Bishul Akum* concerns, some type of Jewish involvement is required (*Bishul Yisroel*). Ideally, Jewish personnel<sup>118</sup> would act as the exclusive cooks and operators of cooking equipment, a situation that is, however, generally impractical in a factory setting. Even in a restaurant or food-service setting with a Jewish chef, many employees other than the head chef are typically involved in preparing the volume of food required. The successful maintenance of a Kosher program therefore requires alternative means of addressing *Bishul Akum* concerns.

According to *Ashkenazic* custom, *Bishul Yisroel* may be affected by the involvement of the Jewish personnel at virtually *any* stage of the cooking process. Specifically, lighting the

<sup>114</sup> Contemporary authorities disagree as to whether *microwaved* foods are subject to the rules of *Bishul Akum*. In general, however, this question is academic because most microwaved foods would not be considered appropriate to be served at a formal banquet. Reheating previously cooked foods, however, poses no concern.

<sup>115</sup> Many types of “smoked” fish are actually baked, with only a small amount of smoke added in the oven for flavor. Such products are generally considered subject to the rules of *Bishul Akum* (see “The Story of Fish” in Chapter 17).

<sup>116</sup> However, because many authorities rule that steaming is exempt from *Bishul Akum*, this position may be relied on in situations in which other mitigating factors are present.

<sup>117</sup> This dispensation applies to only those foods that require further cooking to be considered a finished product. Fully cooked products that require only defrosting or simple heating do not qualify for the exemption.

<sup>118</sup> According to many authorities, such cooking must be done by someone who personally adheres to Kosher law.

fire, placing the food in the oven, or stirring the pot of food on the fire would serve to obviate concerns of *Bishul Akum*, even if all other aspects of the cooking process are attended to by non-Jewish personnel. It is sufficient for the *Mashgiach* to turn on the fire or heat in a stove, oven, fryer, or other type of cooking equipment, or even raise the flame or temperature therein, for all subsequent cooking to be considered *Bishul Yisroel*. Further, large steam systems may also be considered *Bishul Yisroel* if the *Mashgiach* lights, or even raises, the temperature of the boiler. In such cases, all foods cooked using steam from the boiler would be considered *Bishul Yisroel*, regardless of the fact that other personnel open and close the valves that convey the steam to the cooking equipment. In addition, the *Bishul Yisroel* status of such equipment would continue for as long as the equipment did not cool off.<sup>119</sup>

From a practical perspective, kitchens in restaurants and food-service commissaries may therefore operate without a Jewish chef, provided that the *Mashgiach* lights all the fires and monitors them to ensure that they are not extinguished. (They may, however, be lowered without compromising the system.) Such an action is sufficient to maintain a *Bishul Yisroel* status for an extended period, although most authorities recommend that the *Mashgiach* periodically relight the flames or raise the temperature.

Contemporary authorities also discuss whether cooking that takes place based on a pilot light originally lit by a *Mashgiach* is sufficient for this purpose because the main cooking flame is lit by it. Many authorities do allow for reliance on a pilot light, provided that one can be assured that it remains lit at all times. Electric heating elements, however, as well as gas flames that are lit by electronic ignition, are not subject to such a leniency and must be relit by the *Mashgiach* before each use. Other authorities rule that one should not rely on a pilot light that merely ignites the actual cooking flame.<sup>120</sup>

Practical applications of this concept in factory settings include:

- Large ovens whose burners are never turned off, or retain a minimum baking temperature even when extinguished, may be lit or have their temperature raised by *Mashgiach*, after which all products produced in it would be considered *Bishul Yisroel* (subject to periodic relighting, as noted).
- Boilers in which pressure and temperature are always maintained (even at reduced levels) may be lit or have their temperature raised by the *Mashgiach*. Steam from such a boiler may then be controlled and used to cook products without creating concerns of *Bishul Akum*.
- *Bishul Yisroel* can also be achieved by installing an auxiliary gas flame or electric element<sup>121</sup> in the cooking equipment, which is lit by the *Mashgiach* and remains on at all times.

<sup>119</sup> The length of time that a continuous fire or residual heat remains effective is questionable. Many authorities therefore require that the *Mashgiach* relight the oven or raise its temperature on a regular basis.

<sup>120</sup> Pilot lights found in commercial stoves (and some large home models), however, may satisfy all opinions, provided that they are located directly under the cooking pot and burn with a flame large enough to contribute significant heat while cooking. In such cases, the pilot light itself actually serves as a partial source of heat for the cooking, allowing its lighting by the *Mashgiach* to be considered an actual part of the cooking process.

<sup>121</sup> Some contemporary authorities have extended this concept to include the maintenance of even a small heat source, such as lightbulb, that had been lit by a *Mashgiach*. Others, however, argue that any such extraneous source of heat must be of sufficient magnitude to contribute discernibly to the cooking process. Most Kosher-certifying agencies therefore reject the use of a lightbulb or similar small heating element for this purpose.

In all the preceding situations, a reliable method must be devised to ensure that the flame lit by *Mashgiach* is not extinguished and that the oven or boiler does not cool off. Recognizing, however, that power outages and maintenance may occasion periodic interruptions in such a continuous heat source, provision must be made for the relighting of the heat source by the *Mashgiach* whenever such a disruption takes place. Compliance with this requirement may be monitored by securing a thermocouple on a gas system, such that it could not be relit by someone other than the *Mashgiach*. Periodic inspection of the seal on the thermocouple would serve to confirm the integrity of such a system. In a similar vein, sensing circuits can be installed on electric heaters to verify that power had not been interrupted, and temperature or pressure sensors can be installed in boiler systems. In all such cases, the company would be responsible for advising the *Mashgiach* of the need to relight the system when the continuity of the heat or flame had been compromised. Failure to follow such procedures would be considered a violation of the Kosher certification agreement, and both the product manufactured and the equipment on which it was produced may be deemed non-Kosher.

Modern technology has also created potential new approaches for resolving concerns of *Bishul Akum*. On a rudimentary level, some authorities consider the setting of a timer to initiate a cooking cycle as sufficient involvement by a *Mashgiach*. On a more sophisticated level, programming a computerized cooking cycle should be equally acceptable, especially when this is the normal method of controlling the cooking process. Some authorities also approve the remote-control participation by the *Mashgiach* in the cooking process, meaning that the *Mashgiach* actually turns on the cooking process from another location.<sup>122</sup> The application of these and similar techniques must be evaluated on an individual basis.

All the solutions discussed, however, are valid only according to the *Ashkenazic* custom that considers minimal involvement of the *Mashgiach* sufficient to obviate *Bishul Akum* concerns. *S'phardic* customs are much more stringent in this regard, and require that a *Mashgiach* actively participate in the cooking on an ongoing basis. This standard is commonly referred to as “*Bais* (or *Bait*) *Yosef Bishul Yisroel*.”<sup>123</sup> According to this approach, merely lighting an oven or boiler, or raising its temperature, is considered effective only for the cooking of the product actually *in* the oven, *on* the stove, or *being cooked* by the steam at that time. Indeed, restaurants that follow such customs employ a *Mashgiach* to be involved in the cooking of every dish served. For factories in which a *Mashgiach* is not in permanent attendance, producing a Kosher product that meets this standard is virtually impossible.<sup>124</sup>

The normative approach to Kosher certification follows *Ashkenazic* custom. Some *M'hadrin* Kosher certifications,<sup>125</sup> however, insist on adherence to the standards of the *Bais Yosef* and require the involvement of the *Mashgiach* in all stages of the cooking.

<sup>122</sup> Although many authorities have approved such a system, its acceptance is by no means universal.

<sup>123</sup> The *Bais Yosef* is the name of one of the classic *Halachic* works by Rabbi Yosef Karo (1488–1575 CE), who also authored the *Shulchan Aruch*. Rabbi Karo is considered the standard of authority of the *S'phardic* community.

<sup>124</sup> Special productions, for which the *Mashgiach* actually supervises and participates in the cooking, however, would be acceptable.

<sup>125</sup> The term *M'hadrin* refers to Kosher certifications that insist on standards generally regarded as preferred but not required. For example, a *M'hadrin* certification would insist on using only *Cholov Yisroel* dairy products (see Chapter 1, “Kosher Certification: Theory and Application,” for more discussion of *M'hadrin* supervision).



# 3 Ingredient Management

To a great extent, the Kosher status of a final product is a direct function of the Kosher status of its components. One of the most important tools in maintaining the integrity of a Kosher program, therefore, is the list of ingredients approved for use in a specific plant. This Approved Ingredient List<sup>1</sup> is generally prepared by the Kosher-certifying agency at the time certification is granted and is based on the information submitted to it by the manufacturer. Typically, the manufacturer will be asked to submit a list of *all* ingredients used in the factory (even those not destined to be used in Kosher-certified products<sup>2</sup> or even directly in food<sup>3</sup>), along with any Kosher documentation available. The certifying agency will then evaluate these ingredients and determine their suitability for use in the Kosher program. After this evaluation has been completed—and any changes or replacements agreed to—this list becomes the master list of ingredients that may be used in the facility, and the list may be modified only with the approval of the Kosher-certifying agency. Indeed, one of the primary responsibilities of the *Mashgiach* is to verify the company's adherence to this list. Failure to comply with this list or the conditions under which certain ingredients are approved may result in the termination of Kosher program and possible recall of any certified products manufactured using non-Kosher-approved ingredients. It may also necessitate the re-Kosherization of equipment on which such ingredients were processed, possibly involving significant costs and production disruptions.

No Approved Ingredient List is, of course, engraved in stone, and typically must be updated on a regular basis. For example, a company may wish to change suppliers of a given raw material or add entirely new ones. In all such cases, approval must be sought from the Kosher-certifying entity. In addition, letters of Kosher certification (LOCs) that support the Kosher status of an ingredient are usually issued on an annual basis and must be renewed by the manufacturer on expiration. To ensure that the Approved Ingredient List is accurate and up to date, the expiration date of such approvals is routinely noted on the document, and companies are requested to obtain the renewed documents and submit them to the certifying agency in a timely fashion so that the approved list can be updated. To address these needs, certifying agencies typically provide a simple form for requesting such changes. Companies should submit such requests along with any supporting Kosher documentation available, which is then evaluated by the certifying organization. (Additional information may be requested to aid in this evaluation.) If the certifying organization approves the request, it

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<sup>1</sup> One of the largest Kosher-certifying agencies calls this list its “Schedule A,” and this term has crept into common use to refer to the Approved Ingredient List.

<sup>2</sup> The need for such information is explained later in this discussion.

<sup>3</sup> “Processing aids,” such as lubricants, flocculants, and antifoams that come into contact with either food or equipment, pose a Kosher concern and are generally treated as “ingredients.” Indeed, this approach has now been essentially codified into law by the Food Allergen and Labeling and Consumer Protection Act, which requires that any trace of eight major allergens must be declared as an ingredient (see Chapter 1, “Kosher Certification: Theory and Application,” for more information regarding how this law affects Kosher certification).

updates the Approved Ingredient List and sends to the company either a new document or an addendum reflecting approval of the requested change.

If the agency cannot approve a request, it so advises the company, which then may not use the ingredients in question. The reason for such a denial may depend on several factors:

- The ingredient is deemed non-Kosher.
- The ingredient's status is incompatible with the status of certified product (for example, a dairy ingredient in a Pareve facility).
- The Kosher certification of the ingredient does not meet the standards of the entity that certifies the company producing the finished product.

Many organizations and individuals are involved in granting Kosher certification, and their standards and approaches may differ significantly. Indeed, the standards espoused by a particular Kosher-certifying entity and its reputation are important factors in deciding which certification a manufacturer should choose to employ. Ultimately, Kosher certification is obtained to increase the potential market to which a product appeals, and consumer acceptance of the Kosher certification is therefore critical. This acceptance often hinges on the reputation of the certifying agency that, in turn, is partially a function of the criteria the agency uses to evaluate the ingredients it allows for use in the products it certifies. It is not unreasonable for a certifying entity to reject an ingredient bearing a Kosher certification that, in its opinion, does not meet its standards. In general, however, Kosher-certification agencies are careful in the exercise of this prerogative, invoking it only when they believe doing so to be necessary to maintain their standards.

From a practical perspective, virtually no Kosher certifications insist that all—if any—ingredients used in products they certify bear their own certification.<sup>4</sup> Rather, they insist that all ingredients (that require Kosher certification) be certified by individuals or organizations in which they have confidence. Ultimately, the decision of which ingredients/certifications to accept or reject (based on Kosher concerns) is the sole prerogative of the certifying entity used by the manufacturer. The term “*Approved Ingredient List*”—as opposed to “*Kosher ingredient list*”—indicates this distinction.

- Although not intended to be used in a Kosher product, the ingredient is considered “functionally compatible” with a similar Kosher ingredient that has been approved in other Kosher-certified products.

The modern concept of Kosher certification<sup>5</sup> is designed to ensure the Kosher integrity of all ingredients used in a Kosher-certified product in a factory setting. From the perspective of Kosher supervision, having a manufacturer ensure that all ingredients in the factory are Kosher may be preferable. However, such an arrangement may not be feasible in locations where both Kosher and non-Kosher productions must take place.<sup>6</sup> In such situations, it is critical to ensure that the non-Kosher ingredients destined for the non-Kosher production

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<sup>4</sup> An exception, however, is often made in the case of meat and poultry, and a Kosher-certifying agency may insist that only such products processed under its own supervision may be used as ingredients in products under its supervision.

<sup>5</sup> See Chapter 1, “Kosher Certification: Theory and Application,” for a complete discussion of the theory behind and structure of modern Kosher-certification systems.

<sup>6</sup> See Chapter 1, “Kosher Certification: Theory and Application,” for a more complete discussion of the requirements for Kosher certification in such a setting.

are not inadvertently used in the Kosher product. Many approaches are used to address this concern, but one of the most important is to ensure that all ingredients in the factory that have the *potential* of being used in the Kosher product be Kosher. Non-Kosher ingredients that *cannot* be used in the Kosher production are deemed immune from this concern.<sup>7</sup> This concept is referred to as *functional compatibility*. It is therefore important for the Kosher certifier to be aware of *all ingredients* used in the facility—even those not used in Kosher production—to identify any ingredients that may be deemed prone to misapplication. If a non-Kosher ingredient is deemed functionally compatible with a Kosher ingredient, the company will be asked to use the Kosher version in all applications.

Ingredients used in R&D applications may be evaluated on a case-by-case basis, depending on the quantities involved and the operating methodology of the R&D department. Although an R&D division may reasonably operate unfettered by Kosher constraints, R&D often seeks to test its developments in a real-world production environment. Kosher regulations, however, preclude such R&D testing on equipment that is approved for Kosher production, and for this reason, Kosher requirements are often applied to on-site R&D operations. Furthermore, research involving non-Kosher ingredients in facilities that are dedicated to maintaining a Kosher program might not be worth pursuing, because the use of these ingredients would not be appropriate under such circumstances. Indeed, in such situations it is generally prudent and more economical for R&D to work with the Kosher-certification agency to identify and approve *all* ingredients that are used in product development. Any final application would, in any event, entail such approval, and should such approval not be forthcoming and a replacement required, much of the R&D effort might need to be duplicated to validate the new ingredient. Particular attention must be paid to small production runs done on the actual production lines.

Please note that the Approved Ingredient List is an integral part of the Kosher-certification program and a formal part of the contract for Kosher certification.<sup>8</sup> Failure to adhere to the terms of this list may be considered a breach of the contract itself.

Apart from serving as a list of ingredients that may be used in a production facility, the Approved Ingredient List usually contains the following additional information that is critical to the proper functioning of the Kosher program.

## Ingredient Grouping

Ingredients can be grouped into three broad categories:

- A. **Ingredients considered inherently Kosher:** The Kosher status of an ingredient is a direct function of its satisfying Kosher requirements. Any satisfactory determination

<sup>7</sup> This concept may best be illustrated by the following example: A given factory produces Kosher-flavored beverages on one production line and noncertified cookies on another. Glycerin is used as a sweetener on both lines, and lard is used as a shortening in the production of the cookies. In such a situation, normative Kosher procedures dictate that because both Kosher and non-Kosher glycerin are functionally compatible with one another, all glycerin used in the facility must be Kosher, regardless of whether it is to be used on the Kosher beverage line or the non-Kosher cookie line. Lard, on the other hand, has no application in the production of beverages.

It could thus be safely allowed for the production of non-Kosher cookies in the same facility. The use of signs, raw-material numbers, and so on, to prevent a mix-up of compatible ingredients has been proved less than effective and is generally not accepted.

<sup>8</sup> See Chapter 1, “Kosher Certification: Theory and Application,” for a complete discussion of the contract for Kosher certification.

that an ingredient has met this requirement is sufficient to declare an ingredient Kosher and approved for use in Kosher-certified products. A formal Kosher “certification” is not mandatory. Many fruits, vegetables, spices, chemicals, and a plethora of other food ingredients can safely be assumed Kosher and are therefore acceptable without a formal Kosher certification.<sup>9</sup>

- B. Ingredients requiring Kosher verification:** Another group of ingredients may be produced in both Kosher and non-Kosher versions. Such ingredients cannot be considered Kosher or approved for use in Kosher products unless their Kosher status has been appropriately verified. Such verification is most commonly done by “Kosher certification,” which means that the manufacturer has contracted with a responsible entity to review and oversee its production and thus issue a warrant as to its Kosher status (LOC).<sup>10</sup>
- C. Ingredients not acceptable for Kosher use:** Such ingredients may be patently non-Kosher (for example, lard) or their Kosher status may be suspect. In either case, such ingredients may not be used in Kosher products. If deemed functionally incompatible, however, they may be permitted to be used in non-Kosher products produced in the same production facility.

In an attempt to categorize ingredients clearly and efficiently, as well as to allow for significant distinctions within the same broad classifications, Kosher-certification agencies have devised various systems called “groups” or “categories.” Although many such schemes have been implemented by the large, mainstream Kosher agencies, they are all designed to convey and categorize the same information. For the sake of simplicity, I use a system that mirrors that used by the major Kosher-certification agencies<sup>11</sup> to illustrate these various classifications.

### ***Ingredients Not Requiring a Kosher Certification***

**Group 1:** This group refers to all ingredients that do not require a formal Kosher certification, as discussed previously. They may be purchased from any source, and sources may be changed without notifying the Kosher-supervising entity. Although such ingredients may be used without restriction,<sup>12</sup> they must nevertheless be listed on the list of approved ingredients.

Please note, however, that this group is more accurately described as containing those ingredients that the world’s food technologists have not succeeded—as yet—in producing in a non-Kosher manner in commercially viable quantities. Food technologists are a resourceful group, however, and the method of production for many ingredients long considered “harmless” from a Kosher perspective may yet change to create a Kosher concern. It is therefore important for these ingredients to be listed in the Approved Ingredient List so

<sup>9</sup> However, many such ingredients do indeed have Kosher certification, although it is not required. Many companies manufacture or sell a range of products, some of which do require a Kosher certification, and to standardize their Kosher program they have elected to have all their products formally certified. In addition, a Kosher certification is often considered a marketing advantage.

<sup>10</sup> If a particular ingredient cannot be formally certified, researching a particular source or manufacturer to verify that the ingredient is acceptable may be sufficient.

<sup>11</sup> Systems used by all organizations are but roses by another name.

<sup>12</sup> With the important caveat that produce from Israel is subject to additional concerns (see Chapter 6, “Fruit and Vegetables”).

that if the status of a particular ingredient does change, the manufacturer can be advised to obtain an acceptable version. It is also important for a company to work with its Kosher-supervision agency and advise it when the company becomes aware of a significant change in the method of production of such ingredients. (Food technologists in an industry that produces ingredients considered Group 1 should be aware of the Kosher assumptions relating to their products. It is in everyone's best interest to consult with their customers or directly with the Kosher agencies before initiating changes in their manufacturing processes that may undermine the status that their products currently enjoy.) Because of the virtually unique status and requirements of Kosher certification, a determination that an ingredient poses a Kosher concern may compromise the Kosher status of a product containing that ingredient regardless of knowledge or culpability. Many factors must be taken into account in such a situation, but an item produced using an ingredient that had been approved—but subsequently deemed non-Kosher—may conceivably cause such product to be deemed non-Kosher retroactively. Kosher-certifying agencies are not omniscient; they appreciate and rely on the partnership they enjoy with the companies they certify to keep abreast of changes in the food industry. Obtaining an acceptable substitute for formerly Kosher ingredient is much easier than dealing with the consequences of having used it.

### ***Ingredients That Require Kosher Verification***

**Group 2:** Such ingredients bear an acceptable Kosher certification. Each supplier of this material must be approved individually based on an acceptable LOC. However, because of the nature of the Kosher-certification program in place at the manufacturer, the certifying entity does not require that a Kosher symbol appear on the label (as indicated in the text of the LOC). Therefore, the only marking necessary for this product is an accurate label that indicates the manufacturer.<sup>13</sup> Such products will appear on the approved ingredient list with the name of the manufacturer and the expiration date of the LOC.

**Group 2TR:** Such a designation is given to ingredients that may pose a Kosher concern but, in the absence of a formal Kosher certification, have been verified to meet Kosher requirements. Such a designation may also be used for an ingredient that has a Kosher certification generally considered insufficient but has nevertheless been approved based on an independent review.

**Group 3:** Such ingredients have an acceptable Kosher certification and, as per the terms of certification indicated in the LOC, must bear a designated Kosher symbol. Such a symbol may be preprinted on the container or applied in some other manner. If the product does not bear the appropriate Kosher symbol, it is assumed not to be covered by the LOC and thus not Kosher certified.

**Group 3 with conditions:** In certain situations, Kosher products require extraordinary controls to ensure their Kosher status, perhaps because a company produces both Kosher and non-Kosher versions of the same product, or that the equipment on which it is produced requires special Kosherization prior to the Kosher production. In other situations, such as ones involving meat or cheese products, the Kosher sensitivity of these products is deemed of sufficient concern as to require an additional level of security. To guarantee the Kosher status of such products, the LOC may specify special labeling requirements. Some common examples include:

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<sup>13</sup> Bulk commodities are given a different group number (see later text regarding “Group 4” ingredients).

- **Rabbi's stamp:** Kosher certification of the product is valid only when an official stamp from the supervising *Mashgiach* appears on each unit of product.
- **Lot letter:** Kosher certification is valid (with or without a Kosher symbol appearing on the package) only when accompanied by an LOC from the supervising Rabbi specifically enumerating the lot number of the certified product.
- **Rabbi's signature:** Kosher certification of the product is valid only when each unit of product bears the written signature of the supervising *Mashgiach*.
- **Sticker:** Kosher certification of the product is valid only when an official sticker (often, and ideally, serially numbered) from the certifying agency appears on each unit of product.

In all the preceding cases, the absence of the special mark or indication is grounds to consider the product not Kosher certified.

**Group 4:** When dealing with bulk commodities that require a Kosher certification, it is impossible to “label” each unit of product. If a product is restricted to specific manufacturers, appropriate shipping documentation must be maintained to allow for verification of the source of the material.<sup>14</sup>

**Group 4TR:** The same as Group 4, but the product relies on technical research, as opposed to a formal Kosher certification, for approval.<sup>15</sup>

**Group 5:** When dealing with bulk commodities that must be supervised during their production and shipping, a specific letter accompanies each shipment. Such a letter typically includes the truck number, date, and seal numbers used with the delivery vehicle, and is signed by the supervising *Mashgiach*. Absence of such a letter is grounds to consider the product not Kosher certified.

### ***Non-Kosher Ingredients***

A non-Kosher ingredient, although not allowed in a Kosher-certified product, may nonetheless have certain uses in a Kosher-certified facility. The following classifications are used to clarify their appropriate status.

**Group 6—used as directed:** In general, processing non-Kosher ingredients in equipment renders such equipment unfit to process Kosher products unless it is subsequently *Kosherized*.<sup>16</sup> In certain situations, however, the use of some non-Kosher ingredients does not compromise the Kosher status of such equipment. The use of non-Kosher ingredients in noncertified products produced in a Kosher facility may therefore be allowed, provided that adequate safeguards are in place to preclude their use in Kosher-certified products. At a minimum, such ingredients must be deemed functionally incompatible with any Kosher product manufactured in the facility.<sup>17</sup> In addition, one or more of the following restrictions must also be in place, as well as an acceptable means of verification to that effect:

- The usage level of the non-Kosher ingredient in the non-Kosher product must be below a prescribed level.

<sup>14</sup> A Group 4 item is essentially the equivalent of a bulk Group 2 item.

<sup>15</sup> Essentially a bulk version of Group 2TR.

<sup>16</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a detailed discussion of Kosherization.

<sup>17</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” concerning compatible ingredients.

- The non-Kosher ingredient may not provide significant flavor to the non-Kosher product.<sup>18</sup>
- The non-Kosher ingredient is handled below a specified temperature.<sup>19</sup>
- The non-Kosher ingredient, if liquid, is not considered a very pungent ingredient,<sup>20</sup> does not remain in Kosher equipment for more than twenty-four hours,<sup>21</sup> or both.

Approval may also be given for a nonapproved ingredient to be used in an R&D setting, provided that appropriate safeguards are in place.

**Group 7:** No approval has been given for this ingredient to be in the facility.

In all cases, the certified company has the responsibility to implement procedures to monitor and enforce adherence to all these requirements.

## Ingredient Status

Kosher ingredients are differentiated in various ways, and the particular status enjoyed by a given ingredient may have significant impact on the Kosher status of the final product. An Approved Ingredient List will indicate these distinctions, and understanding them is critical to developing a Kosher program that addresses the needs of the manufacturer.

The following are the most important status categories by which Kosher ingredients are grouped.

**Meat/Dairy/Pareve:**<sup>22</sup> Because Kosher law prohibits the mixing of meat and milk, all Kosher ingredients are accorded one of the following three basic statuses. (Please note that these categorizations are used for both ingredients and finished products. They therefore serve as part of the consumer Kosher lexicon and are an integral part of a Kosher label.)

- A. **Meat:**<sup>23</sup> This category<sup>24</sup> includes Kosher species of red meat (such as beef, lamb, goat, and deer) and fowl (such as chicken, turkey, and duck). It also includes most products derived from them<sup>25</sup> (with the conspicuous exception of milk, which has an entirely different status). Examples of ingredients designated as Meat are chicken broth, chicken fat, and beef or mutton fat (tallow). Given the many processing restrictions innate to Kosher meat production, the availability of ingredients derived from meat and poultry is quite limited. In addition, the normative level of supervision required for the use of Kosher meat and meat-based ingredients in a plant- or food-service establishment is predicated upon the full-time presence of a *Mashgiach*. This requirement generally renders their use impractical in the context of Kosher production in a factory setting.

<sup>18</sup> Opinions concerning such situations differ as to the permissibility of using non-Kosher flavors in very small quantities.

<sup>19</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” concerning *B’lios* and temperature issues.

<sup>20</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” concerning certain sharp (*Cha’rif*) items.

<sup>21</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” concerning *Ka’vush*.

<sup>22</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a full explanation of these terms.

<sup>23</sup> See “The Story of Kosher Meat” in Chapter 17 for a discussion of Kosher meat.

<sup>24</sup> Also known by the Yiddish term *fleishig* (from the German *fleisch*—meat).

<sup>25</sup> Significant exceptions are gelatin (see “The Story of Gelatin” in Chapter 17) and L-cysteine (see “The Story of L-Cysteine” in Chapter 17).

Ingredients in this category are generally marked with the word “Meat” and may not be used in any product labeled Dairy<sup>26</sup> or Pareve.

Note that any foods that are processed on equipment that was used for meat products (and not Kosherized afterward) attain a Meat designation even if they do not contain any actual meat ingredients.<sup>27</sup> (Some certification organizations note the *Halachic* distinction between products that actually contain meat and those that are merely cooked in meat equipment<sup>28</sup> and label the latter with a “Meat Equipment” designation.)

- B. **Dairy:**<sup>29</sup> This category<sup>30</sup> includes milk from Kosher mammals (such as cows, sheep, and goats) as well as its derivatives (such as lactose, butter oil, whey, and casein). In addition, it includes all products containing milk derivatives (such as ascorbic acid standardized with lactose or “non-dairy” creamer<sup>31</sup> containing sodium caseinate).

As in the case of meat, any Pareve foods that are processed on equipment that was used for dairy products (and not Kosherized afterward) attain a Dairy designation even if they do not contain any dairy ingredients. (Some certifying organizations note the *Halachic* distinction between a dairy ingredient and a product that has merely been cooked on dairy equipment,<sup>32</sup> and label the latter with a “Dairy Equipment,” or “DE,” designation.)

A Dairy designation is significant for two reasons. First, such ingredients may not be used in any product labeled Meat or Pareve. Second, most Kosher dairy ingredients are not *Cholov Yisroel*,<sup>33</sup> and for this reason, ingredients marked “Dairy” are presumed to be non-*Cholov Yisroel*, unless otherwise indicated. Finished products containing dairy ingredients must also be marked as “Dairy”—and assumed to be non-*Cholov Yisroel*—which may be a significant consideration to consumers who insist on a *Cholov Yisroel* status for their dairy products.

- C. **Pareve (or parve):** The term *Pareve*<sup>34</sup> refers to all foods that are neither meat nor dairy. These include all fruits, vegetables, and minerals. In addition, fish,<sup>35</sup> honey, lac resin, and eggs are also considered Pareve.<sup>36</sup> From a practical perspective, Pareve ingredients are the most versatile because they can be used in both meat and dairy applications. By default, a Kosher designation that is not qualified (such as with a Meat or Dairy designation) may be assumed to be Pareve, although many products bear a Pareve

<sup>26</sup> Kosher veal rennet and gastric lipase, depending on how they are prepared, are notable and interesting exceptions, which may be used in dairy products (see Chapter 9, “The Dairy Industry”).

<sup>27</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a full discussion of the concept of *B’lios* (absorbed flavors) and their effect on equipment.

<sup>28</sup> According to *Ashkenazic* custom, such products may not be eaten together with dairy products, but may be consumed immediately before or after them. According to many *S’phardic* authorities, they may be eaten together with dairy products (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”).

<sup>29</sup> See Chapter 9, “The Dairy Industry,” for a detailed discussion of dairy products.

<sup>30</sup> Also known by the Yiddish term *milchig* (from the German *milch*—milk).

<sup>31</sup> See Chapter 9, “The Dairy Industry.”

<sup>32</sup> According to *Ashkenazic* custom, such products may not be eaten together with meat products, but may be consumed immediately before or after them. According to many *S’phardic* authorities, they may be eaten together with meat products (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”).

<sup>33</sup> See “Additional Specifications,” later in this chapter, and Chapter 9, “The Dairy Industry,” for a full discussion of this category.

<sup>34</sup> The term Pareve (or Parve) is a transliteration of an obscure Aramaic term, roughly meaning neutral.

<sup>35</sup> Fish, although Pareve, may be subject to special restrictions as noted in “Additional Specifications” later in this chapter.

<sup>36</sup> Exceptions may also be made for certain fermentation products, for which a dairy component may be deemed insignificant and the final product considered Pareve.



designation to allay any possible confusion, and this practice is to be encouraged.<sup>37</sup> An LOC will always indicate a Pareve status. Given a choice, using a Pareve ingredient where possible is usually advisable because its use would not prejudice the status of the finished product or compromise the status of equipment on which it was processed.

**Passover status:** During the holiday of Passover (*Pesach*), an additional superset of rules applies to permitted foods.<sup>38</sup> Such products are referred to as being “Kosher for Passover” (*Kasher l’Pesach*) and, because of their *Halachic* sensitivity, are generally produced under more stringent supervision. Most ingredients used in such productions are similarly produced under more stringent supervision, so the default status of an ingredient is assumed to be non-Passover approved. Although it is often routinely noted on an ingredient list, a Passover status is of no concern for the production of Kosher products not specifically designated for Passover use.

Some basic ingredients (and minimally processed food products) may be considered Kosher for Passover all year long without any special supervision. Common examples of such products may include certain basic chemicals, as well as some minimally processed fruit. One should not assume, however, that a “pure” Kosher product is automatically acceptable for Passover use. Undeclared “processing aids,” even if inherently Kosher or determined to be Kosher through the normal supervision process, may pose significant Passover concerns.

Ingredients and products that are approved for Passover typically have the letter *P* or the words *Kosher for Passover* appended to the Kosher symbol.

## Additional Specifications

Although the Dairy/Meat/Pareve designation is by far the most significant status category, the following special distinctions may also be noted on an ingredient list:

- **Fish:**<sup>39</sup> Although fish are considered Pareve, Kosher law<sup>40</sup> prohibits their being mixed together<sup>41</sup> or eaten with meat.<sup>42</sup> Although some exceptions should be noted,<sup>43</sup> most products that contain fish ingredients are marked “Fish” to alert the consumer as to this concern.<sup>44</sup>

<sup>37</sup> A ‘P’ designation generally refers to Passover and not Pareve.

<sup>38</sup> See Chapter 5, “Kosher for Passover,” for a discussion of Passover requirements.

<sup>39</sup> See Chapter 10, “The Fish Industry,” and “The Story of Fish” in Chapter 17 for detailed discussions of issues relating to Kosher fish.

<sup>40</sup> *Shulchan Aruch Y. D.* 117:2, based on a *Talmudic* concern that such a mixture is unhealthful. Although some authorities feel that this concern is no longer applicable, the predominant position of *Halachic* authorities is that this restriction is still valid, and Kosher certification is subject to this restriction.

<sup>41</sup> Most Kosher-certifying agencies follow the predominant opinion that processing fish on equipment does not compromise the status of such equipment, and subsequent nonfish productions, following normal sanitation procedures, on such equipment need not be accorded a “Fish” status.

<sup>42</sup> Some authorities (*Bais Yosef* 87:3 *et al.*) maintain that health concerns related to fish extend to mixtures of fish and milk. Certain segments of the Kosher-consuming community follow this position, a factor that may need to be taken into account in positioning products for that market. However, the predominant position of Kosher-certifying agencies is to follow the custom that such mixtures pose no Kosher concern.

<sup>43</sup> According to many opinions, Kosher fish gelatin is considered to have undergone a sufficient processing change so as to make it immune to this concern.

<sup>44</sup> The level of fish in the final product may also be significant. Some Kosher-certification agencies consider minor amounts of intentionally added fish to be insignificant (*Batul*) and do not require a “Fish” designation for such products (such as certain brands of Worcestershire sauce).

- ***Cholov Yisroel***:<sup>45</sup> This refers to milk that has been supervised by a *Mashgiach* from the time of the milking until final packaging to ensure that it has not been adulterated. The requirement for *Cholov Yisroel* in the context of modern dairying is a matter of some dispute, although a significant segment of the Kosher-consuming public does require all dairy products to be *Cholov Yisroel*. However, the prevailing practice in North America and many other parts of the world is to consider milk per se as an inherently Kosher product in countries where the industry is well regulated and where non-Kosher milk is more expensive than Kosher milk. As indicated previously, Kosher dairy products are assumed to be non-*Cholov Yisroel* unless specifically certified to the contrary. For a finished product to be certified *Cholov Yisroel*, all dairy ingredients therein must be either Pareve or *Cholov Yisroel*.
- ***Yoshon***:<sup>46</sup> This status refers to a special rule limited to one of the five major grains (wheat, rye, oats, barley, and spelt). The prevailing position of most certifying agencies outside Israel is to accept all such grain irrespective of any *Yoshon* concern.

In assessing the effects of any of the preceding statuses on a finished product, of critical importance is recognizing the following three considerations in determining the appropriateness of any given ingredient:

1. **Status of the finished product:** Each status category (for example, Meat/Dairy) is essentially a progressively limiting factor—a product using ingredients with differing Kosher statuses qualifies for the most restrictive status of any of the ingredients. For example, a cookie made with only Kosher ingredients—but which included a small amount of a non-Kosher emulsifier—would be considered non-Kosher, even though all predominant ingredients were Kosher.<sup>47</sup> Similarly, if that same cookie contained only Kosher Pareve ingredients—plus a small amount of Kosher milk—it would be classified as dairy, even though the dairy ingredient may play only a minor role in the product.
2. **Status of equipment:** The Kosher status of a product is determined both by the status of its ingredients and by the equipment on which it is processed. Decisions governing the choice of ingredients used in certain products may therefore be significant even when no Kosher status is needed for a given product. To ensure the Kosher status of equipment for the production of Kosher products, it may be expedient or necessary for *all* ingredients used in a production system to be Kosher. For example, it may be appropriate to use Kosher shortening in the production of bread destined for use in assembling (non-Kosher) ham sandwiches, where customers for other types of bread produced on the same system demand a Kosher product. A similar concern would apply vis-à-vis to dairy and Pareve considerations: Dairy ingredients might be avoided in an ice cream sandwich cookie even though it is destined for a dairy use, whereas other cookies produced on the same production system require a Pareve status.

In contradistinction to the determination of the status of the product itself, however, this concern may indeed be subject to considerations relating to the usage level of a

<sup>45</sup> See Chapter 9, “The Dairy Industry,” for a full explanation of this standard.

<sup>46</sup> See Chapter 7, “The Baking Industry,” for a full explanation of this standard.

<sup>47</sup> The concept of *Bitul* (insignificance) has no relevance to intentional formulations and processes (*ab intio*). However, it may be a factor in dealing with certain accidental or unintentional situations (*post facto*) (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a discussion of the concept of *Bitul* [nullification]).

particular ingredient. Under certain circumstances, the inclusion of minor amounts of an ingredient with a more restrictive status may not prejudice the status of the equipment on which it is processed. For example, including a small amount of milk in a cookie would cause such a cookie to be certified as Dairy. However, provided that the amount of milk was sufficiently minor (*Batul*), cookies containing all-Pareve ingredients subsequently baked on the same equipment may indeed be certifiable as Pareve. Such a caveat is subject to several significant limitations, such as an adequate method of guaranteeing that no dairy residue remains in the system, and each situation must be evaluated by a competent *Kashrus* authority.

The need to maintain a Kosher or less restrictive status for ingredients may also be based on “compatible ingredient” issues. Protocols governing Kosher certification typically entail the uniformity of Kosher standards for all ingredients that are deemed functionally interchangeable. As such, it may be appropriate to maintain a certain Kosher status for ingredients used in the production of non-Kosher (or more restricted Kosher) products if similar, functionally compatible ingredients are used in the production of Kosher (or less restricted) products.

3. **Proscribed combinations:** Certain combinations of otherwise Kosher ingredients are prohibited and therefore require that care be exercised in choosing ingredients for compliance with such constraints. For example, ensuring that no meat ingredients are mixed with dairy or fish ingredients is critical.

# 4 Rabbinic Etiquette

The successful management of a Kosher program requires an effective working relationship with the certifying entity and its designated representatives. Although many of the individuals involved in Kosher certification may not have had formal training in food technology, the successful integration of Kosher standards and requirements into mainstream food production attests to their ability to work effectively in this setting. As a rule, companies can look forward to working with individuals who are knowledgeable in the areas of Kosher law that pertain to their particular assignment, are eager to understand the company's operations and its needs, can explain Kosher requirements, and will work with the company to resolve issues in keeping the Kosher standards that they are charged with enforcing. As in most working relationships, communication and respect are the keys to success.

The Kosher supervisor assigned to monitor a production facility may function as a periodic inspector or as a full-time overseer of the Kosher program. The prerequisites for such an assignment are a commitment to adhere to Orthodox Jewish law in all its aspects, an interest and knowledge in the specific areas of Kosher law as it applies to the situation in which the supervisor is working, and an ability to deal with the specific technical issues in that setting. The supervisor may have a formal degree of Rabbinic ordination and thus have earned the title of *Rabbi* (literally, *teacher*). However, such a status is not required to serve as a Kosher supervisor. A Kosher supervisor is called a *Mashgiach*, which is the Hebrew word for supervisor, and many excellent *Mashgichim* (plural of *Mashgiach*) have no formal Rabbinic ordination.

They do, however, have the training appropriate to the handling of their responsibilities and seek Rabbinic guidance from their superiors whenever necessary. In all cases, the *Mashgiach* has the authority and training to ensure that all Kosher requirements are met, and for that reason the *Mashgiach* is often (appropriately) referred to as “Rabbi” as a recognition of this responsibility, irrespective of a formal degree of ordination.<sup>1</sup> Regardless of clerical position, every *Mashgiach* is committed to following Orthodox Jewish law and traditions. Such a commitment pervades his life and habits, and it is important for a company to be aware of those customs that affect the *Mashgiach*'s interaction with the company he supervises in order to ensure a smooth working relationship. Some of these rules are obligatory and therefore incumbent on every *Mashgiach*.<sup>2</sup> On the other hand, some are customs that were accepted only by certain communities and are not universally followed. Indeed, Jewish law recognizes differences in customs and *Halachic* interpretation (within the norms of Orthodox Jewish Law), and it may be perfectly acceptable for a *Mashgiach* to supervise the

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<sup>1</sup> The distinction between one who has formal Rabbinic ordination and a *Mashgiach* can be further illustrated in the employment of a woman as a *Kashrus* supervisor. Orthodox Jewish law does not provide for Rabbinic ordination of females, yet a woman may, under certain circumstances, function as a *Mashgiach*.

Although women generally do not function as *Mashgichim* in an industrial setting, they do often provide such services in food-service situations.

<sup>2</sup> Examples are maintaining a Kosher diet and avoiding work on the Sabbath and Jewish holidays.

Kosher status of a product that he may personally choose to avoid.<sup>3</sup> Wherever any religious practices create an issue, however, the best solution can be obtained by respectfully asking for an explanation of the *Mashgiach's* actions or request and working with him to resolve the issue to mutual satisfaction. The following sections explain some of the most common of these issues.

## **Shabbos**

The *Shabbos* (Sabbath) is the Jewish day of rest, which begins<sup>4</sup> on Friday evening at sunset and ends on Saturday night after three stars are visible. Traditionally, one begins observing *Shabbos* eighteen minutes before actual sunset, and the time it concludes (“when the stars become visible”) varies according to one’s particular custom (between forty-two and seventy-two minutes after sunset). Because the onset and ending of *Shabbos* follow seasonal and geographic vagaries, in the winter it can begin very early on Friday afternoon; in the summer it may end very late on Saturday night.

*Shabbos* is of paramount importance in Jewish life and is devoted to prayer and family. It is also a day on which no work is permitted; thus, a *Mashgiach* would not be available to provide Kosher supervision. In addition, the term *work* is defined very broadly—but also very specifically—in Jewish law. It includes traveling, riding in a car, using a telephone, and cooking—even turning on a light! Consequently, a *Mashgiach* must be able to finish his work early enough on Friday afternoon to return home before *Shabbos* begins. Barring situations of mortal danger, no exceptions are made to any *Shabbos* restrictions, so coordinating Friday afternoon work schedules well in advance is critical. Please also note that, barring life-threatening situations, a *Mashgiach* will not answer the telephone on *Shabbos*, so be prepared to rely on the answering machine if you need to contact him at that time. Please also note that merely observing is not considered “work,” and periodically a *Mashgiach* will arrange to walk to a factory or food-service facility that is operating on *Shabbos* to “spot-check” adherence to Kosher requirements.

## **Yom Tov**

In addition to *Shabbos*, during the course of the year Jews observe a series of holidays, each of which is known as a *Yom Tov* (literally, *good day*). While these holidays are fixed according to the Hebrew calendar, the date of their occurrence in the civil calendar changes each year because the Hebrew calendar is lunar based (with a solar adjustment) whereas the civil calendar is calculated on a solar year.<sup>5</sup> Many of these holidays enjoy restrictions

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<sup>3</sup> One example of such a situation is a *Mashgiach* who follows *Ashkenazic* customs to abstain from rice on Passover but nonetheless supervises Passover products that do contain it for use by *S'phardim* who permit it. Another example is a *Mashgiach* who eats only *Cholov Yisroel* products but nonetheless supervises regular for those who follow the *Halachic* opinions that permit their use.

<sup>4</sup> Although *Shabbos* is fixed to the seventh day of the week, it is nevertheless the subject of *Halachic* discussion as regards the location of the International Date Line. Many people therefore try to avoid being in Japan on Sunday (which may be “Saturday” according to Jewish law) or, conversely, in Hawaii on Friday for the same reason.

<sup>5</sup> A year in the common solar calendar has 365 days, or 366 in a leap year. A year in the Hebrew lunar calendar varies between 353 and 355 days. Further, to maintain seasonal synchronization, an intercalary month is added every two or three years, creating a year with between 383 and 385 days. Both calendars achieve virtual parity every nineteen years.

**Table 4.1.** Major holidays—restrictions similar to *Shabbos*

<i>Rosh ha'Shanah</i> (two days)	Jewish New Year	September
<i>Yom Kippur</i>	Day of Atonement	September/October
<i>Sukkos</i> <sup>6</sup> (seven days)	Feast of Tabernacles	October
<i>Sh'mini A'tzeres</i>	Eighth Day of Tabernacles	October
<i>Pesach</i> (eight days)	Passover	March/April
<i>Sh'vuos</i>	Feast of Weeks	June

similar to those of *Shabbos*, including their commencing at sunset on the afternoon of the prior day. Others are less restrictive, but many *Mashgichim* prefer to avoid working on those days. Tables 4.1–4.3 list common holidays and their approximate dates according to the civil calendar, as well as are a guide to how they may affect a *Mashgiach's* availability.

<sup>6</sup>The first and last days of *Pesach*, as well as the holidays of *Sh'vuos*, *Sukkos*, and *Sh'mini A'tzeres*, are celebrated for one day in Israel and for two days in the diaspora (all other countries). This factor also affects the number of intermediate days in *Sukkos* and *Pesach*.

The reason for this discrepancy is as follows. The Hebrew calendar is based on lunar months, each month beginning with the occurrence of the “new moon,” the astronomic event during which the moon passes between the sun and the earth and begins to become visible from the earth. Because the time period between one new moon and the next is approximately twenty-nine and a half days in length—and a “month” is calculated on the basis of full days—the lengths of the Hebrew months tend to alternate between twenty-nine and thirty days. Several factors, however, can upset this orderly progression. The interval between new moons is not exactly twenty-nine and a half days and indeed varies a bit from month to month. In addition, the Biblical basis for the determination of the occurrence of the “new moon” is through the testimony of witnesses. Witnesses who saw the new moon would appear in a special court in Jerusalem the next day and testify as to the sighting of the new moon, after which the court would officially declare that day *Rosh Chodesh*—the first day of the new month. It was therefore impossible to predict the onset of each month because there was no guarantee that the new moon would have been visible on its first night, either due to a cloudy sky or due to a lack of witnesses. (In such a case, the month would automatically start the next evening, even if no witnesses were available.) For the most part, this lack of predictability had little practical impact on daily life. When it came to the major holidays, however, this irregularity was far from academic. Both the *Shabbos* and the major holidays (*Rosh ha'Shanah*, *Yom Kippur*, *Pesach*, *Sukkos*, *Pesach*, and *Sh'vuos*) are similar in that “work” is prohibited. (All types of work are forbidden on *Shabbos* and *Yom Kippur*, whereas cooking is permitted on the other holidays.) They differ, however, in the method by which their occurrence is determined. *Shabbos* occurs every seven days and is not tied to the vagaries of the Hebrew calendar. The holidays, however, were tied to specific dates on the calendar, and their timing was therefore dependent on the fixing of the beginning of the month. Because the exact day *Rosh Chodesh* could not be predicted, the precise day on which each of the holidays fell could not be determined until the *Rosh Chodesh* of that month had been declared. To complicate matters, because the day of the *Rosh Chodesh* was determined in Jerusalem, it is necessary to disseminate the knowledge of the day of *Rosh Chodesh* to ensure the proper observance of the holidays.

From a practical perspective, it was impossible to advise anyone outside of Jerusalem of the exact date of *Rosh ha'Shanah*, because this holiday fell on the first day of the month (*Rosh Chodesh* itself). For this reason, everyone outside Jerusalem observed two days of *Rosh ha'Shanah* to avoid transgressing any prohibitions of performing work. All other holidays, however, fell later in their respective months, allowing sufficient time to send messengers throughout Israel to advise the populace of the exact day of *Rosh Chodesh*, thus allowing all communities in Israel to safely observe only one day for each holiday. Because of their distances from Jerusalem, however, communities outside Israel could not be assured of such timely information and were thus obligated to observe two days for each holiday, just as *Rosh ha'Shanah* is observed by all.

The destruction of the Second Temple and subsequent exile of most of the Jews from Israel created significant problems in maintaining the traditional calendar. Ultimately, Hillel II (fourth century CE) created a fixed calendar based on calculations of the lunar cycles, which is the calendar in use today. Although the exact dates of the holidays are now known to all, the *Talmud* notes that the requirement to keep two days of

**Table 4.2.** *Minor holidays*—less restrictive, but work is generally avoided

<i>Erev Pesach</i>	Passover Eve	March/April
<i>Chol ha'Mo'ed Sukkos</i> (five or six days)	Intermediate days of Tabernacles	October
<i>Chol ha'Mo'ed Pesach</i> (four or five days)	Intermediate days of Passover	April
<i>Purim</i>	Purim	March
<i>Tish'ah b'Av</i>	Ninth day of Av	August

**Table 4.3.** *Other holidays*—work is permitted

<i>Chanukah</i>	Hanukah	December
<i>Ta'anis Esther</i>	Fast of Esther (Purim Eve)	March

## Prayers

Every observant Jew prays three times every weekday, in the morning (after dawn), in the afternoon, and at night (after dark). The *Mashgiach* may therefore ask for access to a private area for prayer in the morning (if he needs to come to work before the proper time for morning prayers) and some time in the afternoon (if, as in the winter, the days are short and evening would come before leaving work).

## Shaking Hands

Every culture has its unique rituals of greeting, and in many Western countries, one involves shaking hands. Indeed, such a custom is common in Jewish communities. However, the Jewish concept of modesty restricts physical contact between members of the opposite sex. According to many authorities, this restriction extends to a common Western form of greeting—shaking hands. While some authorities do allow shaking hands where the other party may take offense, all agree that this should be avoided if at all possible. As such, a *Mashgiach* may be put in the awkward position of having a female offer her hand in greeting and being unable to reciprocate. He has many tactful ways of avoiding such a situation, but it is important to understand that the refusal to shake hands in such a situation should not be taken as an affront or as a sign of disrespect. It is, on the contrary, an indication of the importance assigned to the concept of modesty in Jewish life and the innate respect for the opposite gender.

## Vehicular Travel/Seating

Concerns of modesty similarly restrict other close contact with the opposite gender. Many *Mashgichim* prefer not to sit adjacent to a person of the other gender. Further, in many situations, *Halacha* restricts private meetings between a man and a woman, a concept known as *Yichud*. Again, a *Mashgiach* should tactfully advise a female colleague of any such

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the holiday outside Israel applies even in our times. Jews in Israel therefore continue to observe two days of *Rosh ha'Shanah* (and only one day for the other holidays), while Jews outside Israel observe two days for each holiday. Because of the difficulty of fasting for two days, however, an exception was made for the fast day of *Yom Kippur*, and only one day is observed.)

concerns, and solutions are generally easily found. As with shaking hands, such concerns should not be interpreted as signs of disrespect.

## Beards and Sidelocks

Many Jewish men follow the tradition of wearing a beard, based on the Biblical injunction<sup>7</sup> against shaving. In addition, some have a custom not to cut their sideburns (sidelocks, known as *Pay'os*), based on the same Biblical verses.<sup>8</sup> If a *Mashgiach* wears a beard or sidelocks, his entry into the factory may be subject to company policies regarding hair and beard coverings. In general, *Mashgichim* have absolutely no problem with conforming to any requirements concerning the method by which such coverings should be worn. Indeed, *Mashgichim* expect to be subject to all health and safety requirements in a factory, and hair coverings are no exception. This matter may become an issue, however, if the company has a blanket “no-beard” policy. When an exception for Rabbinic supervision cannot be made, the company may ask for the services of a *Mashgiach* who does not wear a beard.<sup>9</sup>

## Clothing

Rabbis have no “uniform” and many dress in conventional business attire. However, certain communities maintain a distinctive style of dress, reminiscent of attire worn hundreds of years ago. The dictum “not to judge a book by its cover” certainly applies in this situation, and an out-of-style frock often clothes someone fully conversant with the nuances of modern food processing. As in the case of hair coverings, *Mashgichim* are happy to comply with all safety and hygiene requirements, such as wearing factory-provided jackets or cloaks, foot coverings, goggles, steel-toed shoes, and other safety equipment. However, should a *Mashgiach* choose to remain in his distinctive clothes when factory rules permit, be assured that he does so because he feels more comfortable in that attire—as hot or as uncomfortable as it may seem to the observer. (*Mashgichim* are used to it.)

## Yarmulke and Tzitzis

While we have noted that many Rabbis wear conventional business attire, two articles of clothing are almost routine features of dress for most Orthodox Jewish men. The first is the *Yarmulke*, a *Yiddish* term<sup>10</sup> for the skullcap (*Kippa* in Hebrew) that is customarily worn at all times. While removing one’s head covering may be considered a sign of respect in many Western cultures, a *Yarmulke* signifies humility in Jewish tradition<sup>11</sup> and is never removed.<sup>12</sup>

<sup>7</sup> *Leviticus* 19:27, 21:5.

<sup>8</sup> Technically, this prohibition prohibits only the total removal of the sideburn. Many people, however, follow the custom of not cutting the locks at all.

<sup>9</sup> Although Jewish men are prohibited from shaving, this is defined as removing facial hair with a razor. According to many authorities, electric razors, which cut the hair as opposed to actually shaving it, are deemed to be in the category of scissors and therefore permitted.

<sup>10</sup> Its traditional etymological derivation is as a mnemonic of the Aramaic phrase *Yarei Malka*—“one who fears the King” (based on *Shabbos* 156b and *Shulchan Aruch O.C.* 2:6).

<sup>11</sup> Indeed, many have a custom to don a dress felt or fur hat at all formal occasions.

<sup>12</sup> Although removing one’s head covering is a virtual requirement in court (both legal and royal) and other solemn public venues, the wearing of the *Yarmulke* in such arenas has long been recognized and respected



Another distinguishing article of clothing is called *Tzitzis*—literally, “tassels.” The Bible<sup>13</sup> teaches us that when wearing a four-cornered garment, one must place special tassels in each of the four corners. To fulfill this obligation, Orthodox Jewish men traditionally wear a tasseled four-cornered garment,<sup>14</sup> generally *under* the outer shirt.<sup>15</sup> Although there is no *requirement* for any part of this garment to be visible, many have a custom to allow the *Tzitzis* strings themselves to be noticeable at all times, thus fulfilling the Biblical phrase relating to *Tzitzis*, “and you shall see them and you shall remember all of the commandments of the Lord and fulfill them.”<sup>16</sup>

### **Food for the *Mashgiach***

Kosher requirements apply at all times, and a *Mashgiach* eats Kosher food exclusively, regardless of the setting in which he finds himself. For this reason, a *Mashgiach* often brings his own food with him when traveling, especially to areas where he cannot expect to find a Kosher community.

Also important to note is that many aspects relating to Kosher food involve personal customs and stringencies. A *Mashgiach* may refrain from eating at a “Kosher” restaurant because the Kosher program in the restaurant does not meet his standards, or his personal customs dictate that he does not eat outside his own home. Although an invitation to dinner at a Kosher restaurant may certainly be appropriate, one should not be offended if the offer is declined. Similarly, a *Mashgiach* may be invited to a company meal or banquet, especially if he is an honored guest in a foreign land or for some other special event. In some situations, the *Mashgiach* may find accepting such an invitation appropriate—but only if he will be able to maintain his Kosher diet. In other situations, the *Mashgiach* may feel uncomfortable, and no one should be offended if he politely demurs. (As indicated previously, a *Mashgiach* may not even wish to partake of products that he supervises when his personal customs or *Halachic* preferences so require.)

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as an expression of humility and religious observance. Indeed, while allowance in the military had been the subject of significant legal wrangling, it was ultimately sanctioned by an act of Congress.

<sup>13</sup> *Numbers* 15:37–41.

<sup>14</sup> This garment is technically called *Arba Kanfos*—literally, “four corners.”

<sup>15</sup> In some communities, however, this garment is worn on top of the shirt and under the jacket.

<sup>16</sup> *Ibid.*

# 5 Kosher for Passover

The Jewish people celebrate the holiday of Passover on the fifteenth day of the Hebrew month of Nissan, usually corresponding to the end of March or the beginning of April.<sup>1</sup> An aspect unique to this holiday is that the *Kashrus* of food eaten during this holiday period is subject to an additional set of Kosher requirements that is superimposed on conventional Kosher food law. The Passover holiday period that is subject to “Kosher for Passover” regulations begins at about 10 a.m. on Passover eve and continues through the entire eight days of the holiday (seven days in Israel). Although such a short period may seem trivial in terms of annual sales, the importance of “Kosher for Passover” far exceeds the limited duration of the holiday. It has been estimated that 40 percent of the food products sold to the Kosher Jewish market are for use on Passover, and such products are often the major product lines for many companies that specialize in serving the Kosher market for distinctly Jewish foods. Understanding the requirements for products certified as Kosher for Passover is therefore important, in terms of both ingredient and production considerations.

The concept of “Kosher for Passover” centers around one basic tenet: the prohibition of “*Chometz*”<sup>2</sup> and customs related to this prohibition. *Chometz* is defined as any of the five major types of grain<sup>3</sup> (wheat, rye, oats, barley, and spelt) after they have begun to “leaven.”<sup>4</sup> As they relate to Passover, such leavened products are considered “non-Kosher” and may not be used in the production of foods to be eaten during that holiday.<sup>5</sup> In addition, their use

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<sup>1</sup> Although the Jewish calendar is based on a system of lunar months, and a year so measured is approximately eleven days shorter than the civil solar year, adjustments (that is, an extra month) are periodically made in the Jewish calendar to ensure that *Nissan* will always fall sometime in the spring.

<sup>2</sup> The *Torah* (*Exodus*, chapters 12 and 13, and *Deuteronomy*, chapter 16) explicitly prohibits *Chometz* and *Leaven* (sour dough used for leavening) on Passover. The basis for this prohibition is expressed in *Deuteronomy* 16:3, “Do not eat *Chometz*, seven days you shall eat *Matzah* (unleavened bread), the bread of affliction, because in haste did you leave Egypt, in order that you shall remember the day you left Egypt all the days of your life.” The *Torah* relates that the exodus from Egypt took place in such haste that the children of Israel did not have time to let their bread rise and so ate “unleavened bread” (see *Exodus* 12:39). To commemorate this event, the Jewish people are enjoined from eating *Chometz* and are commanded to eat *Matzah* during this holiday.

<sup>3</sup> Only these five types of grains can become *Chometz*, and prohibited as such on Passover. Other staple commonly considered grains (for example, corn, rice, and soybeans) are subject to the rule of *Kitniyos* (see the section “*Kitniyos*”).

<sup>4</sup> The term *leaven* is neither scientifically nor *Halachically* precise. A more accurate definition of *Chometz* refers to grain or flour that had begun to undergo a chemical change after being exposed to water. This process, called *Chimutz*, generally begins at least eighteen minutes after the two are mixed. Although commonly referred to as “fermentation,” it is not specifically tied to the action of yeast—sprouted grain is a “yeastless” *Chometz*.

<sup>5</sup> Additionally, a Jew may not own or derive any benefit from *Chometz* during the Passover holiday. This requirement has two interesting ramifications. First, a Jew must burn or otherwise remove all *Chometz* from his house prior to the onset of Passover. When large amounts of *Chometz* are involved, however, the custom is to allow the Jew to sell his *Chometz* to a non-Jew, thereby avoiding the prohibition of “owning” *Chometz*. Such a sale must be legally valid, although the non-Jew may choose to sell the *Chometz* back to the Jew after the Passover holiday (see below, concerning Jewish-owned companies during Passover). Second, a Jew may not feed *Chometz* to his animals during Passover. Pet food must be “Kosher for Passover” or, at least, *Chometz* free. (*Kitniyos*, however, poses no concern in this regard.)

will compromise the otherwise Kosher for Passover status of equipment on which they are processed (just as non-Kosher ingredients compromise the equipment on which they are processed). The only acceptable use of the such grains involves their being processed into unleavened bread, which we call *Matzah*,<sup>6</sup> for which flour that has been specially supervised to ensure that it has not come into contact with water is baked in a manner that ensures that it could not become *Chometz*.<sup>7</sup>

From a practical perspective, therefore, Passover requirements proscribe the use, other than as *Matzah*, of the five major grains or any of their derivatives. Such *Chometz* ingredients are ubiquitous and, under certain circumstances, even trivial amounts of *Chometz* may compromise the Kosher for Passover status of a product.<sup>8</sup> The level of supervision that is required for Passover productions is therefore often far more stringent and rigorous than that typically required for the production of other Kosher products for the rest of the year.

In addition to the prohibition of *Chometz*, foods known as *Kitniyos*<sup>9</sup> are generally precluded from use in Passover foods accorded to Ashkenazic custom.<sup>10</sup> Although the word *Kitniyos* may be translated as “beans,” it encompasses a number of commodities commonly considered “grain,” albeit not of the five major grains that are subject to the rules of *Chometz*. Such *Kitniyos* quasi-grains include corn (maize), soy, rice, beans, lentils, and peanuts; these foods, as well as most of their derivatives,<sup>11</sup> may not be used as ingredients in foods certified for Passover. Note, however, that *Chometz* and *Kitniyos* are not synonymous. *Chometz* is subject to a Biblical prohibition that is universally accepted in Kosher law and applies to virtually all its forms and derivatives, and equipment in which it is processed is considered “non-Kosher” vis-à-vis Passover food production. *Kitniyos*, although not permitted for use in Passover foods, is not *Chometz*. Rather, the prohibition of *Kitniyos* is based on long-standing custom and, although such custom has the force of *Halacha*, applications of this rule may differ significantly from those of *Chometz* (see the section “*Kitniyos*” later in this chapter).

## Passover Ingredient Classification and Terminology

In addition to conventional Dairy, Meat, and Pareve designations, all food for Passover fits into one of the following classifications:

<sup>6</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

<sup>7</sup> See “The Story of *Matzah* (Unleavened Bread),” in Chapter 17, for a full discussion of different types of *Matzah* and the requirements relating to their production.

<sup>8</sup> See “The Story of *Kitniyos*,” in Chapter 17, for a full discussion of the *Halachic* basis of, and differing customs relating to, this rule and the products subject to it.

<sup>9</sup> In certain situations, normative Kosher law allows for the Kosher status of a product to remain unaffected even if an insignificant level of non-Kosher material were inadvertently mixed into it (*Bitul*; see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”). In certain situations, however, *Chometz* may not be considered *Batul* even at extremely low levels. Great care must therefore be exercised in supervising foods that are certified Kosher for Passover.

<sup>10</sup> According to many *S'phardic* customs, *Kitniyos* pose no Passover concern whatsoever, and they and their derivatives may be consumed on Passover without compunction. Virtually all Kosher certification agencies, however, follow the *Ashkenazic* custom and prohibit *Kitniyos*, and this approach is assumed for the purposes of this discussion.

<sup>11</sup> See the section “*Kitniyos*,” concerning several significant exceptions regarding *Kitniyos*, derivatives.

<b>Inherently Kosher for Passover</b>	Primarily unprocessed foods, such as raw milk, fish, meat, fruit, and vegetables (vegetables that are classified as <i>Kitniyos</i> excepted, see below).
<b>Certified Kosher for Passover—nongrain based—regular production</b>	Processed foodstuffs that require Passover certification, but are produced as Kosher for Passover all year long.
<b>Certified Kosher for Passover—nongrain based—special production</b>	Processed foodstuffs that are produced specifically for Passover use. Often, such products are replacements for non-Passover versions.
<b>Matzah</b>	Unleavened bread made from Passover-certified flour from any of the five grains (wheat, rye, oats, barley, and spelt) and prepared under conditions that prevent the creation of <i>Chometz</i> .
<b>Gebrochts</b>	Products containing cooked or baked <i>Matzah</i> or <i>Matzah Meal/Matzah flour</i> .
<b>Matzah A'shirah (Egg Matzah)</b>	<i>Matzah</i> produced with Passover flour and a liquid other than water.
<b>Kitniyos</b>	A group of non- <i>Chometz</i> starches and vegetables (and their derivatives) that are proscribed from use on Passover by <i>Ashkenazic</i> custom.
<b>Chometz</b>	Any of the five major grains (or their derivatives) that have—or may have—begun the process of <i>Chimutz</i> .

The classification of ingredients and their acceptability for Passover productions is the sole purview of the certification agency that certifies the finished product. Many factors are evaluated in determining which ingredients, and under what conditions, may be considered acceptable. Understanding the concepts behind each of the classifications is helpful, however. The following sections briefly discuss the classifications presented in the preceding table and the issues each presents.

### ***Inherently Kosher for Passover***

The vast majority of basic foodstuffs (other than grain) are inherently Kosher for Passover. These include raw meat, milk, eggs in the shell,<sup>12</sup> and fresh fruit and vegetables, as well as basic minerals such as salt—provided that they do not contain non-Passover additives or are not processed on equipment used for non-Passover items. Granulated white sugar is also generally considered acceptable for Passover, as are most vegetables, although some are subject to the rules of *Kitniyos* (see the later discussion of *Kitniyos*). Grains (that is, wheat, rye, oats, barley, and spelt) are subject to concerns of *Chometz*, however, and are acceptable only if they are processed as *Matzah*, in which case they do not become *Chometz*.<sup>13</sup>

Even minimal processing may compromise the erstwhile “inherently Kosher for Passover” status of these foods, however. The following is a brief list of products that can be compromised with *Chometz* or *Kitniyos* additives or processing aids:

<sup>12</sup> Some have a custom of purchasing eggs and milk prior to Passover, to avoid concerns of the animal from which it was obtained, eating *Chometz* on Passover, and contaminating the product. In addition, some have a custom to use “unwashed” eggs, because they are concerned that the egg-washing solution may contain *Chometz* (for example, alcohol).

<sup>13</sup> It is *theoretically* possible to process these grains into non-*Chometz* material that is not *Matzah*, either by scalding or by baking whole kernels of grain prior to cooking them. Such processing alters the grain in such a way that “*Halachic*” *Chi'mutz* (the process of becoming *Chometz*) cannot take place. However, the *Shulchan Aruch* (*O.C.* 454:3 and 463:3) rules that such procedures are unacceptable today because we are not sufficiently familiar with the procedures necessary to avoid the creation of *Chometz* in such situations.

- **Milk:** Regulations may require the addition of vitamins blended with non-Passover polysorbates. In addition, regular milk may be pasteurized on equipment that is used for chocolate milk that contains *Chometz* malt flavoring.
- **Peeled raw potatoes and leafy vegetables:** The solution used to wash these products may contain non-Passover citric acid.
- **Fresh fruit and vegetables:** The polish (wax) used on a number of fruit and vegetables (for example, cucumbers, apples, and peppers) may contain non-Passover emulsifiers and other chemicals. Some people therefore have a custom of carefully washing or peeling all such vegetables for Passover use.
- **“Pure” spices:** Although a spice may not contain any other ingredients, it may nevertheless be blended and packaged on equipment that is also used for spice, seasoning, and spice blends that contain non-Passover ingredients (such as flour, hydrolyzed vegetable protein, and yeast extract).
- **Decaffeinated coffee and tea:** The decaffeination process may involve the use of ethyl acetate derived from non-Passover ethyl alcohol.
- **Dried fruit:**<sup>14</sup> Fruit may be dried on equipment that is used for the processing of non-Passover items. In addition, they may contain starch, oils, or stearates to aid in the drying process.<sup>15</sup> They may also contain non-Passover ascorbic acid as a preservative.
- **Raw nuts:** Raw nuts may be preserved with butylated hydroxyanisole and butylated hydroxytoluene that have been blended with non-Passover oils.
- **“Pure” fruit juices:** Some types of juices may be processed with non-Passover pectinase and amylase enzymes. (Orange juice, however, is free of this concern.)
- **Iodized salt:** Iodized salt may contain non-Passover dextrose as part of the iodization stabilization process.
- **Confectioners sugar:** This type of sugar may contain non-Passover corn or wheat starch to prevent caking.
- **Honey:** Some manufacturers blend corn syrup with honey.

### ***Certified Kosher for Passover (Nongrain Based)—Regular Production***

Many manufacturers have recognized the importance of a Kosher for Passover designation for their products and have arranged for such a certification for the standard production of many of their items. One should recognize that these products are not “inherently” Kosher for Passover; they potentially pose significant Passover concerns. However, the manufacturers of such products have agreed to ensure that all Passover requirements are met in their year-round production. Some of these items, such as raisins and instant coffee, are only minimally processed, and maintaining a Kosher for Passover status for such items may not pose a significant challenge. Other products, such as citric acid, involve significant levels of processing but a limited set of starting materials so that keeping the equipment Kosher for Passover at all times is the more cost-effective route. Nonetheless, reliably ensuring the Kosher for Passover status of such products is possible. Common examples of products manufactured as Kosher for Passover on a year-round basis include:

<sup>14</sup> Many have a custom to avoid dried fruits on Passover because it was common to sprinkle flour on them to hasten the drying process and to dry them in ovens that were used for *Chometz* (see *Rama O.C.* 467:8).

<sup>15</sup> By definition, the rules of *Kitniyos* apply only to vegetables and not to fruit.

- **Citric acid:** Along with other organic acids such as erythorbic and ascorbic, citric acid is produced through the controlled fermentation of sugar. Several manufacturers use non-*Chometz* glucose for this purpose (see the section “*Kitniyos*,” concerning the use of glucose derived from *Kitniyos* for such productions). Note that some citric acid (as well as erythorbic and ascorbic acid) is produced from wheat-derived glucose overseas and is *Chometz*.
- **Wine and grape juice:** Virtually all Kosher wine and grape juice is produced under Kosher for Passover certification.
- **Cheese:** Virtually all Kosher hard cheese (for example, cheddar, Swiss, and American) is produced as Kosher for Passover. Soft cheeses (such as cottage cheese and cream cheese) generally require special Kosher for Passover certification.
- **Raisins and dried fruit:** These products are often produced in equipment dedicated to fruit and without compromising additives.
- **Virgin olive oil:** Olives are not *Kitniyos*,<sup>16</sup> and olive oil is therefore approved for Passover use. Such oil may be certified for Passover on an ongoing basis when the equipment is used exclusively for olive oil and no non-Passover enzymes or other processing aids are used.
- **Pure spices:** If manufacturing facilities are restricted to pure spices, they may be certified for Passover on an ongoing basis. Certain spices (such as mustard) are considered *Kitniyos*, however.<sup>17</sup>

### ***Certified Kosher for Passover (Nongrain Based)—Special Production***

Many products and ingredients pose significant Kosher for Passover concerns, and Passover versions of such products require special supervision. Common examples include:

- **Alcohol:** Ethyl alcohol may be produced through the fermentation of *Chometz* or *Kitniyos*.<sup>18</sup> Petroleum-derived alcohol may be permitted, as well as alcohol derived through the fermentation of molasses, fruit, tapioca, or potato starch.
- **Flavors:** Flavorings typically contain non-Passover components. Ethyl alcohol is often used as a carrier in flavors, and derivatives of alcohol are common flavoring components.
- **Flavor extracts:** Many botanical extracts use ethanol as a solvent.
- **Enzymes:** Most enzymes are produced by the controlled fermentation of sugar and proteins. Many sources of sugar (such as dextrose) may be *Chometz* (see the section “*Kitniyos*,” concerning the use of *Kitniyos*-based sugars and proteins for such fermentations).
- **Oils and fats:** Many commonly used oils, such as soy, corn, and canola, are considered *Kitniyos* and thus unsuitable for Passover productions. Alternatives include tropical oils

<sup>16</sup> See “The Story of *Kitniyos*,” in Chapter 17, for a list of spices and the reasons that they are generally not acceptable for Passover use.

<sup>17</sup> Although some authorities permit certain products derived through the fermentation of *Kitniyos* (such as citric acid and enzymes; see the section “*Kitniyos*”), virtually none permit alcohol produced by the fermentation of *Kitniyos*.

<sup>18</sup> Most authorities also accept cottonseed oil, which is the most common oil used in North America for Passover productions. However, many certifications in Israel, as well as some *M'hadrin* certifications (those adhering to exceptionally strict standards) in North America, do not. Most certifications in North America do not accept peanut or sunflower oil for Passover.

(palm, palm kernel, and coconut), olive oil, walnut oil, and cottonseed oil,<sup>19</sup> although they may require special Passover certification to ensure that additives (such as citric acid) are Passover approved. In addition, some certifications rule that the equipment used to process *Kitniyos* must be Kosherized for Passover productions, in which case equipment used to process *Kitniyos* oil must be Kosherized prior to the production of a Passover-approved product.

- **Starch:** Wheat starch is *Chometz*, whereas cornstarch is considered *Kitniyos*. Potato and tapioca starch are acceptable. Passover certification is required for these products, however, because they are often processed on the same equipment as are non-Passover starches.
- **Dextrose and other starch-based sweeteners:** Sweeteners produced by the hydrolysis of starch require reliable Passover certification to ensure that both the starch and the enzymes used are Passover approved.
- **Sugar replacers and artificial sweeteners:** Sweeteners based on components derived through fermentation (such as aspartame) must be carefully supervised to meet Passover requirements.<sup>20</sup>

### **Matzah (*Unleavened Bread*)**

This category refers to a type of bread made from flour from any of the five major types of grains that has been mixed with water and baked before any leavening (*Chimutz*) can take place. Other than *Matzah* and products made from it, no other form of these grains may be eaten on Passover.

*Matzah* contains but two ingredients: flour and water. The flour must be specially supervised and prepared to ensure that it does not come into contact with water prior to the actual *Matzah* production, because by doing so it may have become *Chometz*. In addition, the dough preparation and baking process must be carefully monitored and optimized to ensure that the dough does not begin to ferment and become *Chometz*. To address such issues, several different types of *Matzah* are produced, differing primarily in the manner by which the flour is supervised and the dough is prepared and baked. From a practical perspective, virtually all *Matzah* and *Matzah* products used in an industrial setting would be produced by machine from standard Passover flour (known as *P'shutos*).<sup>21</sup> Many people, however, prefer to use *Matzah* produced by hand or from specially supervised flour and avoid eating standard *P'shutos Matzah* or products containing it.

Note that the term “*Matzah*” is both a *Halachic* term and a marketing identity, and the two may not always coincide. Many *Matzah* manufacturers produce both Passover and non-Passover versions of their product; the non-Passover versions are made from non-Passover flour and are not produced in a manner that prevents the creation of *Chometz*. Such “*Matzah*” products are marked “Not for Passover Use” and should be considered *Chometz*.<sup>22</sup>

<sup>19</sup> Consumer products based on such sweeteners are typically produced by diluting the very intense sweetener with maltodextrin (or lactose). As such, the production of Kosher for Passover versions of such products must address the status of the diluents as well as the sweetening agent itself (see “The Story of Sugar Replacers” in Chapter 17).

<sup>20</sup> See “The Story of *Matzah* (*Unleavened Bread*),” in Chapter 17, for a discussion of different types of *Matzah*.

<sup>21</sup> Indeed, some companies even add malt—which is quintessentially *Chometz*—to their non-Passover *Matzah*.

<sup>22</sup> Any fermentation of Passover *Matzah* is *Halachically* considered “*sirchon*” (rot) and not *Chometz*.

## Gebrochts

After being properly baked, *Matzah* cannot subsequently become *Chometz*.<sup>23</sup> Many people therefore eat Passover products made with *Matzah* that has been broken or ground into “flour” (“*Matzah meal/Matzah cake flour*”), which is then cooked or baked. Such products are called *Gebrochts*, literally “broken (pieces of *Matzah*)” in Yiddish, and a large variety of Passover baked goods are based on such *Matzah* meal (or “cake meal,” which is *Matzah* meal ground to finer consistency).<sup>24</sup>

On the other hand, many communities maintain the custom of not eating *Gebrochts*.<sup>25</sup> Although this custom is by no means universal, many manufacturers of Passover products choose to avoid the use of *Matzah* meal, thereby ensuring that their products are acceptable to the largest possible market. The designation “non-*Gebrochts*” on a Passover product indicates that it complies with this custom.<sup>26</sup>

## Matzah A'shirah<sup>27</sup> (Egg Matzah)

The creation of *Chometz* requires both flour and water. Pure fruit juice, eggs, and oil are not considered “water” in *Halacha*, and they will not support the process of *Chimutz*. (Any fermentation that takes place without water is considered *sirchon* [“rot”] and not *Chometz*.) Foods produced from dough made with flour and such liquids (which have not been adulterated with water that was not naturally contained therein) are not *Chometz* and may be eaten on Passover. Ashkenazic custom, however, restricts the use of such *Matzah*

<sup>23</sup> Care must be taken, however, to ensure that the *Matzah* meal used for such purposes is fully baked. Some authorities have noted a possible tendency to “underbake” *Matzah* destined for processing into such cake meal to ensure a whiter and cleaner color. Should *Matzah* be incompletely baked, it may indeed become *Chometz*.

<sup>24</sup> Technically, such products are referred to as *Matzah Sh'ruyah* (“soaked *Matzah*”) because it is this aspect of their preparation that forms the basis for the custom not to eat it. According to most opinions, the custom is based on a concern that perhaps some of the flour in the *Matzah* dough had not been mixed properly and had remained as pockets of unmixed flour in the *Matzah*. Should such bits of flour subsequently come into contact with water, as would be the case when *Matzah* meal is used in cooking, they could become *Chometz*. Others contend that the custom is based on a desire to avoid actions that appear to be inappropriate. Because *Matzah* meal and flour are similar in both appearance and functionality, the use of ground *Matzah* might be confused with flour, thereby transgressing the injunction of *Mar'is A'yin* (the appearance of impropriety) (see “The Story of *Matzah* (Unleavened Bread)” in Chapter 17).

<sup>25</sup> Non-*Gebrochts* products may also enjoy an additional marketing advantage. Virtually all commercially available *Matzah* meal is produced from *P'shutos* (standard) Passover *Matzah*. Although such *Matzah* is reliably certified as Kosher for Passover and accepted by the majority of customers, a significant segment of the Kosher for Passover market prefers *Matzah* produced under different standards (for example, “hand *Matzah*” or “eighteen-minute *Matzah*”). Products formulated without *Matzah* avoid such concerns and appeal to a greater market segment.

<sup>26</sup> The term *Matzah A'shirah* means “rich bread” and is used to emphasize the distinction between it and regular *Matzah*—the “bread of poverty (affliction).” Although *Matzah A'shirah* may be made with any liquid other than water, eggs were historically used for this purpose. As a result, the term “egg *Matzah*” came into common usage despite the fact that such *Matzah* is generally produced today with apple or grape juice and may be labeled as such rather than as “egg *Matzah*.” Although *Matzah A'shirah* may be Kosher for Passover (subject to the restrictions indicated in the text), it is not true *Matzah* and may not be used to fulfill one's obligation of eating a minimum amount of *Matzah* at the *Seder*. See “The Story of *Matzah* (Unleavened Bread),” in Chapter 17, for the reasoning behind this rule.

<sup>27</sup> This custom is based on a concern that although pure fruit juice may not create *Chometz*, a mixture of fruit juice and a small amount of water will do so and in a shorter period than would otherwise be required for water alone. Consequently, concern exists that the fruit juice may have been contaminated with water and the *Matzah* may thus have unwittingly become *Chometz*.



to children, the aged, and the infirm,<sup>28</sup> and boxes of egg *Matzah* and other similar products typically bear an advisory of this fact. Egg *Matzah* is typically sold in both regular and whole-wheat varieties and is often used as the base for “chocolate-covered *Matzah*.”

## Kitniyos

The term *Kitniyos* literally translates as legumes and refers to the *Ashkenazic*<sup>29</sup> custom of not eating beans, rice, and corn (maize) on Passover.<sup>30</sup> Note, however, that although one may not eat them, such products cannot become *Chometz* because they are not true grains in the *Halachic* sense. (Their fermentations are classified as *sirchon*.) They are therefore subject to the following leniencies:

- The prohibition of *Kitniyos* applies only to eating the beans or their derivatives. According to all customs, a Jew is permitted to own and derive benefit from *Kitniyos*. Jewish-owned companies that process *Kitniyos* (as opposed to *Chometz*; see “Jewish-Owned Companies” later in this chapter) are therefore not required to divest themselves of this material during Passover.
- Children and those who are ill (even if the illness is not life threatening<sup>31</sup> or even a serious ailment) are allowed to eat *Kitniyos*. Medicines are generally considered exempt from concerns over *Kitniyos*, although some manufacturers produce over-the-counter preparations (such as aspirin) that are *Kitniyos* free.
- According to many authorities, *Kitniyos* differ from most other prohibited foods in that they do not compromise the Kosher status of equipment on which they are processed. Many *Kashrus*-certifying organizations allow for the production of Kosher for Passover foods on equipment normally used for *Kitniyos*-based products (for example, corn syrup and soybean oil), without requiring a Kosherization of the equipment. Such a dispensation is contingent, however, on verification that no *Chometz* ingredients were so processed.
- Many authorities rule that certain derivatives of *Kitniyos* that are considered “significantly changed”<sup>32</sup> may be considered Kosher for Passover. Included in this category are enzymes, organic acids,<sup>33</sup> and amino acids<sup>34</sup> derived through fermentation.<sup>35</sup> Some also extend this dispensation to ingredients that undergo significant chemical changes, such as those involved in the reaction of sorbitol and fatty acids to produce polysorbates.

<sup>28</sup> Although many Jews of *S’phardic* heritage do not follow the custom of *Kitniyos* and eat rice, beans, and corn (see “The Story of *Kitniyos*,” in Chapter 17), products certified Kosher for Passover in virtually all countries today follow *Ashkenazic* custom and eschew their use.

<sup>29</sup> This custom grew out of a concern that “grains” other than the five major varieties were being used to produce flour, and this flour could be confused with the flour from true grain.

<sup>30</sup> According to *Halacha*, health concerns involving the possible danger to a person’s life preempt virtually all religious restrictions, including the prohibition against eating *Chometz* on Passover or any other non-Kosher food. Indeed, one is not permitted to be stringent on such matters and forego the use of medically required foods or medicines in order to comply with normative Kosher requirements.

<sup>31</sup> The term commonly used to refer to such items is *Kitniyos she’Nishtaneh* (literally, “*Kitniyos* that has been transformed”), although such terminology may be less than precise in describing the underlying *Halachic* basis for this leniency. See “The Story of *Kitniyos*,” in Chapter 17, for a full discussion of the *Halachic* rationale for this ruling.

<sup>32</sup> For example, citric, erythorbic, and ascorbic acids.

<sup>33</sup> For example, phenylalanine, as used in the manufacture of aspartame, and glutamic acid, as used in the manufacture of MSG (monosodium glutamate).

<sup>34</sup> As noted previously, alcohol derived through the fermentation of *Kitniyos* is generally not considered subject to this leniency.

<sup>35</sup> See “The Story of Sugar and Sugar Alcohols” in Chapter 17.

It is critical to note, however, that this allowance applies only to *Kitniyos*. Derivatives of actual *Chometz*, no matter how changed or altered, cannot be permitted for Passover use. This concern is of special note in that wheat-derived glucose is used as a substrate for fermentation in many countries. Ingredients produced through its fermentation (for example, citric acid and enzymes) are not acceptable for Passover use. Similarly, sorbitol manufactured from wheat-derived glucose may not be used to produce Passover polysorbates.

In addition, allowances related to *Kitniyos* assume that the material being processed is indeed *Kitniyos* and contains no *Chometz*.

- “Corn” syrup produced using enzymes that are *Chometz* (such as barley amylase) is generally not considered subject to the leniencies applied to the processing of pure *Kitniyos*.<sup>36</sup>
- Authorities disagree as to the status of certain types of “legumes” (for example, peanuts and sunflower seeds), regarding their inclusion in the prohibition of *Kitniyos*. Some *Kashrus* organizations allow the use of oils derived from such seeds, although they may not permit the use of the seed itself.<sup>37</sup>

These exceptions noted that concerns of *Kitniyos* are taken very seriously. Indeed, many of the ingredient issues involved in the production of Passover foods relate to this very rule. The following brief list of ingredients commonly used for year-round Kosher production illustrates the pervasiveness of *Kitniyos* in processed foods. (Please also note possible non-*Kitniyos* alternatives.)

<i>Kitniyos</i> Ingredient	Non- <i>Kitniyos</i> Alternative
Cornstarch	Potato or tapioca starch
Glucose and maltodextrin (derived from cornstarch)	Potato or tapioca glucose and maltodextrin produced with Passover-approved amylases; glucose derived from sucrose using Passover-approved invertase
Fructose (derived from corn-based glucose)	Fructose derived from sucrose; Passover glucose converted into fructose using Passover-approved glucose isomerase
Sorbitol (derived from corn-based glucose)	Sorbitol produced from hydrogenated glucose derived from sucrose
Soybean, corn, peanut, <sup>38</sup> and canola oil	Olive, cottonseed, palm, and walnut oils
Soy protein	(No equivalent currently available)
Lecithin (derived from soybeans)	Passover-approved emulsifiers. In chocolate productions, the amount of cocoa butter may be increased to compensate for the absence of lecithin
Emulsifiers produced from <i>Kitniyos</i> oil	Emulsifiers produced from non- <i>Kitniyos</i> oils
Alcohol (derived from corn or rice fermentations)	Alcohol derived from petroleum; alcohol derived from molasses (sucrose), potato starch, or tapioca starch fermentations

<sup>36</sup> See “The Story of *Kitniyos*” in Chapter 17.

<sup>37</sup> As noted earlier, some authorities allow for the use of peanut oil for Passover. Most *Kashrus* agencies, however, do not permit it.

<sup>38</sup> The Jewish ownership of a company creates other ramifications relative to Kosher certification, such as the requirement to separate *Challah* (see Chapter 7, “The Baking Industry”) and leniencies regarding the laws of *G’vinas Akum* (see Chapter 9, “The Dairy Industry”).

## Chometz

*Chometz* is forbidden under all circumstances and may, depending on the temperature and other considerations, compromise the Kosher for Passover status of equipment on which it is processed. As noted previously, only foods made from the five major types of grain can become *Chometz*. Other “grains,” such as corn (maize), rice, and soy, cannot become *Chometz*, although they may still be prohibited because of *Kitniyos* concerns (see the section “*Kitniyos*”). Although *Chometz* is defined as “leavened” or “fermented” grain, a concern exists that any grain that has come into contact with water for more than eighteen minutes may have begun the *Chimutz* process and may therefore not be used.

The following is a brief list of common *Chometz* ingredients, as well as Kosher for Passover alternatives:

<i>Chometz</i>	Kosher for Passover Alternative
Wheat, rye, oats, barley, or spelt flour	<i>Matzah</i> ( <i>Gebrochts</i> ), potato starch
Wheat-derived glucose and sorbitol	Passover glucose and sorbitol (potato, tapioca, or sucrose based)
Brewer’s yeast	Passover yeast grown on molasses or wood liquor (torula yeast)
Alcohol (derived from grain fermentation)	Alcohol derived from petrochemical sources; molasses (sucrose), potato starch, or tapioca starch fermentations
Enzymes and citric acid (and other organic acids) derived from the fermentation of <i>Chometz</i>	Enzymes and citric acid (and other organic acids) derived from the fermentation of molasses (sucrose) or, according to many authorities, from <i>Kitniyos</i> fermentations
Vinegar (derived from <i>Chometz</i> alcohol)	Vinegar produced from apple cider or Passover-approved alcohol (using Passover-approved vinegar nutrients)

## Passover Certification and Supervision

In theory, the type of supervision required for Kosher for Passover should not differ significantly from that of any other Kosher production. Several considerations, however, typically mandate a much more rigorous and intensive supervision program. Although full-time supervision (*Hashgacha T`midis*) may not be deemed necessary for the certification of many routine Kosher productions, it is considered de rigueur for special production Kosher for Passover items. Several reasons explain such increased supervision. First, most Passover productions require the use of special Passover-approved ingredients, many of which are functionally identical with non-Passover versions normally used in a production facility. Second, even minor mistakes can render a Passover production invalid. Third, the Kosher consumer attaches a great deal of importance to the integrity of the Kosher status of products eaten on Passover and expects—and is willing to pay for—full-time supervision. Indeed, many people customarily avoid using any processed foods on Passover, lest even a minor mistake in the production invalidate its Kosher for Passover status. Most consumers, although willing to use processed foods, insist that only the highest level of supervision be maintained.

Kosher for Passover productions therefore entail the following requirements and procedures:

- Ingredients must be reviewed and approved specifically for the Passover productions. In essence, a special Passover List of Approved Ingredients is provided for such productions.

Some basic raw materials (for example, salt, sugar, and phosphates) may be considered acceptable for Passover productions without any special supervision. Many others, even those considered generally acceptable year-round without formal Kosher certification, require a Kosher for Passover certification.

- Equipment used for non-Passover production may be subject to Kosherization prior to Passover productions, because *Chometz* ingredients are considered “non-Kosher” vis-à-vis Passover foods.
- Passover productions may be subject to full-time Rabbinic supervision, even when year-round productions are certified based on periodic inspections. Such supervision may extend through the final packaging of the product.
- “Kosher for Passover” labels are carefully controlled to ensure that they are used appropriately. Most *Kashrus* organizations prohibit the use of “Kosher for Passover” stickers because their use is difficult to monitor, and require that a Passover designation be an integral part of the label.
- In certain cases, the inclusion of a Passover designation as part of the automatic ink-jet code printed on the package may be permitted.
- Many organizations charge a separate fee to handle Kosher for Passover productions, apart from an annual certification fee for year-round certification. Such fees are in addition to any special fees that may be charged for Kosherization and special supervision of production and packaging.

## Jewish-Owned Companies

Although not directly related to Kosher for Passover productions, Passover concerns intrude into year-round Kosher certification as regards companies that process *Chometz* and are Jewish owned.<sup>39</sup> A basic rule governing *Chometz* is that it may not be owned by a person of the Jewish faith on Passover, and any *Chometz* so owned is considered a non-Kosher food.<sup>40</sup> In general, Kosher certification is not a function of one’s personal adherence to religious precepts. Rules relating to *Chometz* are unique, however, in that *Chometz* owned by a Jew on Passover becomes a prohibited item, irrespective of the personal religious convictions of the owner. The application of this rule has several ramifications significant to food manufacturers:

<sup>39</sup> This rule, known as *Chometz she’Avar Alav ha’Pesach*, is limited to *Chometz* and does not apply to *Kitniyos*.

<sup>40</sup> The *Halachic* status of the Jewish ownership of a corporation is subject to differing opinions. Some have argued that a “corporation” has a *Halachic* status unto itself and is not subject to the obligations attendant to direct Jewish ownership.

Most authorities, however, aver that a corporation has no *Halachic* standing, and *Halachic* issues relating to its assets are simply a function of the partnership rights of its various shareholders. Although the owner of minor amounts of stock for investment purposes would not be considered an owner of significance, many authorities believe that one who owns sufficient stock to be consulted about the operations of the corporation is considered an “owner,” and such a corporation is to be considered (partially) owned by a Jew. Others rule that such a status is determined by majority ownership.

In practice, most *Kashrus* agencies follow the opinion that Jewish ownership of less than 5 percent is *Halachically* insignificant, and *Chometz* owned by such companies on Passover poses no *Halachic* concern. *Chometz* in companies whose Jewish ownership is greater than 5 percent, especially when the majority of shares are controlled by Jewish shareholders, is generally considered subject to the prohibition of *Chometz she’Avar Alav ha’Pesach* and is prohibited.

- Kosher certification may not be granted to *Chometz* products or ingredients manufactured by a Jewish-owned company during Passover,<sup>41</sup> even if all the ingredients are otherwise Kosher and the product will be sold after Passover. Indeed, many *Kashrus* agencies decline to certify Jewish-owned companies for year-round production unless those companies divest themselves of all *Chometz* during Passover.
- Kosher certification may be granted to *Chometz* products or ingredients manufactured by non-Jewish-owned companies *even when such production takes place on Passover*. Indeed, such products may continue to bear the year-round Kosher symbol, even though such products are considered non-Kosher at the time of manufacture.<sup>42</sup>
- The non-Kosher status of *Chometz* that is owned by a Jew during Passover is not limited to Kosher-certified companies. Any *Chometz* food product or ingredient that is owned or manufactured by a Jewish-owned company may not be considered Kosher, including those otherwise considered inherently Kosher (such as flour).
- Furthermore, Kosher-certified *Chometz* products or ingredients (whether manufactured by a Jewish-owned company prior to Passover or during Passover by a non-Jewish-owned company) may be rendered non-Kosher if they are merely owned by a Jewish broker or intermediary during Passover. From a practical perspective, however, absent any reason to suspect such a situation, one is not required to verify the prior ownership of *Chometz* products. When such ownership is known, however, the use of such products may pose a significant concern.

Under normal circumstances, the requirement to divest oneself of *Chometz* prior to Passover is fulfilled by either destroying the *Chometz* or giving it to a non-Jew before the holiday begins. Although such a solution may be practical for a homeowner with small personal stores of food, it poses a significant problem for businesspersons with large inventories of *Chometz*. To address such a situation, *Halacha* provides that such *Chometz* may be sold to a non-Jew through a transaction known as *M'chiras Chometz* (literally, “the sale of *Chometz*”). When a *M'chiras Chomez* is properly executed, the *Chometz* is permitted because, at that point, the *Chometz* no longer belongs to the Jew.<sup>43</sup> By virtue of this transfer, the former Jewish owners avoid transgressing the prohibition of owning *Chometz* on Passover, allowing that the erstwhile Kosher status of the *Chometz* is maintained. At the conclusion of the Passover holiday, the Jewish proprietor may approach the non-Jewish owner of the *Chometz* and ask to repurchase it at a profit, which is the typical scenario. However, the resale of the *Chometz* is not—and may not be—mandated in the original agreement of sale, because such a stipulation would obviate the efficacy of the transfer of true ownership required.

<sup>41</sup> It is assumed that all Kosher consumers are aware that foods approved for Passover use require special certification and that standard Kosher symbols are implicitly not an indication of Passover certification.

<sup>42</sup> In addition to transferring title to the *Chometz* itself, the *M'chiras Chometz* will also entail the leasing to the new non-Jewish owner of the warehouse or other storage areas where the *Chometz* is located, thus preventing the previous owner from regaining ownership by virtue of a form of adverse possession.

<sup>43</sup> Because the sale of *Chometz* must be legally binding, in terms of both *Halacha* and secular law, expertise in both disciplines is required to ensure the efficacy of the transaction. Traditionally, the Rabbi of the community acts as an agent for members of the Jewish community who wish to sell their *Chometz*, obtaining written authorization for each to act on his behalf for the sale and, on the conclusion of Passover, the repurchase of the *Chometz*. (Contrary to a common misconception, however, the Rabbi does not “buy” the *Chometz* from the individuals for whom he acts as an agent.)

According to many authorities, however, the preceding prescription for the sale of *Chometz* may have limited applicability in most corporate contexts. Because the underlying concept involves the total and unencumbered transfer of the *Chometz* to a third party, executing such a sale while continuing to produce *Chometz* products or using *Chometz* ingredients undermines the validity of the sale and creates a situation in which the Jewish company maintains true ownership, thus voiding its *Halachic* efficacy in preventing the prohibition of the *Chometz*. According to this approach, such a sale would generally be efficacious only if either of the following two conditions was met:

- The manufacturer ceases operations involving *Chometz* during Passover. Such a cessation would include both production and shipping of *Chometz* inventory, because any shipment of *Chometz* would be an ipso facto repudiation of the sale and serve to return the *Chometz* to Jewish ownership.
- The corporate ownership of all *Chometz* is transferred to non-Jewish hands or partners. In such situations, the sale must stipulate that all management, responsibility, and profits accrue to the non-Jewish owners.

Many Kosher-certifying agencies subscribe to the above approach and do not sanction the sale of *Chometz* where the Jewish corporate ownership remains and *Chometz* production continues. Others, however, follow more lenient opinions that validate such sales—under certain conditions—even where corporate ownership and production are unchanged. In all cases, a competent *Halachic* authority should be consulted to ensure that the sale of the *Chometz* or business interest in it is both *Halachically* and legally sufficient.

# 6 Fruit and Vegetables

Most Kosher regulations govern foods that, in some manner, are related to the animal kingdom. Foods from the plant kingdom—fruit and vegetables—pose limited Kosher concerns, provided that they are not processed on equipment that has been compromised by non-Kosher foods and do not contain non-Kosher additives. However, several important Kosher issues unique to agricultural products must be taken into account as part of any Kosher program.

## Insect Infestation<sup>1</sup>

The most generic Kosher issue relating to produce is the concern of insect infestation.<sup>2</sup> Although insects may not be considered particularly appetizing, at least in the Western world, they are regarded as undesirable contaminants whose presence is controlled to an acceptable level. In Kosher law, however, their presence may be altogether unacceptable. Indeed, the *Talmud*<sup>3</sup> notes that anyone who eats a *Zir'ah* (a type of wasp) would transgress six distinct Biblical prohibitions. Even though *Halacha* recognizes the impossibility of a 100 percent guarantee, the level of concern for insect infestation in Kosher law far exceeds any similar regulations in conventional food regulations. Indeed, an entire specialty in Kosher certification has emerged specifically to deal with issues relating to insect infestation.<sup>4</sup>

Concerns of insect infestation are governed by two considerations. First, the prevalence of the infestation in the produce must be determined to be “significant.” Such a determination is based on the type of produce, the location of its growth, and the method by which the produce is cleaned or otherwise prepared to reduce or eliminate the potential of insects remaining in the product. Certain types of vegetables (such as broccoli) are considered highly susceptible to infestations that are difficult to remove, and a number of *Kashrus* authorities have therefore banned those vegetables in commercial production. In addition, regional and seasonal variables can significantly increase the level of infestation, either because the prevailing weather conditions are conducive to such infestation or because of a lack of effective insect-control methods. Certain vegetables may therefore be prohibited from some regions, while approved for others, or approved only during certain seasons. Authorities also recognize that industries have developed methods by which produce is cleaned or otherwise

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<sup>1</sup> See “The Story of Insect Infestation,” in Chapter 17, for a full discussion of the *Halachic* parameters of this prohibition and how these concerns may be addressed on a practical level.

<sup>2</sup> Although most types of insects are forbidden, the Bible does permit certain types of grasshoppers (see *Leviticus* 11:21). Although some Jewish communities (notably those from Yemen) do eat such grasshoppers, most communities have lost the tradition (*M'sorah*) and the ability to identify the specific permitted species and thus no longer eat them.

<sup>3</sup> *Makos* 16b. In discussing the various Biblical transgressions related to the eating of insects, the *Talmud* notes that six specific prohibitions can be counted that cover flying insects.

<sup>4</sup> For an in-depth look into insect infestation and Kosher concerns, see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

treated to remove<sup>5</sup> insect infestations. In such cases, *Kashrus* authorities evaluate the efficacy of such systems to determine whether they are sufficient to obviate Kosher concerns.

A second consideration revolves around the physical status of the insect itself. Although insects are clearly proscribed, under certain situations they may be considered *Halachically* insignificant (*Batul*). If infestation is only suspect and not proven, ensuring that the level of any possible infestation is below a certain threshold may be sufficient. The application of this type of *Bitul* (annulment) is constrained, however, by the rule of *Beryah*, which states that a *whole* or complete object may *never* be considered insignificant regardless of how low the rate of infestation or how small the insect, as long as it is visible.<sup>6</sup> This concern may be obviated when the fruit or vegetable processing assures that any insect present would be fragmented. However, the viability of relying on this approach may depend on the prevalence of a particular infestation in a specific type of produce. Insects may also be considered *Halachically* insignificant when they are thoroughly desiccated. Invertebrates that are thoroughly dry<sup>7</sup> are no longer considered prohibited insects, but rather decomposed material and thus permitted. Such an approach is often invoked in the case of dried spices and herbs.

Although steering clear of concerns of insect infestation may be possible by avoiding the use of certain types of produce, such an approach is not feasible in all situations. A classic example is grain flour, in which the presence of mealworms may be of particular concern. Interestingly, this issue serves to illustrate the application of many of the parameters that have been discussed. First, insect infestation in the *kernel* poses much less of a concern because the grain is subsequently milled, thus ensuring that any contamination is reduced to fragments. Second, the growth of mealworms seems to be very much a function of climate. Flour therefore poses little significant concern in the cooler climates of North America and Europe but is a major issue in more tropical areas, such as the Middle East. Third, flour can easily be *sieved* to remove insects, which is an acceptable method of decontaminating a suspect batch of flour. Indeed, the construction and monitoring of flour-sieving systems is a major part of Kosher certification in countries where such infestation poses a concern.

As in all matters relating to the determination of the Kosher status, the final decision regarding the acceptability of certain types of produce—and the reliability of various cleaning systems—is ultimately the purview of the *Kashrus*-certifying entity. Indeed, certain vegetables and cleaning procedures are routinely accepted by some authorities but rejected by others. For example, although recognizing that broccoli may have a significant level of such infestation, some authorities consider the cleaning procedures routinely employed in the processing of frozen broccoli as sufficient to address *Kashrus* concerns. Others, however, are less sanguine in this regard and demand a more rigorous cleaning and inspection system. Raspberries are illustrative of another approach to the problem. Again, raspberries

<sup>5</sup> The *presence* of the insect is of concern, not whether it is alive or dead (see immediately following text concerning insects that are thoroughly desiccated).

<sup>6</sup> A prohibited insect must be of a size that is visible to the naked eye by a person with normal eyesight. Microorganisms—or even insects that are not discernable without the aid of a magnifying device—are deemed to be inherently *Halachically* insignificant.

<sup>7</sup> Traditionally, the benchmark for determining the requisite level of desiccation was that achieved after the insect had been dead for twelve months. Many authorities, however, are of the opinion that this level of desiccation can be satisfactorily achieved through heating in an oven or similar device to an equivalent level of dryness.



are recognized to have a significant concern of insect infestation. However, raspberry *puree* may be deemed acceptable if ground to a degree, ensuring that no *whole* insect remains. Another approach to resolving this issue may be used when herbs or other vegetables are used only to flavor broths but are not intended to remain in the product. In such situations, placing such herbs in cheesecloth or muslin bags during the cooking may be possible, thereby allowing the flavor of the herbs to enter the broth. After cooking, the bag of spent herbs (and any possible insects) is then removed and discarded.

Although the prohibition against insects is clear, the status of some of the *derivatives* of prohibited insects is less so. Honey, although derived from bees, is explicitly permitted, whereas the status of royal jelly is debatable.<sup>8</sup> Although a derivative of the lac insect, *shellac* (also known as resinous glaze) is permitted by some authorities and approved by many Kosher-certifying organizations.<sup>9</sup> The potential Kosher status of *carmine*, derived from the cochineal beetle, is the subject of great controversy,<sup>10</sup> and most Kosher-certifying organizations do not approve its use.

## Israeli Produce

According to *Torah* law, agriculture is subject to a series of rules and restrictions. These regulations govern the method by which food should be grown, such as the requirement that the fruit borne during the first three years of a tree's growth not be used (*Orlah*), as well as a prohibition against grafting different species together (*Kil'ayim*). Other rules center on the tithes and gifts that must be dealt with for various ecclesiastical and charitable purposes. Most of these requirements are restricted to produce grown within the borders of ancient Israel and are essentially irrelevant to grain,<sup>11</sup> fruit,<sup>12</sup> and vegetables grown anywhere else in the world.<sup>13</sup> Although many of the gifts and tithes stipulated in the *Torah* are no longer distributed, the actual tithing *process* must nevertheless be performed before any of this produce can be used.<sup>14</sup> No produce may be eaten prior to the separation of the appropriate tithes, even if the tithe may subsequently be eaten, and for

<sup>8</sup> See "The Story of Honey and Royal Jelly" in Chapter 17.

<sup>9</sup> See "The Story of Candy" in Chapter 17.

<sup>10</sup> See "The Story of Colors" in Chapter 17.

<sup>11</sup> See Chapter 7, "The Baking Industry," concerning *Chodosh*.

<sup>12</sup> Although *Halacha* technically stipulates that the first three years' fruit in all countries be forbidden (*Orlah*), in practice this concern is limited to fruit grown in Israel. This is because most fruit trees do not bear fruit in their first three years and, in cases of doubt, the requirements of *Orlah* are less restrictive in countries other than Israel.

<sup>13</sup> The papaya potentially poses an interesting exception to this general rule. The papaya tree produces useful fruit only during the first three years of its growth, and the rules of *Orlah* apply even outside Israel where the fruit is *definitely* produced during the *Orlah* period. It has therefore been proposed that papaya may *never* be eaten because its being *Orlah* is a virtual certainty. *Halachic* authorities have resolved this issue by pointing out that *Orlah* presupposes a tree providing fruit at the expiration of the prohibited period, a situation that does not exist in the case of the papaya.

<sup>14</sup> The obligatory gifts and tithes are based on the seven-year Sabbatical cycle (*Sh'mitah*; see the following paragraph) according to the following schedule:

*T'rumah G'dolah*—A gift to the Priest (no minimum amount is required)

*Ma'aser Rishon*—1/10 of the remaining produce, to be given to the Levite (1/10 of which is, in turn, given to the Priest as *T'rumas Ma'aser*)

*Ma'aser Sheni*—1/10 of the remainder, to be eaten in Jerusalem (first, second, fourth, and fifth years)

*Ma'aser Ani*—1/10 of the remainder, to be distributed to the poor (third and sixth years)

that reason, special Kosher supervision is required for all Israeli produce. Recognizing the need to maintain the Kosher status of the food supply in Israel, the Chief Rabbinate undertakes to ensure adherence to all appropriate agricultural requirements for produce sold in Israel.<sup>15</sup> However, the Chief Rabbinate does not take the responsibility for ensuring such compliance for produce that is *exported*, a fact that creates a significant Kosher concern for those Israeli fruit, vegetables, and spices that are routinely sold on the world market. Although the use of Israeli produce may be commendable, an appropriate Kosher certification is essential.<sup>16</sup> When such verification is unavailable, the issue can be resolved by taking the appropriate tithes before using the product. However, this procedure is subject to certain technical requirements and should be done only under appropriate Rabbinic guidance.

Another important agricultural consideration unique to Israel concerns *Sh'mitah*, the Sabbatical Year. Torah law decrees that once every seven years the land of Israel is to lie fallow and all planting or other agricultural activities are to be suspended. This *Sh'mitah* year provided the agricultural society in Israel a respite from the mundane and an opportunity to engage in a year of spiritual development. Today, this law of *Sh'mitah* still applies, and many farmers in Israel comply with this requirement by abstaining from planting and harvesting during the entire year. Fruit that grows spontaneously is considered to have a special holiness attached to it and is distributed freely to all. On the other hand, the Chief Rabbinate in Israel has historically taken the position that discontinuing all agricultural work during this period would be economically unfeasible lead many farmers to therefore transgress this rule. It therefore arranges for a legal loophole to allow for continued farming for those who will not follow the conventional rules of *Sh'mitah*.<sup>17</sup> Although some accept this exigency, the position of many *Kashrus* authorities both inside and outside Israel is to consider all produce grown under such conditions as having been grown in violation of the rules of *Sh'mitah* and therefore unusable in Kosher products. This is another reason that a reliable Kosher certification is imperative for all products manufactured in Israel.

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Of these, *T'rumah G'dolah* and *T'rumas Ma'aser* have special restrictions that prevent them from being eaten today and they must therefore be destroyed. (While needless destruction, especially involving food, is prohibited in *Halacha*, requirements unique to *T'rumah* take precedence in such a situation. Often, however, even this concern can be mitigated by using spoiled or otherwise unusable produce for tithing purposes.) *Ma'aser Rishon* (except for the part that is *T'rumas Ma'aser*) must be separated but may be eaten by anyone. *Ma'aser Sheni* and *Ma'aser Ani* must be separated, but *Ma'aser Sheni* may be redeemed (by exchanging it for a small coin; see *Deuteronomy* 14:25) and eaten by anyone, and *Ma'aser Ani* eaten by any poor person. In practice, slightly more than 1 percent of a crop is therefore unusable, with the balance subject to formal separation, after which it may be used.

<sup>15</sup> Important to note is that even within Israel, the program instituted by the Chief Rabbinate is not accepted by all segments of the Kosher-consuming public; many therefore insist on an independent method of certifying compliance with these regulations. The acceptability of *all* products manufactured in Israel—even with a Kosher certification—must be cleared with the certifying agency of record of the company that wishes to use such ingredients (see the following paragraph concerning *Sh'mitah*).

<sup>16</sup> Recent efforts have been made in cooperation with Israeli export authorities to arrange for the proper tithing of some products destined for export.

<sup>17</sup> This leniency involves the sale of all farms in Israel to a non-Jew, who is not required to observe the laws of *Sh'mitah*. According to this opinion, Jews are then allowed to farm such land and eat the crops. At the end of *Sh'mitah*, the land is sold back to its former Jewish owners. Note that the *Halachic* propriety of such a procedure is quite controversial, however, and the Chief Rabbinate itself exercises this option as a last resort.

## Wine and Grape Juice—*S'tam Yaynam*

Although all other pure fruit juices are inherently Kosher (subject to the aforementioned laws relating to Israeli produce), the Kosher status of *grape* juice (and its derivatives) is the significant exception.<sup>18</sup> Wine had historically been used for pagan worship, and wine that had indeed been used for such purposes was forbidden. In addition, the Rabbinic authorities in the times of the *Talmud* were concerned that the prevalence of such social activity may have had an inappropriate influence on the Jewish community. To preclude such a possibility, an injunction was issued to the effect that *all* grape wine that was susceptible to having been used for such pagan worship was banned. Although the proximate cause of the edict may no longer be operative, this rule—known as *S'tam Yaynam*—remains in force today, and all Kosher grape wine is produced exclusively by Jewish people committed to Kosher law. Indeed, Kosher grape wine that is handled by a non-Jew instantly loses its Kosher status unless the container is properly sealed. In addition, this rule applies equally to grape juice, raisin juice, brandy, ethyl alcohol from grape juice,<sup>19</sup> and their derivatives. It does not apply, however, to grapes or raisins themselves.

Given the impossibility of ensuring that grape wine and grape juice were handled by Jewish workers exclusively in a conventional food-manufacturing facility, the rules of *S'tam Yaynam* would seem to preclude their use in the context of general Kosher food production. Fortunately, however, one additional regulation allows this concern to be resolved. Grape wine used in pagan rituals was confined to *fresh* wine; wine that had been cooked was deemed inferior and unsuitable for religious purposes. Cooked wine *that was Kosher at the time of cooking* is not considered susceptible to the concerns that had fostered the rule of *S'tam Yaynam* and can therefore be treated and handled as any other acceptable Kosher ingredient. Cooked<sup>20</sup> grape wine, raisin juice, and grape juice—known as *Ya'yin M'vushal* (literally, “cooked wine”)—may indeed be used as an ingredient in a conventional food-processing setting. Note, however, that non-Kosher wine or grape juice cannot be made Kosher by cooking it.

## Fruit and Vegetable Coatings

Even raw produce may be subjected to various chemical treatments. Green tomatoes are ripened with ethylene gas, and spices are often fumigated. Of Kosher concern are the coatings that are applied to fresh fruit and vegetables to make them more appealing or preserve their freshness. A quick reading of some of the ingredients—oleic, stearic and other fatty acids, casein, and sucrose esters—used in such preparations would seem to raise significant Kosher concerns. Indeed, some Kosher consumers insist on peeling all fruit and vegetables to avoid eating the residue of such treatments. The position of most *Kashrus* authorities is that ensuring that all such ingredients are Kosher is indeed preferable, and efforts are under way to address this issue. However, most authorities concur that the minute amounts of such material that may remain on the fruit, as well as the inherently inedible

<sup>18</sup> See “The Story of Wine, Beer, and Alcohol” in Chapter 17.

<sup>19</sup> The status of *marc* alcohol (derived from wine pressings) has been the subject of recent *Halachic* discussion but is generally considered to be conventional wine alcohol.

<sup>20</sup> The exact temperature required to effect a *M'vushal* status is subject to differing interpretations, varying between 175 and 212°F. The temperature used must be verified as meeting the requirements of the intended market.

nature of these preparations, are insufficient to create a major *Kashrus* concern for the fresh fruit and vegetables. In the United States, FDA regulations stipulate that coated fruit and vegetables must have this information indicated both on the outer carton and on a sign in the store where it is sold. Consumers have a right to request that their supermarket meet this legal requirement, although it is commonly ignored.

# 7 The Baking Industry

The Kosher status of bread, cake, and other bakery products is subject to both conventional *Kashrus* considerations relevant to the baking industry and certain ones unique to it. In addition, certain customs and other *Halachic* considerations may influence how a Kosher certification program is designed for a particular situation.

## Dairy Bread

The unique *Kashrus* issue relating to the baking industry concerns the requirement that “standard” bread—the type usually eaten as a main part of a meal—be Pareve. Such bread may not contain either dairy or meat ingredients, nor be produced on equipment used for either Meat or Dairy.<sup>1</sup> “Standard” bread includes many common types of bread (for example, “American white bread”) that often contain dairy ingredients, which are therefore not subject to normative Kosher certification.<sup>2</sup>

*Halacha* does, however, provide for several significant exceptions to the prohibition of dairy bread that fall into the following categories:

- **Unique shape:** If a loaf of bread is baked in an uncommon shape,<sup>3</sup> it is no longer considered “standard” bread and is therefore exempt from this restriction.<sup>4</sup>
- **Small loaves:** Small, single-serving bread units produced in limited numbers that are generally eaten in one meal.<sup>5</sup>
- **Cake and cookies:** This category includes all baked confections that are not eaten as the main part of a meal.

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<sup>1</sup> Traditionally, bread was the mainstay of a meal—meat, cheese, or vegetables being served as a side dish, if served at all. Anyone baking bread could therefore expect his product to be consumed at both meat and dairy meals. To prevent a Dairy or Meat bread from being unwittingly consumed at the wrong type of meal, Rabbinic authorities in the times of the *Talmud* (ca. 100 BCE) ordained that “standard” bread must always be Pareve. This rule, however, provided for certain exceptions, as noted.

<sup>2</sup> Although some dairy bread is marketed with a Kosher designation, such certification is not based on normative Kosher standards. Indeed, many of the commercial bakeries that mark such breads as “Kosher” utilize a *K* designation for such products—essentially as a warrant that all *ingredients* used in the product are inherently Kosher. They recognize, however, that these products do not meet generally accepted Kosher standards, and bakeries therefore engage the services of a recognized Kosher-certification agency to provide Kosher certifications for Pareve bread that meets normative Kosher standards.

<sup>3</sup> Some Kosher-certifying organizations accept a Dairy designation on the label of the dairy bread as the equivalent of a unique shape, arguing that such an indication suffices to alert the consumer of the bread’s status. Most authorities, however, have rejected this approach.

<sup>4</sup> It is assumed that anyone seeing a strange-looking loaf of bread will enquire as to its Kosher status and thus not eat such dairy bread with a meat meal.

<sup>5</sup> It is assumed that such bread will be baked for a specific meal and not carried over from one meal to the next. Large numbers of small, normally shaped rolls produced in a bakery are therefore not subject to this exception.

Based on the preceding criteria, dairy English muffins are customarily certified as Kosher because they are single-serving units that have a distinctive shape. Further, no cookies, cakes, or sweet muffins are considered standard bread.<sup>6</sup>

Most authorities believe that bread that is considered subject to the dairy prohibition must be considered as a non-Kosher product. Such an approach has the following ramifications:

- Dairy bread cannot be further processed into dairy products that would otherwise be exempt from the dairy bread restriction, such as French toast or cheese-topped breads. Pareve bread must be used for such products, although they would attain a Dairy status with the addition of dairy ingredients in processing stages subsequent to the original baking.
- Dairy bread cannot be processed into breadcrumbs, even for use in dairy applications.<sup>7</sup>
- According to some authorities, dairy bread would compromise the Kosher status of equipment on which it was baked—not merely confer a Dairy status to that equipment. It would therefore be unacceptable to use the same equipment for non-Kosher dairy bread and Kosher-certified dairy pastry. Others, however, rule that while one may not certify such bread, it would not compromise the Kosher Dairy status of equipment on which it were processed.

## Ingredient Issues and Kosherization

The first step in the preparation of a bakery for Kosher production involves ensuring the Kosher status of ingredients. If the equipment in the bakery was used formerly for non-Kosher production, Kosherization may be required. An awareness of commonly unacceptable ingredient issues, the equipment that would be affected by them, and the method by which such equipment would be Kosherized is therefore critical.

Historically, the most common *Kashrus* concern in the baking industry involved the endemic use of animal shortening<sup>8</sup>—butter, lard (derived from pigs), and tallow<sup>9</sup> (derived from beef or mutton).<sup>10</sup> Although butter may be Kosher, lard and tallow are not, and their use precluded Kosher approval for products containing them as well as all other products baked in the same ovens.

<sup>6</sup> Dairy bread mixes are clearly not included in the restriction of dairy bread because they are not yet a loaf, and the mix may be used to produce products that are *Halachically* acceptable. Nonetheless, many *Kashrus* authorities are reluctant to certify such products, feeling that the consumer may assume that such mixes may be used to bake standard bread.

<sup>7</sup> Most authorities permit the production of dairy breadcrumbs if the original baked product is not in the form of a loaf, such as a continuous cracker. In addition, dairy ingredients may be blended into the breadcrumbs after baking.

<sup>8</sup> The term *shortening* actually means *brittle* and refers to crumbly types of baked goods, such as crackers and piecrust. Such products require the use of solid fat that, until the advent of oil hydrogenation technology in the early twentieth century, was limited to animal-derived materials.

<sup>9</sup> Although beef fat (tallow) may theoretically be processed as a Kosher item, producing sufficient quantities of such material for use in large-scale commercial applications is virtually impossible (see “The Story of Kosher Meat,” in Chapter 17, for an overview of the processing required for Kosher meat). Even if such a product were available for the baking industry, it would not be suitable for use in bread (regarding the use of dairy ingredients, see the section “Dairy Bread” earlier in this chapter) and would confer a Meat status on all equipment.

<sup>10</sup> Another non-Kosher bakery confection involving the use of meat was traditional “mincemeat.” Originally, a mixture of chopped meat, beef suet, nuts, and fruit, this English medieval dish has generally been modified to eliminate meat, leaving beef suet as the only ingredient posing a Kosher concern. In many cases, however, manufacturers have dispensed with beef suet, replacing it with vegetable fat.

**Table 7.1.** Ingredients commonly used in the baking industry that pose significant *Kashrus* concerns

Ingredient	Purpose	Potential <i>Kashrus</i> Concerns
Vegetable oil and shortening	Adds fat to product	May be produced on equipment also used to process animal fat, or contain animal-based emulsifiers
Emulsifiers	Affects the functionality of dough and icings	May be animal based, or produced on equipment used for animal-based products
Whey	Moisture retention and browning	Unacceptable for use in bread; will confer a Dairy status to equipment; requires Kosher certification
Milk, butter	Flavor and emulsification	Unacceptable for use in bread: will confer a Dairy status to equipment
Release agents (tough grease, divider oil, nonstick baking sprays)	Prevents sticking	May be animal based, or may contain animal-based emulsifiers
Gelatin	Used as a whipping aid and to provide texture I in icings	Generally derived from nonacceptable animal sources

As in all matters relating to *Kashrus*, every ingredient used in a Kosher product must meet Kosher requirements. It is instructive, however, to note ingredients commonly used in the baking industry that pose significant *Kashrus* concerns (see Table 7.1).

The use of a non-Kosher ingredient also affects equipment (see Table 7.2).

**Table 7.2.** Equipment affected by non-Kosher ingredients

Equipment	Method of Use	Kosherization Issues
Mixers, dividers, sheeting machines	Generally used in cold temperatures	A thorough cleaning generally suffices
Oven chamber	Non-Kosher ingredients—hot products do not touch walls	A thorough cleaning followed by heating the chamber to over 450°F ( <i>Libun Kal</i> ) (Some authorities permit a temperature that is higher than normal even if it is below 450°F)
Oven chamber	Dairy ingredients—hot products do not touch walls	If the oven is clean, many authorities permit the use of such an oven without <i>Kashering</i> , provided dairy and Pareve items are not in the oven at the same time
Oven racks that hold pans, or rotating shelves inside ovens	Goods do not touch the racks or shelves	Generally treated as the interior of the oven
Oven belt (solid metal or mesh)	Non-Kosher ingredients—product is actually baked on this material	Most authorities require a <i>Libun Chamur</i> (glowing). Generally, this involves a temperature in excess of 800°F <sup>11</sup> and generally requires the use of auxiliary heating elements or coals

(continued)

<sup>11</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

**Table 7.2.** Equipment affected by non-Kosher ingredients (*Cont.*)

Equipment	Method of Use	Kosherization Issues
Oven belt (solid metal or mesh)	Dairy ingredients—product is actually baked on this material	If the Kosherization is being undertaken only to <i>Kasher</i> from dairy to Pareve, some authorities permit a <i>Libun Kal</i> , provided all dairy residue had been removed
Sheet pans, baking pans	Product is actually baked on this material—the use of a paper pan liner is not considered significant	In situations where <i>Libun Chamur</i> is required (see above regarding oven belts), aluminum pans will melt at the required temperatures, and may therefore not be <i>Kashered</i> <sup>12</sup> Steel pans may be <i>Kashered</i> by placing them in a kiln and heating them to the required temperature
Hot knife cutters	Contain internal heaters and are used to cut granola bars or other solid baked products	Since these are heated, they require a <i>Libun Chamur</i> (or the cutting blade may be replaced)
Transfer and cooling belts	Transfer hot goods from the oven to packaging line, often with a serpentine conveyor system to allow for product cooling	Many authorities allow Kosherization with boiling water
Vacuum fingers	Lift hot goods from baking pans and place them on cooling belts	Should be <i>Kashered</i> with boiling water or replaced
Donut fryer	Either gas or electric fryers	These may be <i>Kashered</i> with <i>Hag'olah</i> (boiling water), provided they are completely clean. All baskets, ladles, and other equipment must also be <i>Kashered</i>
Enrober	Non-Kosher coating	In situations where the coating was not Kosher (or dairy and the intention is to convert it to Pareve service), the device should be <i>Kashered</i> with boiling water
Enrober	Non-Kosher cookie or topping	In situations where the coating was Kosher but the cookies contained non-Kosher ingredients (for example, a non-Kosher marshmallowy topping), two considerations may mitigate the need to <i>Kasher</i> the equipment: i. If the non-Kosher ingredient is <i>Batul</i> ii. If the coating never exceeds <i>Yad Soledes Bo</i> (approximately 110°F) In either case, the enrober may be used without <i>Kashering</i> , provided all of the residual coating from the non-Kosher production is removed and the enrober is thoroughly cleaned

An additional concern common to bakeries is the use of rework, which is often a defined ingredient in a formula (for reasons of both thrift and product formulation). When a bakery produces both Kosher and non-Kosher products—or dairy and Pareve items—great care must be taken to ensure that rework from an unacceptable product cannot be used inappropriately.

<sup>12</sup> The process of “reglazing” pans typically does not reach the temperature required for *Libun Chamur*.



## M'zonos (Cake) Bread

Baked “cake” and “bread” share many similarities, from both a technical and a *Halachic* perspective.<sup>13</sup> Many types of yeast-dough cakes are essentially nothing more than bread with the addition of sugar, fruit, chocolate, or nuts. Indeed, the distinction between cake and bread is often subjective and differs from culture to culture.<sup>14</sup> The distinction between the two, however, is significant as regards certain religious requirements that attend the eating of bread.<sup>15</sup> Because these requirements do not apply when eating cake, many people prefer to replace bread with cake when eating a small meal, especially where it would be inconvenient to perform some of the rituals required when eating bread.

Although the discussion of arcane issues of Jewish ritual observance are generally not within the scope of this work, this particular issue is of significance in the development and certification of certain baked products. Recognizing the market potential for “bread” that has the *Halachic* status of “cake” (“un-bread?”), bakers have developed baked products that, according to some opinions, technically meet the *Halachic* criteria of cake.

Typically, this is done by using fruit juice to replace all or most of the water in the dough, which is then baked into the shape of rolls, loaves, or pita. Such products are marketed as “M'zonos (cake) bread”<sup>16</sup> and labeled as such, and have become popular with many consumers as a bread replacement. It is important to note, however, that not all authorities concur with this approach, reasoning that the requirements attendant to bread cannot be obviated by merely substituting fruit juice for water. The criteria for a “bread” designation are primarily a function of its general appearance and utility, which would therefore confer a true bread status to these putative *M'zonos* variations.

## In-Store Bakeries

A recent innovation in the bakery industry involves the development of prepared, frozen, “oven-ready” products and in-store bakeries. This symbiotic relationship has made fresh-baked products available to consumers in areas where maintaining a full-service bakery may not be feasible. Many manufacturers of frozen, raw, and par-baked bakery products are Kosher certified and, provided that the in-store bakery maintains a Kosher certification, such products may be sold as Kosher. Indeed, some large supermarket chains have made such arrangements, affording consumers a ready availability of fresh, Kosher, baked goods.

<sup>13</sup> For example, both bread and cake may be considered *Pas Palter* (“commercial bread”) and thus not subject to the restrictions of *Bishul Akum* (see the section “*Pas Yisroel*” for details).

<sup>14</sup> *Halacha* recognizes three criteria for a baked product to be considered cake: (1) it is filled with foods that are not considered a mainstay of a meal (such as fruit or nuts); (2) the dough is significantly sweetened; and (3) the product is thin and crispy.

The underlying theory behind all these criteria is that such foods are eaten as a snack and not as the main part of a meal.

<sup>15</sup> When eating a baked product that is considered “bread,” a Jewish person is obligated to wash his hands in a prescribed manner and recite a specific blessing (*ha'Mo'tzee*) before eating, and at the conclusion of eating a meal containing bread he or she must recite a full *Birkas ha'Ma'zone* (Grace After Meals). These requirements are unique to bread and generally do not apply to any other food.

<sup>16</sup> The name “M'zonos” is taken from the blessing said over cake, “*Bo'rei Mi'nay M'zonos*,” which means “the Creator of various foods of sustenance.”

The close relationship between the manufacturers of the prepared dough and the bakeries, however, has led to a concern involving the *labeling* of the products. In an attempt to simplify the supermarket's baking operation, the dough manufacturer often provides everything needed to run the bakery—the supermarket may only need to put the bread or cake into the oven. In such “full-service” arrangements, manufacturers often provide the final packaging for the baked goods—including the label. Note that if the dough manufacturer has a Kosher certification, such certification carries over only to the raw product supplied to the supermarket, not to the finished baked product. Consumer labels provided by the manufacturers to be affixed by the supermarket may therefore not bear a Kosher certification symbol for the product, because the Kosher certification enjoyed by the manufacturer is limited to its production site. The supermarket may, of course, engage its own Kosher certification for the products, in which case the products would bear the Kosher designation of the agency that actually supervises the in-store bakery.

## Challah

When a dough or batter is owned by a Jewish person, or by a company with significant Jewish ownership,<sup>17</sup> it may be subject to the requirement of separating *Challah*.<sup>18</sup> This requirement applies to all types of dough or batter<sup>19</sup> prepared from the five major grains (wheat, barley, rye, oat, or spelt flour)<sup>20</sup> that had Jewish ownership at the time the dough was kneaded.<sup>21</sup> Failure to follow the rules of *Challah*, where required, renders the finished product unfit for Kosher use.<sup>22</sup>

The normative method of fulfilling the requirement of *Challah* is by separating a very small amount of dough from each mixture, an act that must be performed by either the owner of the dough or another Jew acting on his behalf. The small amount of *Challah* (or collection of many pieces of *Challah* that are collected from different batches of dough)

<sup>17</sup> The *Halachic* status of the Jewish ownership of a corporation is subject to differing opinions. Some have argued that a “corporation” has a *Halachic* status unto itself and is not subject to the obligations attendant to direct Jewish ownership. Most authorities, however, aver that a corporation has no *Halachic* standing, and *Halachic* issues relating to its assets are simply a function of the partnership rights of its various shareholders. Although the owner of minor amounts of stock for investment purposes would not be considered an owner of significance, many authorities believe that one who owns sufficient stock to the extent that he would be consulted about the operations of the corporation is considered an “owner”; such a corporation is therefore considered to be (partially) owned by a Jew. Others rule that such a status is determined by majority ownership.

<sup>18</sup> The *Halachic* term *Challah* is independent of its use in the vernacular as a type of braided loaf traditionally eaten as part of the *Sabbath* or holiday meal. The use of the term *Challah* (literally, “loaf”) referring to the bread of the *Sabbath* meal probably comes from the *Shewbread* that was distributed to the Priests every *Sabbath* in the Temple, which was also referred to as *Challah* (*Leviticus* 24:5).

<sup>19</sup> Some authorities are lenient as regards the requirement of taking *Challah* from liquid batters. Most authorities, however, rule such products to be subject to the rules of *Challah*, although the separation would take place *after* baking.

<sup>20</sup> Mixtures of other grains (such as rice or corn) together with any of the five major grains may also be subject to the rules of *Challah*.

<sup>21</sup> The separation of *Challah* is not required from dough that had been produced by a non-Jewish company and subsequently formed or baked by a Jew. Kosher frozen dough may therefore be purchased and baked by a Jewish company or individual without being subject to the rules of *Challah*.

<sup>22</sup> If *Challah* has not been taken from dough, it may be taken from the finished product. Kosher certification, however, is not granted to products from which *Challah* has not been taken because manufacturer assumed that the consumer will address the issue on purchase.

must then be burned.<sup>23</sup> This is indeed the system used to separate *Challah* at home<sup>24</sup> or in small bakeries when a *Mashgiach* (or the Jewish owner himself) is available to ensure that the process is handled properly.

In a large commercial bakery, however, the implementation of such a system would be impractical, given the large number of batches of dough and the rule requiring that only a Jew acting as an agent of the owner may separate *Challah*. In addition, any such procedure would require an acceptable means of verification. To address these concerns, many *Kashrus* agencies have devised systems whereby a batch of dough may be designated in advanced as “*Challah* dough,” from which *Challah* may be *automatically* taken from each subsequent batch of dough.<sup>25</sup> Typically, the *Kashrus* certifying agency involved in the Kosher certification of the product addresses all issues relating to the implementation of such a system.<sup>26</sup> From the perspective of the manufacturer, however, its operation should be transparent and require no special accommodations other than ensuring that the “*Challah* dough” left in the production area is not disturbed.

## Supplementary Standards

In addition to the Kosher *requirements* discussed previously, certain segments of the Kosher-consuming public prefer products that meet the following supplemental standards.

### Pas Yisroel

Although many cooked foods require some Jewish involvement in their cooking (the rule of *Bishul Akum*<sup>27</sup>), baked products are treated differently in *Halacha*. “Bread” baked in a commercial bakery—known as *Pas Palter* (literally, “bread of a baker”)<sup>28</sup>—may be considered Kosher without any Jewish involvement, provided that all ingredients and equipment issues satisfy Kosher requirements. All types of baked<sup>29</sup> bread products from the five major species of grains<sup>30</sup> are included in the rule of *Pas Palter*, as are pastries, cookies, crackers,

<sup>23</sup> Just as the *Challah* should not be eaten, it should also not be burned on equipment that is used for Kosher foods.

<sup>24</sup> Each batch of dough must contain a minimum of 2½ pounds of flour to trigger the requirement of *Challah*.

<sup>25</sup> Such a system typically involves the preparation of a small amount of dough from which *Challah* that has not yet been taken (called the “*Challah* dough” in this context) and placing it in the dough production area. The *Mashgiach* then obtains an ongoing authorization from the Jewish owner of the dough to act as his agent for the separation of the *Challah*. At that point, the *Mashgiach* stipulates that as each batch of new dough is being prepared, a tiny amount of dough from the *Challah* dough is considered *Challah* for that batch. This process continues automatically until all the *Challah* dough has been used for this purpose, at which point it is replaced.

<sup>26</sup> Such additional concerns include ensuring that *Challah* is separated from different types of flour (for example, wheat and oats) and that flour from different crop years is handled separately.

<sup>27</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

<sup>28</sup> This dispensation was based on recognition of bread as a basic necessity, as well as its general Kosher status (at least in *Talmudic* times). Rules governing bread baked in a private home, however, may differ.

<sup>29</sup> Cooked foods, such as noodles and dumplings—even if made from the five grains—are nonetheless subject to the rules of *Bishul Akum*. According to many opinions, fried donuts are also subject to *Bishul Akum* concerns because they are not baked. In all such cases, however, *Bishul Akum* is a concern only if the food is considered “important” (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”).

<sup>30</sup> Products made from rice, buckwheat, or soy flour—even if baked—are never considered “bread” and are thus theoretically subject to the rules of *Bishul Akum*.

In practice, however, such items are usually exempt from its strictures because they are not considered “important” foods (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”).

and cakes.<sup>31</sup> The term *Pas Yisroel*, on the other hand, refers to bread that is baked with some type of Jewish involvement. *Halacha* notes that although *Pas Palter* is permitted, one should preferably use *Pas Yisroel* where readily available. Thus, although *Pas Yisroel* may not be required, many Kosher consumers prefer to use *Pas Yisroel* products when possible.

Most, but not all, *Kashrus* organizations are willing to certify breads and cakes that are *Pas Palter*, since ensuring *Pas Yisroel* baking on an industrial scale is difficult, and *Halacha* specifically permits *Pas Palter*. Unless otherwise indicated, the default status of Kosher-certified baked goods should be assumed to be *Pas Palter*. Nonetheless, most *Kashrus* organizations that certify *Pas Palter* products recognize the importance of *Pas Yisroel* and strive to ensure a *Pas Yisroel* status when possible. In such cases, a product's *Pas Yisroel* status is usually indicated clearly on the label.

“Par-Baked” products are items that are only partially baked at the factory, allowing the user (that is, restaurant, bakery, or consumer) to complete the baking immediately prior to using the product. According to many opinions, par-baked products may be considered *Pas Yisroel* if either the original or final baking took place as *Pas Yisroel*. Purchasing non-*Pas Yisroel* par-baked products and completing the baking in-house under *Pas Yisroel* conditions may therefore make attaining a *Pas Yisroel* status possible. Conversely, items par-baked as *Pas Yisroel* will retain that status even if the final baking does not take place under *Pas Yisroel* conditions.

*Pas Yisroel* is generally accomplished by involving the *Mashgiach* in heating the oven in which the bread is baked. After a *Mashgiach* has lit the oven—or even minimally increased its heat—all bread subsequently baked in that oven is considered *Pas Yisroel*.<sup>32</sup> This *Pas Yisroel* status remains for as long as the oven does not cool off, a condition that must be verifiable when relying on such an assumption over some period. In addition to actually lighting the main flame in the oven, many authorities rule that having the *Mashgiach* light the pilot is equivalent to lighting the oven for this purpose, because the main burner is always lit from this source. Ovens with electronic ignitions—which do not maintain a continuously burning pilot—cannot rely on this approach. In such cases, *Pas Yisroel* can nevertheless be achieved by installing an auxiliary gas flame or electric element<sup>33</sup> in the oven that remains on at all times and having it lit by the *Mashgiach*. In such cases, however, a method for verifying the uninterrupted operation of this heat source must be devised.<sup>34</sup>

<sup>31</sup> Although sweet, baked confections may not qualify as “basic necessities,” they are nevertheless considered a type of “bread” from a *Halachic* standpoint (for example, regarding blessings required when eating a meal of cake; see the section “*M'zonos* (Cake) Bread”).

<sup>32</sup> The method by which *Pas Yisroel* is effected is essentially the same as that used to obviate concerns of *Bishul Akum* (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”). Worth noting, however, is that whereas *S'phardic* customs may not accept the lighting of the fire as sufficient to resolve *Bishul Akum* issues, they do accept it to create a *Pas Yisroel* status.

<sup>33</sup> The amount of heat that such an element must produce to be considered significant for such purposes has been the subject of significant discussion. Many *Kashrus* authorities stipulate that such an element must produce heat sufficient to make a significant contribution to the baking process. Others, however, take the position that any perceptible heat—even that given off by a lightbulb—is sufficient for this purpose.

<sup>34</sup> Typically, a thermocouple that is sealed by the *Mashgiach* can be installed as part of a pilot or gas flame system such that it cannot be relit without the *Mashgiach*.

The bakery would agree to contact the *Mashgiach* to relight the flame should the pilot or gas flame be extinguished, with the *Mashgiach* able to verify compliance on inspection of the sealed thermocouple system. In the case of an electric element, a sealed sensor may be installed in the circuit that trips on interruption of electricity to the element (either because of an interruption of electricity or because of the burnout of the

## Yoshon

A rule unique to the five major species of grains (wheat, rye, oats, barley, and spelt) is that each year's harvest may be eaten only after the second day of Passover.<sup>35</sup> Grain from the previous year is called *Yoshon* (literally, "old"), whereas new grain is called *Chodosh* (literally, "new").<sup>36</sup> The manner in which this rule is applied, however, is subject to two differing views. Some authorities believe that the prohibition of *Chodosh* applies only to produce of the Land of Israel (or to grain grown by Jewish farmers) and the rules of *Yoshon* and *Chodosh* therefore do not apply to grain grown anywhere other than Israel. Other authorities, however, find that the rules of *Yoshon* are not restricted to the Land of Israel; grain that is considered *Chodosh* is indeed prohibited in all countries. Most Kosher-certifying agencies outside Israel follow the more lenient opinion, and the default standard of Kosher-certified outside Israel is to permit *Chodosh*.<sup>37</sup>

Despite the general acceptance of *Chodosh*, an increasingly significant segment of the Kosher-consuming community prefers to be more stringent in the matter, insisting on a *Yoshon* status.<sup>38</sup> Many Kosher bakeries make a great effort to use only *Yoshon* flour<sup>39</sup> all year long<sup>40</sup> and mark their products as such.

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element), in which case the procedure of notifying the *Mashgiach* would be implemented to allow him to relight the element.

<sup>35</sup> In the times of the Temple, a special offering of barley from the new harvest was brought on that day. However, if for any reason the offering was not made (as is the case today), the *Halacha* stipulates that the new crop would nevertheless be permitted after that date.

<sup>36</sup> The determination of the *Chodosh* and *Yoshon* status depends on the time of the year when the grain is planted. After the sixteenth day of the month of *Nissan* (the second day of Passover, falling between mid-March and mid-April) passes, all grain that had been harvested by that date is automatically considered *Yoshon*. In addition, the grain from any seedlings that had been planted and taken root by that date is also considered *Yoshon*. Grain that takes root *after* that date, however, is considered *Chodosh* until the *next* Passover. In the United States, *winter* wheat, rye, and spelt are planted in the fall, well before the spring Passover season. Even though these grains may be harvested in the early summer, they are nonetheless always considered *Yoshon*. *Spring* wheat, oats, and barley are often planted (or take root) after Passover, and even though they may be harvested only a few weeks after their winter cousins, these grains are considered *Chodosh* until the following Passover.

<sup>37</sup> The rules of *Yoshon* apply to all products that contain the enumerated grains, regardless of whether they are baked, cooked, or otherwise processed. Thus, products such as beer and ingredients such as malt syrup may be subject to this concern.

<sup>38</sup> Winter wheat tends to have lower gluten content than spring wheat and is thus suitable for use in the production of crumbly items such as crackers, *Matzah*, and pretzels. These products are generally free of *Chodosh* concerns, provided that malted barley or oats are not included. The higher gluten level of spring wheat makes it more suitable for chewy products, such as bread, pizza dough, and pasta, as well as for whole-wheat products, all of which may pose a *Chodosh* concern.

<sup>39</sup> Several mills have agreed to segregate lots of *Yoshon* flour, which is available as Kosher certified for this standard.

<sup>40</sup> Because *Chodosh* grain becomes permitted on the following Passover, no *Chodosh* actually exists on the market from Passover (in the spring) until the new crops reach the market, usually sometime in the early fall. Therefore, no special *Yoshon* certification is required for that half of the year.

# 8 The Biotechnology Industry

Fermentation has been used in the production of food since earliest times, as a means of both food's enhancement and its preservation. Advances in fermentation technology have expanded its application in the food industry, allowing for improved methods of production and the creation of entirely new food products.

In the context of the food industry, fermentation<sup>1</sup> is based on the growth of microorganisms (for example, bacteria, yeasts, molds, and other fungi) in or on a substrate. The practical application of such fermentations and the *Kashrus* issues related to them may be divided into several categories, as described in the following sections.

## Fermentation Using Ambient Microflora

Traditional food fermentation involves the growth of microorganisms in situ with the foodstuff whose modification is the ultimate object of the fermentation. In such fermentations, chemicals or enzymes, or both, are created by the microorganism that then react with and modify the original foodstuff, resulting in significant and desirable changes to the food. Classically, such fermentation processes involve the action of *naturally* occurring microflora to modify a food. Classic wine production relies on the yeasts naturally found on the surface of the grape, and bread was historically fermented by airborne yeasts. To this day, Belgian lambic beer is produced using airborne yeasts that fall naturally into the wort. Similarly, bacteria found on the udders of cows or in dairy equipment historically served to ferment dairy products into cheese and yogurt, and naturally found bacteria may still be used to produce pickled fruit, vegetables, soy sauce, meat, and fish.

Because the Kosher status of foods is normatively a function of the ingredients used in their production, the status of products produced through such natural fermentation is generally identical to that of the foodstuff being fermented.<sup>2</sup> *Naturally* occurring microflora, as opposed to cultures propagated on growth media (see the section "Preparation of Pure Cultures"), are considered *Halachically* insignificant ingredients.<sup>3</sup>

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<sup>1</sup> Although the term "fermentation" is now understood to include many types of enzymatically controlled conversions of organic compounds, virtually all its applications in commercial food production involve the metabolic functions of microorganisms.

<sup>2</sup> The status of cheese may be subject to extraordinary *Kashrus* concerns as they relate to the rule of *G'vinas Akum*, which are unrelated to normative ingredient concerns (see Chapter 9, "The Dairy Industry").

<sup>3</sup> By definition, microorganisms are too small to be seen by the naked eye. As such, they are not considered in the category of prohibited visible living beings (such as insects or worms) and thus not subject to Kosher restrictions attendant to visible living organisms (see Chapter 2, "Basic *Halachic* Concepts in *Kashrus*").

## Fermentation Using Starters from Previous Productions

Given the vagaries of naturally occurring microflora, however, fermentations based on them proved far from predictable. Methods of preparing suitable stores of colonies of microorganisms with proven characteristics—“cultures” or “starters”—have therefore been a part of food fermentation processes since earliest times, despite the fact that a scientific understanding of culture technology has been gained only in recent times. Early bakers mastered the art of husbanding dough *sours* and fermented substrates rich in *ferment* (from the Latin, *fermentum*), enabling their use to ferment fresh dough more quickly and reliably than would have been possible by relying on ambient yeasts. Similarly, dregs of wine were used to inoculate subsequent vats of wine, and fermented milk was used to produce cheese.

From a *Kashrus* perspective, such cultures were merely an extension of naturally occurring microflora because no ingredients other than the fermented food were involved in their propagation. Indeed, with microflora considered to be essentially *Halachic* nonentities, the *Kosher* status of such cultures is assumed to be a function of the status of the food that had originally been fermented. When *Kosher* dough was fermented, the *sours* so produced would perforce produce *Kosher* bread, *Kosher* dregs would produce *Kosher* wine, and *Kosher* fermented milk would produce *Kosher* cheese. From a *Halachic* perspective, the *fermented food*, not the microorganism per se, is what causes the fermentation.

*Kashrus* concerns with such culture systems therefore become a consideration when a culture is taken from a non-*Kosher* production and is used to inoculate a potentially *Kosher* one. The use of bread sour grown on non-*Kosher* bread renders subsequent breads baked with it non-*Kosher*. Indeed, the use of even small amounts<sup>4</sup> of such non-*Kosher* sour renders subsequent bread non-*Kosher* because the non-*Kosher* culture was the active ingredient in the finished product.<sup>5</sup>

## Preparation of Pure Cultures

Modern food science has refined the concept of starters to the point at which the active microorganism can now be isolated from the fermented food, thereby creating a more concentrated source of microorganisms that also allows for its more efficient use and storage. Such purified cultures may then be used to inoculate fermentations for the in situ modification of foods, such as in the case of yeasts used in the baking and alcohol fermentation industries, and bacterial cultures used in the production of cheese.<sup>6</sup> (They may also

<sup>4</sup> This concept, known as *Da'var ha'Me'Chametz* (an agent of fermentation), is similar to *Da'var ha'Ma'amid* (an agent that makes a physical change in the product) or a *No'sen Ta'am* (an agent that imparts a flavor in a product). In all such cases, the discernible impact of the additive in the final product causes the entire product to assume the *Halachic* status of that additive.

<sup>5</sup> Inoculation with a prohibited starter serves to render that fermentation non-*Kosher*, and the use of starter from that fermentation equally compromises any subsequent fermentation that it might engender. Typically, such a cycle continues indefinitely, essentially eliminating that line of starter as an acceptable source for *Kosher* production. An exception to the perpetuation of the prohibited status of a starter may be noted, however, in the case of non-*Cholov Yisroel* cultures (see Chapter 9, “The Dairy Industry”). Non-*Cholov Yisroel* starters may be rendered acceptable for use in *Cholov Yisroel* productions by allowing them to begin a cycle of three consecutive fermentations on inherently *Cholov Yisroel* media. After the third such fermentation, any non-*Cholov Yisroel* components remaining in the culture are considered insignificant and the culture may be used in *Cholov Yisroel* productions.

<sup>6</sup> See “The Story of Cheese and Casein,” in Chapter 17, for a detailed discussion of the diversity of cultures used in this industry.

be used in fermentations designed to enable the recovery of chemicals produced by the microorganism during the fermentation process; see the section “Recovery of Metabolites of Fermentation.”) Although cultures may be concentrated to the point of being essentially “pure” microorganisms, *Halacha* nevertheless treats them in a manner identical to “fermented food” cultures and accords them the Kosher status of the media on which they were grown. From a practical perspective, such purified cultures have the same *Halachic* ramifications and requirements as those of cultures composed of fermented foods.<sup>7</sup>

The production of such prepared cultures, however, involves the growth of microorganisms on nutritional media that allow for their growth in the most efficient and productive manner. Nutrients used to propagate a culture may therefore not be identical, or even similar, to the fermented foods from which they were originally derived or which they are ultimately destined to ferment. For example, bacteria used in cheese cultures often have an affinity to yeast extracts,<sup>8</sup> meat and dairy components hydrolyzed with animal-derived enzymes, and infusions and broth derived from non-Kosher meat sources. Such culture media pose significant *Kashrus* concerns based on the source of their components, as well as concerns of mixing milk and meat (*Ba'sar b'Cholov*).<sup>9</sup> Whenever non-Kosher meat, casein, or proteolytic agents are used, cultures grown on such media are generally not considered Kosher.<sup>10</sup>

*Kashrus* issues related to cultures are not restricted to the ingredients in the nutrient media, however. In many cases, concentrated cultures are deep-frozen to maintain their integrity, and unless properly protected, such temperatures may tend to rupture the cells of, or otherwise degrade the, living microorganisms in the culture. To address this issue, various types of cryogenic protectants may be added to the pure culture, some of which (for example, glycerol) may pose a significant *Kashrus* concern. In addition, the Kosher status of equipment used in media preparation and fermentors used in culture propagation must be ensured, including the Kosher status of the autoclave used to sterilize such materials.<sup>11</sup> Such equipment concerns extend to any lyophilization equipment used in the final stages

<sup>7</sup> Although a microorganism assumes the Kosher status of the material on which it grows, this status is based on *known* substrates. Therefore, unless a specific reason exists to assume that they had grown on a non-Kosher substrate, microorganisms are generally considered to be Kosher.

<sup>8</sup> Although the term “yeast” is often equated with *Chometz* (fermented grain that is forbidden on Passover), pure yeast is merely a microorganism that is inherently Kosher for Passover. Indeed, wine that is central to Passover ritual at the *Seder* is a product of yeast fermentation. Rather, the prohibition related to yeast involves bread *sour*, for which the yeasts grow on grain and create a type of fermentation that is prohibited on Passover (see Chapter 5, “Kosher for Passover”). The Passover status of yeast extracts used in nutrient media is therefore dependent on the material on which the host yeast was grown. Yeast and yeast extracts produced from strains grown on molasses or wood liquor may indeed be Kosher for Passover and may be used as nutrients in Passover-approved cultures.

<sup>9</sup> Some *Kashrus* authorities permit the use of non-Kosher material as an ingredient in agar or other solid media on which Kosher cultures are grown, in which the microorganism grows only on the surface of such media and is not mixed into the nutrient broth of the culture.

<sup>10</sup> In general, the use of non-Kosher ingredients at any stage of the culture propagation would compromise its Kosher status, a status that would be retained in all subsequent generations of growth (as noted previously, concerning propagation of cultures from fermented). For cases in which both Kosher and non-Kosher ingredients were included in the growth media, however, the Kosher status of the culture may not be compromised. The intentional use of such media, however, is not permitted.

<sup>11</sup> This often creates a significant challenge in the early stages of culture preparation because the autoclaves and other equipment used at such early stages are often shared with diagnostic and other laboratory procedures that are not subject to Kosher concerns. Therefore, equipment used in the preparation of non-Kosher nutrient media intended for nonfood use or non-Kosher productions must be segregated from that used for the Kosher productions.



of culture preparation. (Lyophilization is the process by which water is removed from a product by low-temperature heating under a vacuum—“freeze drying.”)

Similarly, the production of active dry yeasts involves a drying process, and the heat from that process tends to degrade the live yeast cells. To address this concern, oils and emulsifiers are typically added to the yeast to protect the cells during this process, and such ingredients require reliable Kosher certification.

## Recovery of Metabolites of Fermentation

In addition to their use in the direct preparation of a food, the metabolic products of a fermentation may be harvested, concentrated, and purified to yield chemicals or enzymes for subsequent use in food processing. The earliest example of such fermentation recovery is the production of alcohol through the fermentation of sugar, during which the yeast produces a zymase enzyme that converts part of the sugar into alcohol. The alcohol is then removed from the fermentation broth and concentrated through distillation.

Modern enhancements of the concept of recovering enzyme-catalyzed chemicals produced through fermentation include the recovery of chemicals secreted<sup>12</sup> by the microorganism (for example, some enzymes<sup>13</sup>), as well as those excreted by the microorganism as part of its metabolic functions (for example, organic acids,<sup>14</sup> vitamins, and amino acids). In such productions, cultures of microorganisms exhibiting the ability to produce the desired chemicals are used to inoculate fermentations that, under the appropriate nutritional and environmental conditions, produce the desired metabolite. The Kosher status of products so produced is dependent on the Kosher status of the following:

- **Cultures used for inoculation:** Traditionally, microorganisms available for such fermentations were those occurring in nature, requiring microbiologists to scour the world for microorganisms exhibiting the desired fermentation characteristics. A refinement in this technique involved the development of mutagenesis, whereby random mutations of microorganisms were induced, allowing for the selection of appropriate mutant varieties that exhibited superior characteristics. The most recent advance in microorganism manipulation has been the development of genetic engineering, by which the genetic coding of a microorganism may be modified to allow it to produce metabolites not naturally part of its metabolic cycle. Although such technology is subject to much discussion and debate as to its safety and ethical ramifications, most *Halachic* authorities agree that microorganisms so modified pose no extraordinary *Kashrus* concerns. The Kosher status of all types of cultures, whether naturally occurring or genetically engineered, is therefore a function of the Kosher status of their propagation media, as noted previously.

<sup>12</sup> Such products are known as *extracellular* metabolites and form the bulk of the enzymes and amino acids commercially produced through fermentation. Other metabolites remain within the cell wall and are not secreted during fermentation, and are referred to as *intracellular* metabolites, the recovery of which involves the lysis of the cell wall to allow access to the desired chemicals. This scientific distinction, however, is not *Halachically* significant.

<sup>13</sup> Commercial sources of enzymes are not limited to fermentations, although they are currently the largest source of many types of such products. Plant proteases (for example, papain and bromelain) and preparations derived from animal tissue (for example, rennet, lipase, and trypsin) are commonly used in the food industry (see “The Story of Enzymes,” in Chapter 17, for a discussion of the *Kashrus* issues related to such products).

<sup>14</sup> For example, citric, lactic, and acetic acids. Other organic acids, such as malic, fumaric, and (synthetic) acetic acid, may be produced through chemical synthesis.

- **Nutrient media in the fermentor:** From a *Kashrus* perspective, fermentations from which metabolites are recovered are viewed in the same manner as are fermentations of foodstuffs; the subsequent separation of the chemicals from the residual nutrient is considered irrelevant. The Kosher status of chemicals recovered from fermentations is therefore a direct function<sup>15</sup> of the Kosher status<sup>16</sup> of the media<sup>17</sup> on or in which the fermentation took place.<sup>18</sup>
- **Postfermentation recovery and processing:** Recovery of metabolites involves their separation from the host microorganism, which typically involves the termination of the growth the microorganism<sup>19</sup> prior to such separation. Often, the microorganism will consume all available nutrients and expire of its own accord. In other situations, the fermentation media must be treated with heat or chemicals (for example, lysozyme) to effect their demise, and the Kosher status of equipment and ingredients used for this purpose must be ensured. When such equipment is used for non-Kosher productions, it must be *Kashered* prior to its use in processing Kosher products.<sup>20</sup> In addition, chemicals used to aid in the separation (for example, flocculants and antifoams) must meet Kosher requirements.
- **Diluents:** Recovered enzymes are often blended with diluents, either to preserve their activity or to allow for a uniform activity level. Liquid diluents may include glycerol, which requires a reliable Kosher certification. Powdered diluents may include lactose, which requires a reliable Kosher certification and whose use would accord the finished product a Dairy status.
- **Spray drying and lyophilization:** Processing that involves heat, such as when drying a product, must take place on equipment that is in Kosher service.

<sup>15</sup> Two significant exceptions should be noted in this regard. Some *Kashrus* agencies allow enzymes produced through the fermentation of lactose to be considered Pareve and may even allow small amounts of casein to be included in Pareve fermentations (see “The Story of Enzymes,” in Chapter 17, for an explanation of this approach). Additionally, many *Kashrus* authorities permit the use of *Kitniyos* in the production of Passover-approved fermented chemicals, such as citric acid and *L*-phenylalanine (used in the production of aspartame) (see “The Story of *Kitniyos*,” in Chapter 17, for a discussion of this approach). Critical to note, however, is that neither of these two leniencies applies to diluents added to the product subsequent to fermentation. All such diluents and additives are subject to conventional ingredient *Kashrus* policies.

<sup>16</sup> As noted earlier in the text, the normative Kosher approach to microorganisms is to consider them *pareve* to be *Halachic* nonentities, with any changes wrought to a fermentation medium considered merely as a modified form of the original material.

Some authorities, however, have taken the position that microorganisms may be considered on a par with other living organisms as regards the metabolites they produce. According to this approach, just as the diet of a cow has no bearing on the milk it produces, so to the nutrients on which the microorganisms grow are considered equally irrelevant. In effect, a microorganism may be considered a “*Halachic* cow” for this purpose, and the Kosher status of metabolites so produced (and recovered from the growth media) is unrelated to the Kosher status of the fermentation media. It is important to note, however, that normative standards relating to Kosher fermentations do not accept this premise.

<sup>17</sup> Concerns related to the Kosher status of such media include its nutritive components, functional additives (for example, antifoams), and the Kosher status of the equipment in which such media are prepared and sterilized.

<sup>18</sup> In general, no distinction is made in this regard between submerged (tank) and surface (such as koji) fermentations.

<sup>19</sup> Certain continuous fermentations, such as in the case of fermentation-produced vinegar (acetic acid), allow the ongoing addition of nutrients and removal of metabolites without arresting the fermentation.

<sup>20</sup> Equipment used for recovery that takes place at ambient or cooler temperatures need not be *Kashered*, however, provided that material does not remain in a vessel for more than twenty-four hours (*Ka'vush*) and no residue from the previous non-Kosher materials remains.

# 9 The Dairy Industry

The Kosher status of milk is dependent on the Kosher status of the animal from which it is derived. Milk from Kosher species,<sup>1</sup> such as cows, sheep, and goats, is inherently Kosher.<sup>2</sup> As with any food, products containing milk or milk components are subject to all conventional *Kashrus* concerns relating to ingredients and the status of the equipment on which they are produced. In addition, the production of dairy products or the use of dairy ingredients raises the following three specific issues that must be addressed by the food manufacturer:

- A “Dairy” status as it relates to concerns of *Ba’sar b’Cholov* (the mixing of milk and meat)
- *G’vinas Akum*—special rules that relate to cheese ingredient issues that commonly attend dairy products
- *Cholov Yisroel*—special rules that relate to the supervision of the milk itself

## Dairy Status

The rules of *Ba’sar b’Cholov* prohibit the mixing of Kosher meat and milk products, their consumption at the same time, or the consumption of dairy products for a certain period of

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<sup>1</sup> Biblical requirements for Kosher species of animals stipulate that they must be ruminants (chew their cud) with split hooves. The vast majority of milk used for drinking and processing in Western countries is derived from cows, which are Kosher. Other types of Kosher milk of commercial significance come from goats and sheep, most of which is used in the production of cheese. Milk from horses, pigs, camels, and donkeys is not Kosher, although such milk is generally of no commercial value in Western countries and is not used in food production. Note, however, that mare and camel milk may be sold in health stores for their reputed therapeutic value, and have been found to be processed on equipment used for other types of inherently Kosher milk (see the section “*Cholov Yisroel*—Supervised Milk” for a discussion of *Cholov Yisroel*).

<sup>2</sup> Otherwise Kosher species of animals can also lose their Kosher status if the animal died or was killed in a non-Kosher manner (*N’veilah*), or if certain internal organs sustained a mortal injury or defect (*T’reifah*) (see “The Story of Kosher Meat” in Chapter 17). Milk derived from such animals is also considered non-Kosher. In most cases, this rule is academic: Dead animals are not milked and one is not required to inspect the internal organs of animals after milking to ensure that they are not *T’reifos*! Modern veterinary science, however, may have created a concern with milk from *T’reifos*. Under certain conditions, cows develop a type of bloat known as left displaced abomasum, a condition in which gas builds up in the abomasum, causing constriction of the digestive system. The type of surgery often performed to remedy this condition may involve puncturing certain internal organs that, according to certain opinions, renders the animal a *T’reifah*. Absent any specific knowledge of such surgery, however, the consensus of most authorities is that the general milk supply is not compromised by this concern because one may assume that the majority of cows are not so affected. (Others also posit that the type of wound inflicted, coupled with its therapeutic nature, does not constitute an injury sufficient to create a *T’reifah*.) On the other hand, many authorities are less sanguine when the source of milk is known to be cows that have been treated with this type of surgery. This is a particular concern for *Cholov Yisroel* because the very act of supervision presupposes knowledge of the surgical history of the cows. *Cholov Yisroel* certification therefore generally entails ensuring that the herd is free of cows that have been surgically treated for left displaced abomasums by the aforementioned treatment. (Other treatments may pose no *Kashrus* concerns.) (Some authorities extend this concern to animals that have had a caesarian section.)

time after eating meat.<sup>3</sup> Further, products that contain a dairy component assume the status of that component.<sup>4</sup> To avoid using prohibited mixtures or eating a meat or dairy product at an inappropriate time, an indication of a product's Dairy status is therefore generally printed on the label as part of the Kosher-certification symbol. A product's Dairy status is significant to the food manufacturer at the following three levels:

**A. Product formulation constraints:** From a product formulation perspective, the inherent inability to mix milk and meat ingredients restricts product formulation flexibility. One may not use caseinate-based emulsifiers in sausages or cream sauces in meat dishes, nor is producing a cheeseburger permissible. Even ingredients that are processed on dairy equipment may not be used in the production of meat or Pareve products. In a restaurant or other food-service setting, one may not serve dairy products (such as butter, milk, or ice cream—or foods processed on dairy equipment) together with meat meals. Indeed, restaurants are typically certified as either dairy or meat, eliminating the use of foods from the opposite category.

Another important dairy formulation restriction involves bread. Kosher law requires that all full-sized loaves of “regular” bread be Pareve.<sup>5</sup> Common dairy bread ingredients, such as whey and milk powder, may therefore not be used in the production of such Kosher bread, nor may it be baked on dairy equipment. This restriction does not apply, however, to rolls, muffins, or any type of cake.

**B. Equipment status and segregation:** From a production perspective, the use of dairy ingredients poses specific requirements regarding the utilization of processing equipment if either Pareve or meat productions take place. Processing systems used exclusively for dairy (or dairy-certified) products pose no concern. However, equipment on which both meat and dairy products are processed may not be used for the production of the products containing ingredients of the opposing category without following specific *verifiable* cleanup procedures. In certain cases, primarily when only cold processing is involved, a thorough cleaning may be sufficient to allow such cross utilization. In other situations, primarily when cooking or heating is involved, the equipment assumes the status of the product that has been processed on it, and an appropriate Kosherization would be required. Alternatively, separate equipment must be maintained for meat and dairy productions. Failure to respect this segregation—that is, producing a dairy product on meat equipment or vice versa—compromises the Kosher status of both the product and the equipment.

<sup>3</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a full discussion of the rules of *Ba'sar b'Cholov*.

<sup>4</sup> Under certain conditions, the inclusion of a minor amount of a dairy or meat ingredient (less than 1/60, and provided that it does not impart a perceptible flavor) is technically subject to the rules of *Bitul* (nullification). However, one may not intentionally (*ab initio*) mix milk and meat together even in minor amounts or include such a minor dairy or meat component in a Pareve product. Pareve products containing even minor amounts of dairy or meat components must therefore be certified as “Dairy” or “Meat,” respectively. Nonetheless, processing foods containing *Batul* levels of dairy or meat ingredients (even if intentionally included) does not compromise the otherwise Pareve (or opposing) status of equipment. (Foods containing *Batul* levels of meat also do not trigger the required waiting period before eating dairy products, nor are products containing *Batul* levels of milk subject to that waiting period after eating meat. In most cases, however, making such information available to the consumer is not practical because of confidentiality constraints, and products containing even minor dairy or meat components are thereby certified as simply “Meat” or “Dairy.”)

<sup>5</sup> See “The Story of Bread,” in Chapter 17, for an explanation of this rule and its application.

Maintaining the Pareve status of products that do not contain meat or dairy ingredients requires that the common equipment be similarly cleaned or Kosherized or that separate equipment exclusively for Pareve production be maintained. Note, however, that any such segregation must be subject to sufficient control and oversight to guarantee its integrity for both equipment and foods produced. If the required Kosherization or equipment segregation is either not feasible or too costly, a company may find producing such products on dairy equipment and certifying them as such, thereby foregoing a Pareve designation, to be appropriate. Indeed, many products owe their Dairy designation solely to the status of the equipment on which they are processed.<sup>6</sup>

- C. **Relative utility of Dairy versus Pareve products:** The food technologist must also take into account the functional and nutritional properties of dairy ingredients when formulating a product. Many Kosher cakes, cookies, and confections—even imitation meat products—take advantage of a variety of dairy ingredients (such as powdered milk, casein, and whey) to achieve desired qualities. In such cases, a Kosher Dairy designation may be the preferred option for certification. From a marketing perspective, however, the ideal status for a Kosher product may be Pareve because Pareve products may be eaten with and after all types of meals. Products that are certified as Dairy, on the other hand, may not be eaten during a meat meal or for a certain period thereafter. Although Kosher consumers readily accept such restrictions for milk, butter, and cheese, many tend to prefer Pareve versions of other products when possible because they offer greater utility in the Kosher diet. This factor should therefore be taken into account when determining the formulation of a product or the status of the equipment on which it is to be produced.

Another consideration in deciding whether to produce a Dairy or Pareve product involves concerns of *Cholov Yisroel*—specially supervised milk. This rule is discussed in greater detail at the end of this chapter, but note that virtually all dairy ingredients under general Kosher certification do not meet this requirement. Although most of the Kosher market may not demand adherence to the rules of *Cholov Yisroel* (see the section “*Cholov Yisroel*—Supervised Milk”), a significant market segment chooses to avoid all dairy products that are not *Cholov Yisroel*. Pareve products—being milk free—meet the requirements of this market segment.

## Cheese and *G'vinas Akum*

A rule unique to certain dairy products is known as *G'vinas Akum*<sup>7</sup> (literally, “the cheese of a non-Jew”). This rule affects not only the Kosher status of cheese but also a number of other dairy products (such as whey and casein) that are related to it. Before discussing general *Kashrus* issues relating to dairy products, this text first defines the concept of *G'vinas Akum*.

The rule of *G'vinas Akum* stipulates that cheese may be considered Kosher only if a Kosher-observant Jew directly participates in its production, even if all the ingredients used

<sup>6</sup> Some Kosher-certifying agencies distinguish between products that actually contain dairy ingredients (certified as “Dairy”) and those that are merely processed on dairy equipment (certified as “Dairy Equipment” or “DE”) Others, however, feel that such distinctions create unnecessary confusion and therefore certify all such products as “Dairy.”

<sup>7</sup> Historically, the production of cheese required the use of animal-derived rennet, which could be considered Kosher only when extracted from the tissue of a Kosher-slaughtered and prepared calf. According to many authorities, the law of *G'vinas Akum* was instituted to ensure compliance with this requirement (see “The Story of Cheese and Casein,” in Chapter 17, for a full discussion of *G'vinas Akum*).

in its production are Kosher.<sup>8</sup> Authorities disagree as to the level of involvement required of the *Mashgiach* in the production of the cheese. Although many authorities believe that the *supervision* of the *Mashgiach* is sufficient to obviate concerns of *G'vinas Akum*, some require that the *Mashgiach* actually *make* the cheese (defined as adding the coagulant to the milk). From a practical perspective, *Kashrus* agencies are often stringent in this matter and require the *Mashgiach* to physically add the rennet or initiate and control the automated rennet injection system.<sup>9</sup> (Some organizations also require that the *Mashgiach* add the starter culture to the milk, even if the milk is to be subsequently coagulated with rennet.)

The rule of *G'vinas Akum* and its attendant requirement for supervision, however, may not apply to all types of cheese. Many authorities distinguish between cheeses that rely on rennet<sup>10</sup> or similar proteolytic agents<sup>11</sup> (rennet set) to effect their coagulation and those that rely primarily on acidification (acid set). According to this approach, only rennet-set cheeses are subject to the rules of *G'vinas Akum*,<sup>12</sup> whereas acid-set cheeses are deemed to be nothing more than fermented milk and thus not true cheese for this purpose. Many, but not all, Kosher-certification agencies subscribe to this distinction and require special supervision only for rennet-set cheeses (for example, Münster, Swiss, Gouda, mozzarella, and cheddar). Acid-set cheeses (such as cottage cheese and cream cheese) may therefore be certified without subjecting them to the rigors of the supervision required of true cheese.

## Practical Issues Relating to Dairy Products and Ingredients

The following sections describe common dairy products and the *Kashrus* issues often encountered in their production.

### Fluid Milk

In countries where the integrity of the milk supply is assured by a reliable regulatory mechanism, fluid milk is generally considered an inherently Kosher product.<sup>13</sup> However,

<sup>8</sup> Many authorities rule that if the cheese is actually *owned* by a Jew, the rules of *G'vinas Akum* do not apply and the Kosher status of such cheese is subject to normative Kosher ingredient requirements.

<sup>9</sup> Some Kosher certifications define the criteria of *G'vinas Akum* much less restrictively and approve cheese if it is known to have been manufactured with Kosher ingredients. Although some *Halachic* basis for such a position may exist, the overwhelming consensus of *Halachic* authorities, as codified in the *Shulchan Aruch*, is to reject this approach and require on-site supervision for Kosher cheese. From a practical perspective, cheese not conforming to such supervision requirements is considered non-Kosher under normative Kosher standards.

<sup>10</sup> The thesis of this distinction is based on the following consideration: Because the rule of *G'vinas Akum* was instituted to address concerns relating to the use of rennet in the manufacture of cheese, only those cheeses that use proteases as their primary coagulating agent were made subject to its restrictions.

<sup>11</sup> Although plant- or microbially derived proteases (“microbial rennet”) may not pose the same *Kashrus* concerns as does animal rennet, *Halacha* specifically considers cheese produced with all such coagulating agents as subject to the rules of *G'vinas Akum*.

<sup>12</sup> *Halachic* literature often refers to rennet-set cheese as “hard” cheese and acid-set cheese as “soft” cheese. Such nomenclature is confusing, however, and does not reflect the thesis of their distinction. In addition, certain rennet-set cheeses (for example, Camembert, Brie, and Stilton) are commonly referred to by the cheese industry as “soft” cheese, even though their primary coagulant is rennet and thus subject to the rules of *G'vinas Akum*. In addition, the terms “hard” and “soft” cheese are more appropriately used in the context of establishing which types occasion a waiting period before eating meat products (see “The Story of Cheese and Casein” in Chapter 17). This text therefore uses the terms “rennet-set” and “acid-set” for purposes of distinction relating to issues of *G'vinas Akum*.

<sup>13</sup> Issues relating to *Cholov Yisroel* are discussed further in this chapter.

certain ingredients routinely added to milk may cause *Kashrus* concerns. Vitamin D is added to virtually all bottled milk, and the addition of vitamin A is often mandated in skim milk to offset the vitamin A naturally present in the removed milk fat, both of which may pose significant *Kashrus* concerns.<sup>14</sup> In addition, the diluents used in the manufacture of vitamin preparations (such as polysorbates) may pose *Kashrus* concerns for both year-round and Passover use.<sup>15</sup>

Lactose-reduced milk is produced by treating milk with a *lactase* enzyme to hydrolyze the lactose into its constituents, glucose and galactose. Note that in addition to the general requirement that such enzymes be Kosher, they are generally produced through the fermentation of *Chometz* and therefore inappropriate for use in Passover-certified milk.

### **Powdered Milk**

Milk can be dried into a powder using either spray-drying or drum-drying technology. Because the equipment used to spray dry milk may also be used to process non-Kosher products, spray-dried milk requires a reliable Kosher certification. In addition, powdered milk may be fortified with vitamin beadlets containing gelatin, which also require Kosher certification.

### **Cream**

Fresh dairy cream (also known as “sweet cream”) has the same *Halachic* status as milk. However, some consumer versions of whipping cream may contain emulsifiers and gelatin that require a reliable Kosher certification (see the section “Whey Cream” for additional *Kashrus* concerns relating to cream).

### **Rennet-Set Cheese**

The production of Kosher rennet-set cheese must address the following issues:

- All ingredients used must be Kosher. These include rennet,<sup>16</sup> cultures (including the mold used in blue and Brie types of cheese), culture media, colors, and flavor-enhancing enzymes (such as lipase preparations<sup>17</sup>). (Some manufacturers also add antimicrobial agents such as *nisin*, which must also be Kosher certified.)

<sup>14</sup> See “The Story of Vitamins” in Chapter 17.

<sup>15</sup> The Kosher for Passover status of polysorbates that contain sorbitol derived from corn has been the subject of divergent opinions. Some organizations certify such polysorbates as Kosher for Passover, whereas others reject them (see “The Story of *Kitniyos*,” in Chapter 17, for a full discussion of this issue). It is therefore important for a manufacturer to clarify the position of its Kosher-certifying agency in this regard because some “Kosher for Passover” vitamin blends may not be acceptable to some *Kashrus* organizations.

<sup>16</sup> Although some traditional Kosher calf rennet has been made in recent years, the vast majority of the rennet used in the production of Kosher cheese is microbially derived. Both conventional and genetically engineered, microbially derived rennet have been approved as Kosher (see “The Story of Enzymes” in Chapter 17).

<sup>17</sup> Microbially derived lipase products are readily available as Kosher items. Animal-derived lipase, derived from oral gastric tissue of kids, lambs, and calves, has certain properties that are difficult to duplicate with microbially derived products. Recent advances have allowed for the production of limited amounts of lipase derived from Kosher-slaughtered and specially processed *oral gastric tissue* (tissue found in and near the gullet) under reliable Kosher certification. Note that some lipase material sold as “Kosher” is actually derived from non-Kosher animal tissue and should not be considered acceptable. (The rationale for this

- To address issues of *G'vinas Akum*, the cheese must be produced under the full-time supervision of a *Mashgiach*. In most cases, the *Mashgiach* should physically add the rennet or control the system that introduces the rennet into the milk. (Some Kosher certifications require that the *Mashgiach* also add the starter culture.)
- The rules of *G'vinas Akum* apply only to the actual coagulation of milk. The further processing of one type of cheese into another, as in the production of American Process Cheese Food, or the use of casein protein in the production of *analog* cheese, is *not* subject to this rule.

With perhaps one significant exception outside Israel, virtually all Kosher cheese is produced in plants that also process non-Kosher cheese. In such situations, the following additional issues must be addressed:

- Cheese is generally heated in the coagulation vat as part of the curdling process. A concern may therefore arise regarding the Kosher status of the cheese vats because they are typically also used to heat non-Kosher cheese. In most cases, however, the temperature of such heating is below 120°F, which is not considered high enough to compromise equipment as relates to cheese issues.<sup>18</sup> Low-temperature cheeses (for example, cheddar, Münster, mozzarella, and Gouda) may be produced in vats that are also used to produce non-Kosher cheese without requiring Kosherization (provided that they are cleaned thoroughly).<sup>19</sup> The production of higher-temperature cheeses, such as Swiss and certain Italian-type cheeses, often involves temperatures exceeding this reference temperature, and vats used to produce non-Kosher versions of these cheeses are subject to an appropriate Kosherization prior to their use for Kosher productions.
- *Pasta filata* cheese, such as Italian-style mozzarella or provolone, typically involves cooking the curd in a hot-water bath (140–160°F), which is well above the 120°F threshold level. Such equipment must therefore be Kosherized for Kosher productions. In addition, the molds into which the hot cheese is poured are subject to Kosherization.
- Equipment used to *slice* cheese at ambient (or colder) temperatures does not require Kosherization, although it must be cleaned thoroughly from all residue of non-Kosher cheese.
- Salt is added to most types of cheese, and a common method of its introduction is to soak the cheese in salt brine. However, salt brine in which non-Kosher cheese has been soaked may not be used for Kosher cheese productions, so separate brines must be maintained for Kosher cheese production. In addition, the tanks used to hold non-Kosher brine must be Kosherized before use with Kosher brine.<sup>20</sup> *Direct* salting of the curd (as in the case

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designation is based on the fact that the material is desiccated to the point of being inedible. In certain circumstances, *Halacha* does consider *inedible* foods as having lost their prohibited status. The application of this approach in this situation, however, has been rejected by the vast majority of *Kashrus* authorities.)

<sup>18</sup> The temperature at which *B'lios* (absorbed flavors) may be transferred to and from equipment is called *Yad Soledes Bo* and, for most purposes, is considered to be somewhat lower than 120°F (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”). For applications relating to cheese and whey productions, however, most authorities have concluded that we may assume the more lenient definition of 120°F for *Yad Soledes Bo*.

<sup>19</sup> This is true even if the vat is heated with a steam jacket, which is significantly hotter than the cheese itself, because *B'lios* transfer only if the product also reaches that temperature.

<sup>20</sup> Even though the brine is maintained at refrigerated temperatures, salty or sharp-tasting foods have the ability to transfer *B'lios* from a vessel to the brine at any temperature (see Chapter 2, “Basic *Halachic*”).



of cheddar cheese) poses no concern. (*Dry salting* of blocks of cheese similarly poses no *Kashrus* concerns.)

- The production of processed cheese (“American cheese”) involves melting and blending cheese with various other ingredients (for example, dairy solids and emulsifiers). In addition to ensuring that the cheese as well as all other ingredients are Kosher, this process requires the Kosherizing of the equipment that handles the hot cheese slurry.
- The production of cheese analog (“imitation cheese”) involves the hot processing of casein or soy proteins, vegetable fat, and flavors. Again, all ingredients and equipment must be Kosher. (Note, however, that any secular “Non-Dairy” designation on casein-based products belies the fact that they are both *Halachically* and nutritionally dairy.)
- *Enzyme-modified cheese* is produced by mixing various types of protease and lipase enzymes together with fresh cheese, thus accelerating and intensifying the flavor development of the cheese. Because the cheese had already been coagulated, the rules of *G’vinas Akum* are not applicable. *Kashrus* concerns are limited to the Kosher status of the cheese, enzymes, and equipment.

### **Acid-Set Cheese**

As discussed previously, many of the major Kosher-certifying agencies do not consider acid-set cheese to be a type of cheese that is subject to the strictures of *G’vinas Akum*. Examples of such cheese are cottage cheese, farmer’s cheese,<sup>21</sup> cream cheese, ricotta cheese, and Neufchatel. The production of such products does not require the full-time supervision of a *Mashgiach*. Rather, Kosher requirements for their production devolve to conventional Kosher issues, such as the Kosher status of the ingredients and equipment used in their manufacture.

In planning for a Kosher certification for such product, the following ingredient issues should be noted:

- Cheese whose *primary* coagulation is achieved through acidification is classified as “acid-set” cheese. Such acidification can be achieved either through fermentation (during which bacteria produce lactic acid) or through the direct addition of an acid (for example, phosphoric, acetic, or citric). Note that the use of small amounts of Kosher rennet (that is, an amount insufficient to effectively coagulate the milk) does *not* compromise the “acid-set” status of such cheese.
- Cottage cheese is typically produced in two stages. First, skim milk is coagulated by acidification, after which the curd is mixed with a cream-type dressing. Often, this dressing includes various types of emulsifiers, which must meet Kosher requirements. In addition,

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Concepts in *Kashrus*”). Some authorities, however, do allow the use of non-Kosher brine tanks, provided that the Kosher brine does not remain in the non-Kosher brine tank for twenty-four hours. The tanks must be cleaned, filled with Kosher brine, and then used to brine Kosher cheese for no more than twenty-four hours, by which time all the Kosher cheese must be removed. (The *Halachic* basis for such a system is the opinion of many authorities that salt water will not leach *B’lios* from equipment in fewer than twenty-four hours.) Others are less sanguine about such a course of action and, in any event, such a process is cumbersome and difficult to maintain.

<sup>21</sup> Terms such as “farmer’s cheese” are not as specific as those of many rennet-set cheeses and may be applied to a number of different types of cheese in different countries. Terms used in this work follow common usage in the United States.

some types of nonfat cottage cheese include gelatin in this dressing, an ingredient that poses significant *Kashrus* concerns.<sup>22</sup>

## Whey

The liquid that remains after the cheese curd has formed is called *whey* and contains water, protein, fat, lactose, and minerals. Whey is a valuable byproduct of cheese production and is used as a food ingredient either as whole whey or by processing it into its discrete components. According to many authorities, whey is not subject to the requirements of *G'vinas Akum*—even when it is derived from the production of cheese that would otherwise be prohibited as *G'vinas Akum*.<sup>23</sup> In such cases, the Kosher status of whey is contingent on conventional Kosher ingredient and equipment concerns. Most Kosher-certification organizations follow this approach and accept whey from non-Kosher (*G'vinas Akum*) cheese productions, subject to the following concerns:

- The rennet, as well as all other ingredients, used in the production of the non-Kosher *G'vinas Akum* cheese must be Kosher. This requirement includes all cultures, flavoring additives (such as lipase), and processing aids.
- The cook temperature of the curd and whey mixture must be maintained below 120°F.<sup>24</sup> Any subsequent heating of the curd after the whey has been removed from it, however, is of no consequence (see the section “Whey Cream” concerning mozzarella whey).<sup>25</sup>

The application of these two concerns has the following practical consequences:

- Provided that Kosher ingredients are used, whey derived from most cheddar, Münster, and similar low-cook-temperature cheeses may be certified as Kosher.<sup>26</sup>
- When the production of such low-cook-temperature cheese involves the use of non-Kosher rennet or lipase, most authorities rule that whey derived from it would not be considered acceptable.<sup>27</sup> However, most authorities rule that the Kosher status of equipment on which such whey is processed is *not* to be compromised.<sup>28</sup>

<sup>22</sup> See “The Story of Gelatin” in Chapter 17.

<sup>23</sup> See “The Story of Whey,” in Chapter 17, for a full discussion of this issue as well as other points regarding whey discussed in this chapter.

<sup>24</sup> The thesis behind this requirement is that *G'vinas Akum* considerations preclude the curd from being deemed a Kosher material; therefore, cooking the whey with the unacceptable curd would lead to a transfer of *B'lios* from the curd into the whey. Although this approach is not universally accepted (see “The Story of Whey,” in Chapter 17, for an in-depth discussion of the issue), most major Kosher-certifying agencies have agreed to maintain a common standard on this point.

<sup>25</sup> The equipment used to process Kosher whey may not be used to process unacceptable whey, except as noted later, concerning unacceptable whey produced with non-Kosher animal rennet.

<sup>26</sup> Although not a common practice in the United States, cheese makers in Europe warm some “low-cook-temperature” cheeses by washing them with hot water.

Although the *average* temperature of the cheese may not rise above 120°F, the water that is sprayed on the curd—with much of the whey still in the vat—is far hotter. Whey derived from such productions is considered the same as that from “high-cook-temperature” cheese.

<sup>27</sup> Some manufacturers have developed a process to hasten the aging process of cheddar cheese by adding a lipase preparation to the milk.

<sup>28</sup> The thesis behind this leniency is that although such whey cannot be approved for use because of the inclusion of non-Kosher material, the amount of such offending material is small enough to render it *Batul* and thus does not affect the status of equipment on which it is processed.

- Whey derived from Swiss cheese is generally not acceptable, because the classic Emmentaler process involves a cook temperature of approximately 126°F.<sup>29</sup> Further, in contradistinction to whey that is considered unacceptable because of ingredient issues, many authorities rule that whey compromised by temperature issues renders the equipment on which it is processed non-Kosher.<sup>30</sup>

Some manufacturers, however, have succeeded in lowering the cook temperature of the Swiss cheese process to below 120°F, thus allowing for the Kosher certification of its whey. In addition, certain types of Swiss cheese (often called “Baby Swiss”) are normally processed at lower temperatures and do not present this concern.

- Parmesan, romano, and some other types of Italian cheese typically pose two concerns regarding their whey. First, their cook temperature is often above 120°F. Second, their traditional recipes often include the use of various types of lipase preparations to develop their characteristic flavors. For their whey to be approved, the cook temperature must be maintained below 120°F and the enzymes used must be Kosher certified. If the cook temperature is below 120°F but the enzymes are not Kosher, the whey is not considered acceptable but does not compromise the Kosher status of the equipment on which it is processed.
- The production of classic *pasta filata* mozzarella and provolone cheese poses a unique concern in that the water from the cooker/stretcher is often mixed with the whey stream.<sup>31</sup> Although the cook temperature of the initial curd and whey mixture may be below 120°F, the temperature of the water in the subsequent cooking/stretching process is generally about 160°F. According to many authorities, the cooking of the non-Kosher curd in this dairy and fat-laden water renders the water non-Kosher and, by mixing with the otherwise Kosher whey, compromises the Kosher status of the entire whey stream. Whey (as well as whey cream; see the following section) from such cheese production may be certified as Kosher only if the water from the cooker is handled separately from the whey.<sup>32</sup>

<sup>29</sup> Some Kosher-certifying agencies permit the use of otherwise unacceptable Swiss cheese whey for use in starter media powder. This exception is based on several considerations, notably the fact that some do indeed permit such whey and that it is *Batul* when used and consumed by the bacterial culture.

<sup>30</sup> Other authorities, however, are less strict on this point and rule that Swiss cheese whey will not compromise the Kosher status of equipment on which it is processed.

<sup>31</sup> The *pasta filata* process involves heating the curd in a hot-water bath and stretching it to develop certain properties in the cheese. Although this process takes place *after* the whey has been recovered—and therefore should be irrelevant to its Kosher status—a production exigency common in the industry tends to compromise the erstwhile Kosher status of such whey. As the cheese curd passes through the hot-water cooker/stretcher that is the hallmark of a *pasta filata* process, some fat, whey, and other dairy solids are leached into the water. In addition, the direct steam that is injected into the water to maintain its temperature condenses into water. These two factors combine to create an overflow of water that is laden with valuable fat and dairy solids, and the most expedient means of recovering them is to combine this overflow with the whey stream.

<sup>32</sup> Some Kosher-certification organizations have adopted the following method of allowing the partial recovery of mozzarella cook water. Instead of combining this water with the whey stream—and thus compromising the Kosher status of the whey—the cooker water is collected and separated into its aqueous and fat phases. The aqueous phase must then be discarded. However, the fat phase, which is the most valuable component of this water, is then used to augment the fat level of milk used in the production of subsequent vats of cheese at usage rates below 1.6 percent (*Bitul*). Even though a small amount of unacceptable fat had been added to the cheese production, the whey derived from it is nevertheless acceptable because the fat is *Batul* and the introduction of the fat was *intended* to remain in the (non-Kosher) cheese and not in the resulting whey. (Such an approach is not acceptable when the intention is to recover whey cream from the whey, because the addition of the non-Kosher whey cream is perforce intended, at least in part, to augment the yield of the whey cream from the subsequent vat of cheese.) Other organizations do not accept such an

## **Whey Cream**

As it separates from the curdled casein that forms the cheese, whey typically contains a significant level of fat. In virtually all cases, this fat is removed through centrifugation and sold as a discrete product for use in the manufacture of products that include cream (for example, butter, ice cream, and cream cheese). The *Kashrus* issues relating to whey cream are identical to those governing the Kosher status of whey (see the section “Butter, Butter Oil, and Buttermilk” concerning the use of whey cream in the production of butter).

## **Condensed and Powdered Whey**

Liquid whey contains more than 90 percent of water, much of which is typically removed to create a more concentrated condensed or dried whey product. Whey is commonly used in the baking industry for both its moisture-retaining and browning properties. It is also used in many health and nutrition products to increase protein levels (see the section “Whey Protein Concentrate”). The *Kashrus* issues relating to such products are identical to the original product.

The condensation process, however, may be the source of an additional *Kashrus* concern in that the water removed from the whey during condensation (either through reverse osmosis or through evaporative condensation) is often recovered. Such water, commonly referred to as “cow water,” is considered dairy and, if derived from non-Kosher whey, is similarly non-Kosher. This is significant whenever cow water is used in the boiler system to produce steam; its dairy or non-Kosher status may compromise the otherwise Pareve or Kosher status of productions using such steam. (It may also be used to clean equipment, thereby fostering similar concerns.)

## **Whey Protein Concentrate**

A further refinement of liquid whey processing involves concentrating the level of whey *protein* by removing some of the water, lactose, and minerals in the original product through ultrafiltration, yielding a *retentate* known as whey protein concentrate (WPC). (WPC typically contains between 30 and 70 percent protein, and when further concentrated—to approximately 90 percent—through ion exchange or microfiltration, the product is called whey protein isolate.) The *Kashrus* of such products is identical to that of the starting whey material.

## **Lactose and Minerals**

The liquid removed as part of the whey-concentrating process—known as *permeate*—is rich in both lactose and minerals. Lactose is used in many “non-dairy” applications, such as in certain candy coatings, enzyme fermentations,<sup>33</sup> and artificial sweeteners, as well as serving as an excipient in medicinal and vitamin tablets. Historically, virtually all lactose has been

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arrangement, however, because the introduction of an unacceptable ingredient into a Kosher product is generally unacceptable regardless of the level and motive.

<sup>33</sup> See Chapter 8, “The Biotechnology Industry,” and “The Story of Enzymes” in Chapter 17, regarding enzymes produced through the fermentation of lactose and their possible Pareve status.

derived from whey permeate and thus requires a reliable Kosher certification. Recently, the residual minerals from permeate have also been recovered and sold as “natural” mineral supplements; these are considered dairy.

### **Ricotta Cheese and Gjetost**

Although whey is that part of milk that does not normally coagulate during the production of cheese, whey protein can nevertheless be precipitated, as in the case of classic ricotta cheese. (Ricotta cheese can also be produced from whole milk, skim milk, or a mixture of milk and whey.) This type of soft, acid-set cheese is produced by a combination of acidification and heat; its status as regards *G'vinas Akum* concerns is the same as cottage cheese. Although also produced by cooking whey, Norwegian *Gjetost* is produced by the concentration of the whey protein and other solids through evaporation, which also serves to caramelize the lactose. This product is similarly free of *G'vinas Akum* concerns.

### **Butter, Butter Oil, and Buttermilk**

Butter is produced by concentrating the milk fat found in cream, either through churning (causing the fat to flocculate) or through centrifugal processing.<sup>34</sup> Although pure butter derived from fresh cream poses few *Kashrus* concerns, much of the butter manufactured today derives, at least in part, from *whey* cream. (Whey cream has a more pronounced flavor than that of fresh cream and its use is thus favored in lower quality, more flavorful grades of butter. However, it is also commonly used in the production of Grade AA butter.) In addition, butter is often flavored with lactic acid, cultures, diacetyl, or starter distillate, all of which raise *Kashrus* concerns. Butter therefore requires a reliable Kosher certification.

Butter oil, or anhydrous milk fat (that is, pure fat with no water), is generally derived from and subject to the same *Kashrus* concern as butter. Indeed, butter oil is usually produced from the lower grades of butter typically made from whey cream. *Lipolyzed butter oil* (LBO) is produced by the enzymatic hydrolysis of butter oil and used as an ingredient in butter flavorings. The enzyme used is a lipase preparation that may be derived from animal tissue or microbial sources, and requires a reliable Kosher certification.<sup>35</sup> (Lipolyzed cream is prepared in the same manner, but uses cream in place of butter oil.)

Classic buttermilk is the liquid that remains after the concentration; it is used commercially in both condensed and powdered versions. Its Kosher status is a direct function of the ingredients used in the manufacture of the butter from which it is derived. (“Buttermilk” typically sold as a consumer product is generally unrelated to butter production and is a specialty cultured skim milk product.)

### **Sour Cream and Yogurt**

Sour cream is produced by culturing of a blend of milk and cream, the resulting acidification serving to thicken the product. In addition to the cultures used, the Kosher status of the

<sup>34</sup> See “The Story of Butter,” in Chapter 17, for a thorough discussion of *Kashrus* issues relating to butter.

<sup>35</sup> See footnote 17.

product is a function of the stabilizing system in the product. Historically, gelatin has been used as a stabilizing agent; this material is generally not Kosher.

The use of even a small amount of such non-Kosher gelatin is sufficient to preclude its being certified as Kosher. However, the usage level of gelatin in the production of sour cream is typically *Batul* (below 1.6 percent) and, in such cases, does not compromise the Kosher status of the equipment on which it was processed.<sup>36</sup>

Yogurt is produced by culturing full-fat, low-fat, or skim milk with special yogurt cultures. The production of *custard*-style yogurt typically involves the use of gelatin, and its Kosher ramifications mirror those of sour cream. The Kosher status of flavorings as well as fruit preserves, granola, and other additives used in such products must also be verified.

### **Casein and Caseinate<sup>37</sup>**

Similar to cheese, “casein” is the precipitated casein complex of milk proteins. It differs from most types of cheese, however, in that it is made from skim milk, after which virtually all residual whey (including lactose) is washed out of the curd and is then dried into granular material. The methods by which casein is precipitated from milk, however, essentially mimic those processes—and *Halachic* criteria—of cheese manufacture. *Acid casein* is produced through the acidification of milk, either through the direct addition of acid or through fermentation.<sup>38</sup> Just as in the case of the acid-set cheese,<sup>39</sup> most Kosher-certifying agencies consider this product to be free of *G’vinas Akum* concerns. Its Kosher status is a function of the ingredients used in its manufacture, as well as concerns of its production on the same equipment as that used for rennet casein (see the following paragraph).

*Rennet casein* is produced through the proteolytic degradation of the casein, and most Kosher-certifying agencies indeed consider this type of casein to be subject to the rules of *G’vinas Akum*. As such, Kosher rennet casein must be produced under the full-time supervision of a *Mashgiach*, even if only Kosher rennet is used in its manufacture.

Because casein is rendered insoluble by reason of acidification, its neutralization allows its return to a soluble material state. *Caseinate* is therefore the soluble casein salt produced by the neutralization of acid casein, and its Kosher status is a function of the Kosher status of such casein. Rennet casein, on the other hand, is precipitated by protein degradation and cannot be converted into a soluble caseinate.

<sup>36</sup> Many authorities have ruled this to be true even if the non-Kosher gelatin were blended into the product in progressive stages, even though it may not be *Batul* in the intermediate stages. For example, a stabilizer blend containing such gelatin may be used at a 5 percent level (above the level of *Bitul*), provided that the amount of gelatin is less than 0.30 percent of the stabilizer blend. In such a case, the amount of gelatin in the *final* product would be below the 1.6 percent level of *Bitul* ( $5\% \times 0.30\% = 1.5\%$ ) and thus would not compromise the Kosher status of the equipment. Similarly, if the manufacturer dilutes gelatin prior to its introduction into the product, even though the level of gelatin may not be *Batul* at each stage, it would nevertheless be considered *Batul*, provided that the amount of gelatin in the final product was indeed below 1.6 percent.

<sup>37</sup> United States labeling regulations of casein as “non-dairy” relate solely to political considerations and have no *Halachic* standing. All casein and caseinate are *Halachically* dairy products.

<sup>38</sup> Casein derived by the direct addition of acid is generally referred to as “acid” casein, whereas product produced by acidification through fermentation is generally referred to as “lactic” casein. Although slight functional differences may be noted, they are essentially the same product, both from a technical and a *Halachic* perspective.

<sup>39</sup> Indeed, farmer’s cheese is virtually identical to acid casein, from both a technical and *Halachic* standpoint.

## Ice Cream<sup>40</sup>

Frozen dairy products, such as ice cream, pose several *Kashrus* concerns. Special attention must be paid to ingredients in the stabilizers that are routinely part of modern ice cream formulas, which may include such Kosher-sensitive ingredients as gelatin, polysorbates, and mono- and diglycerides.

In most situations in which a manufacturer produces both Kosher and non-Kosher ice cream flavors, the basic ice cream recipe is Kosher, with non-Kosher ingredients and flavors added after pasteurization. Therefore, the Kosher status of the equipment on which the non-Kosher flavors are produced may not be compromised because the product is well below *Yad Soledes Bo*. A significant *Kashrus* concern often does present itself, however, in dealing with “rework,” a term used by the industry to describe the recovery of unsaleable product for its inclusion in subsequent productions. When such rework is recovered from non-Kosher varieties (either those that contain non-Kosher flavors or particulate inclusions such as marshmallows), the method by which such material is handled (and repasteurized) must be designed so that it does not compromise the production of Kosher varieties.

Non-dairy frozen confections, such as some types of sherbet and (ironically named) “Pareve ice cream,” are often produced in facilities that also produce dairy ice cream. In such situations, an appropriate Kosherization is required to accord such products a Pareve designation.

## Hydrolyzed Casein and Whey

Casein and whey are sometimes hydrolyzed (either partially or fully) into their constituent amino acids. In the case of infant formula, casein that is *hypoallergenic* may be completely hydrolyzed and thus suitable for infants who suffer from allergic reactions to milk protein. Whey is often hydrolyzed in nutritional products to increase the bioavailability of certain nutrients. In many cases, the enzymes used to effect this hydrolysis are non-Kosher, animal-derived trypsin and pancreatin, and the resulting dairy hydrolysates are not considered Kosher. The potential Kosher status of the equipment on which such non-Kosher products are processed, however, may not be compromised, because the offending non-Kosher proteases are typically used in such low levels that they are considered *Batul*.<sup>41</sup>

## *Cholov Yisroel*<sup>42</sup>—Supervised Milk

By definition, milk from Kosher animals is Kosher per se. However, concerns of the adulteration of Kosher milk with that from non-Kosher animals served as the impetus of a Rabbinic requirement that milk must be supervised from the time of milking to ensure its Kosher integrity. This rule, known as *Cholov Yisroel*, requires that an Orthodox Jew (one who personally adheres to Kosher law) supervise the actual milking process and that such

<sup>40</sup> See “The Story of Ice Cream,” in Chapter 17, for a full discussion of these products.

<sup>41</sup> An additional factor is that, in many cases, casein hydrolysates have a very bitter taste that is considered *Pagum*, which, by definition, does not compromise the Kosher status of equipment (see “The Story of Infant Formula,” in Chapter 17, for a detailed discussion of the *Halachic* issues related to such products).

<sup>42</sup> Grammatical purists would cringe with the phrase “*Cholov Yisroel*” because the correct formulation is “*Cha’leiv Yisroel*” (“*Cha’leiv*” being the possessive form—“the milk of a Jew,” whereas “*Cholov*” the simple noun form). In the real world, however, the phrase “*Cholov Yisroel*” is universally employed and, the author’s predilection notwithstanding, serves as the normative terminology in this work.

milk be maintained under that control until consumed. Milk not so supervised (or otherwise permitted; see upcoming text concerning *Cholov S'tam*) is called *Cholov Akum* and is not considered Kosher. Indeed, although the prohibition of *Cholov Akum* is based on the possibility of adulteration, it is nevertheless considered an inherently non-Kosher product. As such, equipment on which it is processed is rendered non-Kosher, as would be the case with any other non-Kosher product for those who adhere to this stringency.

The application of the rules of *Cholov Yisroel* in the context of modern dairying is a matter of much debate. Although one may reasonably assume that the milk supply in areas such as North America is not subject to concerns of adulteration that were the proximate cause of the Rabbinic injunction of *Cholov Yisroel*, many authorities have ruled that the requirement of *Cholov Yisroel* remains operative nonetheless. In accordance with this approach, all milk acceptable as Kosher is produced under special supervision, and all Kosher dairy products are produced exclusively from such milk.<sup>43</sup> From this perspective, ordinary milk is treated as a “non-Kosher” product, one that compromises the Kosher status of equipment on which it is produced.<sup>44</sup> Given the limited amount of such *Cholov Yisroel* milk available, as well as its added cost, producing standard foodstuffs under a *Cholov Yisroel* standard is usually not practical.

Many authorities, however, have taken the position that the requirement for the special supervision of milk is necessary only when a significant concern of adulteration exists. For countries in which only Kosher milk is commonly used and governmental regulations serve to enforce a ban against adulteration with other types of milk, these authorities have ruled that all milk may be considered Kosher. Because this is manifestly the case in North America, most major Kosher-certifying agencies in the United States and Canada accept ordinary milk as Kosher.<sup>45</sup> (All agree, however, that unsupervised milk in countries where camels, horses, or donkeys are commonly milked is prohibited as *Cholov Akum*.)

Based on this approach, dairy products may be certified as Kosher in such situations even if the milk had not been specially supervised. Recognizing, however, that many Kosher consumers do not subscribe to this approach, a distinction has been made between dairy products certified as Kosher based on the acceptability of ordinary milk and those containing only supervised milk. Although not found in *Halachic* literature, the term *Cholov S'tam* (“simple milk”) has been coined to refer to Kosher ordinary milk,<sup>46</sup> as distinct from *Cholov Yisroel* (supervised milk).

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<sup>43</sup> *Halacha* recognizes that certain dairy products, notably cheese and butter, cannot readily be produced from non-Kosher milk. Some authorities therefore permit their use even if manufactured from non-supervised milk (see “The Story of Butter” and “The Story of Cheese and Casein,” both in Chapter 17, for a full discussion of this approach). In addition, some authorities have ruled that *whey* and powdered milk are also not subject to the requirements of *Cholov Yisroel*. On a personal level, many individuals who insist on *Cholov Yisroel* for fluid milk rely on one or more of these approaches for such processed products. From a practical perspective, however, virtually all products certified as *Cholov Yisroel* do not rely on these leniencies and require the use of *Cholov Yisroel* for all products.

<sup>44</sup> Some authorities, although rejecting the permissibility of *Cholov S'tam* milk per se, nevertheless rule that such milk does not compromise the Kosher status of equipment. Many people accept this position on a personal basis, but the certification of *Cholov Yisroel* products usually presupposes the more stringent approach.

<sup>45</sup> Although one may argue that the milk supply in Western European countries is of equal integrity, most European authorities nevertheless maintain the requirement of *Cholov Yisroel*.

<sup>46</sup> Some Kosher-certifying agencies indicate a “*Cholov S'tam*” status on letters of certification for such products; others feel that such a status is understood. All, however, specifically indicate a *Cholov Yisroel* status on both the letter of certification and the label of any product that so qualifies.



The distinction between *Cholov Yisroel* and *Cholov S'tam* is generally not a significant factor for manufacturers of dairy products for the mass market. The vast majority of Kosher-certified dairy products are not *Cholov Yisroel*, and the bulk of the Kosher-consuming market accepts them as eminently Kosher. Should a manufacturer wish to address the market segment that requires *Cholov Yisroel*, however, it must recognize that—for purposes of *Cholov Yisroel* only—products containing nonsupervised milk (*Cholov S'tam*) must be treated as “non-Kosher.”<sup>47</sup> Consequently, all equipments used in the production of *Cholov S'tam* products must be treated as though they were used for non-Kosher production and Kosherized or dealt with accordingly.<sup>48</sup>

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<sup>47</sup> All dairy ingredients used in *Cholov Yisroel* products must meet this requirement.

Non-*Cholov Yisroel* cultures, however, may be used as starters for the production of *Cholov Yisroel* cheese, provided that they had first been used for three fermentations in inherently *Cholov Yisroel* milk.

<sup>48</sup> A further point relates to the standard employed in the certification of Pareve products, in that several *Halachic* distinctions may be made between issues relating to non-Kosher ingredients and the equipment used to process them, and those relating to *Kosher* dairy products and their relationship to Pareve products. For example, certain types of Kosherization procedures may be acceptable from Kosher dairy to Pareve, but not from non-Kosher to Kosher. To ensure that Pareve products are acceptable to *all* Kosher consumers, however, most Kosher-certifying agencies ascribe a “non-Kosher” status to non-*Cholov Yisroel* dairy products vis-à-vis their impact on Pareve productions.

# 10 The Fish Industry

The Kosher status of fish is a function of several factors: establishing the Kosher status of the species per se, the method by which such fish may be identified at the time of use, and the method by which it is processed. Each of these factors must be addressed before a fish product may be certified as Kosher.<sup>1</sup>

## Kosher Species

According to *Torah*<sup>2</sup> law, any fish that exhibits both fins and *Halachically* acceptable scales is, by definition, a Kosher fish. The *Talmud*<sup>3</sup> posits that all fish that have scales have fins (but not vice versa), allowing the practical enquiry to focus only on the existence of appropriate scales to determine the Kosher status of any given species. No part of the fish—including the flesh, skin (such as for gelatin), roe (or milt), and oil—may be eaten until its Kosher status has been appropriately verified.

The Kosher or non-Kosher status of many species of marine life may be easily ascertained. Molluscan shellfish (for example, clams, mussels, oysters, squid, and octopus), Crustacean shellfish (for example, shrimp, lobster, and crab), and marine mammals are not Kosher species because they clearly lack scales of any sort. When dealing with species that do exhibit some type of scales, however, the *Halachic* definition of scales that define Kosher species of fish is more restrictive than its ichthyological counterpart. *Halacha* defines a scale as a protective covering attached to the surface of the skin of the fish, which can be removed without significantly damaging the underlying tissue. In addition, such scales must be discernible to the naked eye. Such requirements, therefore, effectively preclude certain “scaled” fish from being classified as Kosher. In general, cycloid and ctenoid scales meet the normative *Halachic* standards, whereas ganoid (such as those found on sturgeon) and placoid (such as those found on sharks) do not. Scales found on eels and swordfish<sup>4</sup> are considered too embedded in the skin to be *Halachically* acceptable, whereas the unique scales found on the blue marlin (species *Makaira nigricans*) are accepted by some authorities and yet rejected by others.<sup>5</sup>

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<sup>1</sup> In contradistinction to Kosher species of animals and fowl, Kosher fish need not be slaughtered, butchered, or processed in any specific manner. In addition, blood from Kosher fish is Kosher, although drinking such blood (without fish scales floating in it) is prohibited because it has the appearance of forbidden animal or fowl blood (*Mar'is A'yin*).

<sup>2</sup> *Leviticus* XI:9–12 and *Deuteronomy* XIV:9–10.

<sup>3</sup> *Chullin* 66b.

<sup>4</sup> The Kosher status of swordfish has been the subject of significant Rabbinic discussion and dispute, partly because of the lack of precision in determining which species is indicated by the term “swordfish.” Several significantly different species sport a distinctive “sword,” some of which may indeed be Kosher. Most authorities, however, concur that the species *Xiphias gladius*, commonly sold as swordfish, does not bear acceptable scales and is thus a non-Kosher fish.

<sup>5</sup> The scales of the blue marlin are quite anomalous in that they are not firmly fixed to the skin and have three branches; also, a thin layer of transparent skin covers the entire set of scales.

In determining the existence of proper scales, several additional points should be noted. A species is considered Kosher even if its scales are shed immediately on its removal from water. It is also sufficient for a species to exhibit scales at any point in its life cycle; for example, a species that grows scales only at adulthood is considered Kosher even as a juvenile, as is a juvenile fish that has Kosher scales and later loses them.

In addition, even one scale is sufficient for a Kosher designation.<sup>6</sup>

## Identification of Kosher Species

One must exercise care when listing specific species as Kosher because the nonscientific terminology commonly used to identify various species is far from precise, and the same name may be used in different areas to variously describe both Kosher and non-Kosher species.<sup>7</sup> After a species has generally been determined to be Kosher, however, one may accept a specific fish as Kosher based on the recognition of the species without actually inspecting it for the requisite scales. In practice, the ability to rely on such identification is typically restricted to whole (or gutted) fish, in which the species may be easily recognized.<sup>8</sup>

The Kosher status of fish that has been processed, however, may be determined by either of the following methods:

- Fillets whose skin has been removed, ground fish, fish oil, or canned (skinless) fish may be accepted as Kosher if a *Mashgiach* verifies the Kosher status of the fish prior to processing. The processed product would then be packaged and labeled under the control and supervision of the *Mashgiach* and would bear an appropriate label or marking as to its Kosher status.<sup>9</sup>
- Pieces or fillets of fish to which the skin is still attached may be accepted as Kosher because the scales on the skin attest to their Kosher status. Indeed, such fish may be considered Kosher even if the scales have been removed, because the indentations on the skin where the scales had been affixed sufficiently indicate their original presence.

A corollary of this method of identification is a “skin tab,” which involves virtually removing all the skin from the fillet except one small piece that remains attached to the fish. The scales (or their indentations) on this skin tab are sufficient to indicate the Kosher status of the entire fillet.

In addition to actually observing the existence of scales, *Halacha* provides for reliance on certain *circumstantial* methods of verification of Kosher status. Note that some or all of

<sup>6</sup> Although some authorities indicate that a minimum of three scales may be required—and on specific areas of the fish—virtually all authorities concur that one scale is sufficient if it clearly is indeed part of the fish and not merely fortuitously attached to it from another species.

<sup>7</sup> The name “turbot” is notorious for such confusion because it refers to several species, some of which are Kosher and some of which are not. Attempts to differentiate the official U.S. marketing name for these species have proved unsuccessful.

<sup>8</sup> As in the case of the inspection of the scales themselves, the determination of the Kosher status of the fish must be done by a *Mashgiach* or other adherent of Kosher law.

<sup>9</sup> The purchase of fillets in a retail facility poses concerns as to both the identification of the species from which the fillet was produced and possible contamination from other non-Kosher species cleaned and processed in the same area.

Generally, consumers could purchase fillets from any fish store if they actually watched the filleting process to ensure that (a) the fish being processed was of a Kosher species and (b) all knives, cutting boards, and other equipment used were either supplied by the customer or properly washed and cleaned.

these indicators are subject to differing interpretations and may not be considered acceptable to all *Kashrus* agencies:

- Early authorities had determined that only Kosher fish produced red-colored fish roe.<sup>10</sup> Most *Kashrus* agencies will therefore accept naturally colored red or orange roe (for example, salmon roe) without special supervision. Other *Kashrus* agencies, however, follow opinions that reject this assumption and do not regard a red color in the roe to indicate a Kosher status.
- Many contemporary authorities have also concluded that all red-colored raw fish flesh derives from Kosher species of fish. According to these authorities, red-colored fillets (such as salmon) may be accepted as Kosher without special supervision.<sup>11</sup> Some authorities are less sanguine in this regard, however, and decline to accept the red color of the flesh as a conclusive indicator of its Kosher status.<sup>12</sup>

Some authorities have also concluded that herring fillets may also be accepted without special supervision. They reason that the silvery layer remaining on the surface of the fillets after the skin has been removed is claimed to be unique to these (Kosher) species and is thus a sufficiently cogent indicator of its Kosher status.<sup>13</sup>

- Some authorities follow the approach that fish from factories that are engaged exclusively in the processing of Kosher fish may be accepted as Kosher, even absent any physical indices of its Kosher status in the processed product. *Kashrus* organizations that accept this position will therefore certify tuna, skinless sardines, and skinless kippers without full-time supervision.<sup>14</sup> Others, however, reject this approach and decline to accept fish<sup>15</sup> or products containing them (for example, Worcestershire sauce containing anchovies) that are certified on this basis.

## ***Kashrus* Issues Relating to Production**

The processing of Kosher fish products presupposes acceptable verification of the Kosher status of the base fish material. Some *Kashrus* agencies consider the Kosher sensitivity of fish to be on a par with that of meat and require full-time, on-site supervision of all fish processing to ascertain the Kosher status of the fish as it enters the facility and to seal

<sup>10</sup> See *Shulchan Aruch Y.D.* 83:8.

<sup>11</sup> The use of fish feed supplements containing carotenoids or astaxanthin to artificially create or enhance the red color of certain species of fish (such as trout and pale-colored salmon) has been the subject of much discussion relating to assumptions concerning the Kosher status of red-fleshed fish. The ability to induce a red color in a fish whose flesh would otherwise lack such pigmentation would seem to compromise the premise on which its Kosher status could be assumed, and indeed some authorities have rejected this approach on this basis. Others, however, have posited that although red color may be artificially induced, only inherently Kosher salmonid fish seem to be susceptible to such manipulation of color, allowing for a red color to remain a cogent indicator of a Kosher status (see “The Story of Fish” in Chapter 17). (The only other species known to be able assimilate red color into their flesh from such feed are carps, which are also Kosher species.)

<sup>12</sup> Such an approach may be based on a general reticence to accept color as an indication of Kosher status (as in the case of roe) or caused by the ability to artificially induce such a color through feeding.

<sup>13</sup> Others have pointed out, however, that this may be factually incorrect in that virtually all fish have such a layer. (It may not be apparent in other species because it is routinely removed as part of the skinning process.)

<sup>14</sup> Such an approach may also be used to certify oil derived from Kosher species of fish (such as menhaden) when the production system is designed to reduce the possibility of the inclusion of unacceptable fish to levels considered insignificant by the certification agency.

<sup>15</sup> See “The Story of Tuna,” in Chapter 17, for a full discussion of this approach.

the finished product. Others take a less intensive approach and rely on spot inspections to verify that fish received in the processing facility meets Kosher identification requirements, as well as to mark the finished product as Kosher. Some *Kashrus* certifying agencies base their policies in this regard on the type of fish and the methods by which it is processed. They may accept spot inspections for certain types of fish and yet require a more rigorous approach for others.

Another concern with the Kosher status of fish per se concerns worms or insects found in certain otherwise Kosher species. Although a fish often carries such parasites in its digestive system, these can then migrate to the flesh, and similar organisms may grow in the gills or flesh of other species. Although *Halacha* generally prohibits worms and insects,<sup>16</sup> many authorities rule that such parasites are considered a part of the fish and are thus specifically exempted from this prohibition.<sup>17</sup> Others, however, consider many of these types of parasites to be extraneous to the fish itself and thus prohibited. *Kashrus* agencies following the latter approach may require an inspection by a *Mashgiach* trained in the detection of such parasites.

In addition, the processing of Kosher fish is subject to all conventional *Kashrus* regulations, including the Kosher status of ingredients used in its production, the Kosher status of the equipment on which it is produced, and concerns of *Bishul Akum*. The following *Kashrus* issues commonly associated with the fish industry—or having peculiar applications to it—should be noted.

### ***Ingredient Issues***

A number of Kosher-sensitive ingredients may be used as flavorings or processing aids in fish products:

- Fish, such as sprats and sardines, may be canned in “sild oil,” which is derived from the sild fish (a species of sardine). The *Kashrus* of such oil is subject to the general requirements appropriate to fish oil (see earlier, concerning the level of supervision required).
- Canned tuna packed in water often contains hydrolyzed proteins and, historically, some of these had been casein based.<sup>18</sup> Such fish products would be certified as dairy. In addition, all hydrolyzed proteins would require appropriate Kosher supervision because of Kosher concerns related to the enzymes and equipment used in their processing.
- *Surimi* (a specially processed form of minced—that is, ground, hamburger-like—fish flesh) is used to produce imitation shellfish products. Given the Kosher status of the fish (Alaska pollack) often used in its production, Kosher imitation versions of otherwise non-Kosher seafood (such as lobster, shrimp, and crab) may be produced from surimi, provided that the surimi itself is properly supervised. Note, however, that the non-Kosher versions of such imitation products often contain measurable amounts of the non-Kosher species they are designed to replicate, and such ingredients may not be used in Kosher productions. In addition, surimi often contains non-Kosher beef plasma protein or pig plasma protein (derived from the blood of their respective species), which is used to inhibit the natural proteolytic and autolytic degradation of the fish. Kosher surimi

<sup>16</sup> Insect infestation is a major concern in produce (see Chapter 6, “Fruit and Vegetables”).

<sup>17</sup> See “The Story of Fish,” in Chapter 17, for a discussion of this concept.

<sup>18</sup> See “The Story of Tuna,” in Chapter 17, for a discussion of the rationale for the use of this ingredient.

production may use egg whites for this purpose (see the section “Processing Issues,” concerning other issues involved in surimi production).

- Imitation crab legs, shrimp, and lobster produced from surimi are often dyed with a red food color to simulate the true crab legs. The red color traditionally used is carmine, which most authorities consider non-Kosher,<sup>19</sup> and must be replaced for Kosher productions of such products.
- Although fish are inherently Pareve and thus not subject to restrictions of *Ba'sar b'Cholov* (the prohibition of mixing milk and meat), *Halacha* regards mixtures of meat (either animal or fowl) and fish as unhealthful. As such, meat ingredients may not be included in Kosher fish products. Similarly, fish or ingredients containing fish may be not used in the production of meat products.<sup>20</sup>
- Some authorities prohibit mixtures of fish and milk, and *Kashrus* agencies following such opinions decline to certify many common fish products, such as herring in sour cream sauce, and lox and cream cheese. Most authorities, however, rule that such mixtures pose no *Halachic* concern, a position followed by most *Kashrus* agencies.
- Most authorities permit the use of gelatin derived from fish as an ingredient in meat or dairy products.<sup>21</sup>

### Processing Issues

The gutting and filleting of fresh fish poses no significant *Kashrus* concerns, in that the process takes place at cold temperatures. Equipment used to process non-Kosher fish may be subsequently used for Kosher processing without the need for Kosherization, provided that it has been thoroughly cleaned and no residue from the non-Kosher product remains.

Equipment used to process fish involving heat, however, requires appropriate Kosherization from non-Kosher to Kosher productions. The following equipment issues typically present themselves in fish processing:

- Many types of “smoked” fish are actually baked (as well as smoked), a process that involves significant heat. Such smokehouses/ovens and related equipment used to process sturgeon, eel, or non-Kosher fish must be Kosherized prior to their use for Kosher fish productions (see the section “*Bishul Akum* Issues” for a discussion of additional concerns of *Bishul Akum*).
- Retorts used to process non-Kosher canned fish must be Kosherized before use for Kosher product. Although the non-Kosher product may be sealed in the can and thus not come into direct contact with the water or steam in the retort, *Halacha* is concerned that *B'lios* (flavors) from the non-Kosher product may permeate the can and thus compromise the Kosher status of the retort.<sup>22</sup> The Kosherization of such retorts poses a number of potential concerns, however. First, the Kosherization process presupposes that all rust

<sup>19</sup> See “The Story of Colors,” in Chapter 17, for a detailed discussion of the Kosher status of carmine.

<sup>20</sup> Products containing fish ingredients are therefore labeled as “fish.” Some authorities permit mixtures of fish and meat at levels below *Bitul* (approximately 1.6 percent).

Consequently, they may allow the use of Worcestershire sauce containing a small amount of anchovies to be used together with meat; such Worcestershire sauce would not be marked as “fish” (see “The Story of Fish,” in Chapter 17, for a discussion of these opinions.)

<sup>21</sup> See “The Story of Gelatin” in Chapter 17.

<sup>22</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

or other occlusions have been removed from equipment surfaces prior to Kosherization. Many retorts have buildups of scale and rust that make such a cleaning difficult. Second, Kosherization generally assumes the filling of equipment with boiling water. Many retorts, however, are designed so that they are never filled with water, raising potential difficulties for the Kosherization process.

- Classic Japanese surimi products use processes that may involve a variety of cooking processes, including broiling, steaming, baking, and pasteurization of packaged product. Although the base surimi material is generally produced from Kosher species of fish, it is often flavored with flesh or extracts of other non-Kosher species. Consequently, the equipment on which such materials are produced requires *Kashering* prior to Kosher productions. Such Kosherization may pose significant difficulties in that equipment on which non-Kosher products are broiled or baked typically require *Libun Chamur* (glowing).<sup>23</sup> Such a *Kashering* procedure may prove impractical because heating product contact surfaces to such temperatures (usually above 900°F) may damage the equipment.
- Breaded fish products pose concerns as to both the ingredients and the *Kashering* of the equipment used in their preparation. Many breading compounds contain whey or other dairy ingredients because the lactose in such products tends to foster the development of desirable browning colors. In most cases, the manufacturers of Kosher breaded fish products desire a Pareve product, in which case the breader must be changed to a Pareve version.

Typically, breaded products are partially or fully fried prior to packaging. When such frying systems are used for non-Kosher productions, through the use of either non-Kosher oil or the processing of non-Kosher fish products, they must be *Kashered* prior to Kosher productions. Such *Kashering* must address the following concerns:

- Oil remaining in the fryer, including in its filtration system, must be removed and the system thoroughly cleaned to remove all oil residue. The system must then be *Kashered* by boiling water in the fryer itself as well as flushing the filtration system with boiling water.
- Fryers that are heated with direct gas flames typically use a system of heating tubes situated within the fryer itself. Although such an arrangement allows for the burning gas inside these tubes to heat the oil efficiently in situ, it also tends to create a buildup of carbon and other burnt impurities on the outer surface of the tubes. Such a buildup poses a concern for the Kosherization of the equipment, because *Hag'olah* (Kosherization with boiling water) presupposes the removal of all extraneous material from the surface of the material prior to Kosherization. If caustic or other cleaning chemicals are not successful in removing such a buildup, a manual scraping may be required.
- Fryer systems in which gas or oil is used to heat the oil with an external heat exchanger are subject to similar concerns involving the potential buildup of deposits on the *inside* surfaces of the heating tubes. Although caustic and other cleaning solutions may be passed through these tubes in an effort to remove such residues, the efficacy of such cleaning must be verified prior to Kosherization.
- Fryer systems in which high-pressure steam is used to heat the oil with an external heat exchanger may pose additional *Kashrus* concerns, involving the steam that exits

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<sup>23</sup> Ibid.

the heat exchanger after heating the oil. If such a system was used for non-Kosher productions, the resulting low-pressure steam or condensate is considered non-Kosher and may compromise the Kosher status of products heated with it.<sup>24</sup>

## Bishul Akum Issues

Many types of fish are subject to concerns of *Bishul Akum*, the rule that requires some type of Jewish involvement in the cooking process.<sup>25</sup> These concerns have the following specific applications in the fish industry:<sup>26</sup>

- The rule of *Bishul Akum* applies only to food preparations involving heat (cooking, frying, or baking). *Pickled* fish, such as herring and certain types of lox, are thus exempt from this concern.
- *Smoked* fish is similarly exempt from *Bishul Akum* concerns, when the smoking process renders the food edible without it first being cooked or baked. The use of the term “smoked” to describe fish products, however, is less than precise as it relates to this rule. “Cold smoked” products, such as most smoked salmon, are indeed exempt from these concerns.<sup>27</sup> Many other “smoked” fish products, however, are actually *baked*, with smoke merely added to the product to effect a certain flavor in the fish.<sup>28</sup> According to most authorities, such “smoked” products are indeed subject to the rules of *Bishul Akum*, unless the brining process that precedes the baking renders the fish edible without subsequent processing.
- *Canned* fish, such as tuna and sardines, are cooked; thus, they may be subject to concerns of *Bishul Akum*. Many Kosher-certifying agencies, however, rely on one or more of the following considerations to mitigate *Bishul Akum* concerns in canned fish products:
  - Tuna is typically steamed to the point of being edible prior to canning.<sup>29</sup> Many authorities have ruled that “steaming” has the same *Halachic* status as smoking as regards *Bishul Akum* and is thus exempt from its requirements.<sup>30</sup>
  - Certain types of canned fish (such as canned sardines and salmon) may not be considered an “important” food. Because the rules of *Bishul Akum* apply only to those foods that are considered suitable to be served at a “royal banquet,”<sup>31</sup> such foods are considered exempt from *Bishul Akum* concerns.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> Some authorities posit that contemporary dining norms may have changed the application of the rules of *Bishul Akum* as regards fish. Foods considered edible without cooking are not subject to the strictures of *Bishul Akum*, and raw fish (for example, *shashimi* and *sushi*) has recently become ubiquitous in much of the Western world. Others are less sanguine on the matter, however, reasoning that although such foods may be common in certain Asian countries, most people in the Occident do not eat raw fish. Most *Kashrus* agencies maintain the traditional approach and consider fish subject to the rules of *Bishul Akum*, at least in countries of the Occident.

<sup>27</sup> Lox and gravad lox (Gravlox) are prepared by soaking in salt brine and other flavorings and are generally not smoked.

<sup>28</sup> Indeed, some manufacturers use a smoke *flavoring* for this purpose, bypassing the need to actually use smoke during the baking process

<sup>29</sup> See “The Story of Tuna” in Chapter 17.

<sup>30</sup> Some authorities have also ruled that the steaming of the sealed can of tuna (or any other food) in a retort is subject to the same leniency.

<sup>31</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”



# 11 The Flavor Industry

The concept of a “flavor” is critical to Kosher law because the concept of “taste”—Kosher and non-Kosher—is what often determines the Kosher status of a product. For example, non-Kosher *B’lios* (absorbed flavors) in a pot may cause otherwise Kosher food subsequently cooked therein to be considered non-Kosher by dint of the non-Kosher flavors that may migrate from the pot into the food. Indeed, Kosher food that had absorbed a discernible non-Kosher flavor<sup>1</sup>—even at minor levels—has absorbed sufficient flavor to render that food non-Kosher. Issues relating to flavors used in the production of Kosher foods are therefore critical to maintaining the integrity of a Kosher program.

The Kosher status of flavors essentially follows normative Kosher rules; they are but a function of the Kosher status of their components and the equipment on which they are produced. That being said, many ingredients and the *Kashrus* issues they present are unique to the flavor industry, and the complexity of such production systems merits a detailed review of it.

## Ingredients

Flavor chemists have identified thousands of flavor compounds, some of which are inherently non-Kosher, many of which are inherently Kosher, and many of which *may* be Kosher. When developing Kosher flavors, an awareness of these distinctions is critical because after a commercial flavor system, which often contains many different ingredients, has been crafted based on an inherently non-Kosher compound, its subsequent reformulation is often quite difficult. In addition, knowledge that a given compound may have only limited Kosher availability may allow the flavorist to use more readily available and less expensive alternatives in the development of a flavor system intended for use in Kosher food production.

Compounds used in creating flavors include those that take an active part in creating the flavor profile and those that act as excipients (diluent and carriers of the flavor). Both categories of ingredients may pose significant Kosher concerns in that they may be derived from non-Kosher animal sources or non-Kosher vegetable sources, or they may be produced on equipment that is also used for processing non-Kosher products.

The list of ingredients that are inherently non-Kosher is actually quite limited, with their non-Kosher status being based on their derivation from inherently non-Kosher species. Civet is derived from the civet cat, castoreum from beavers, and ambergris from whales.<sup>2</sup> The potential non-Kosher status of many other flavor compounds, on the other hand, would stem from their derivation from sources that may or may not be Kosher. If the source of

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<sup>1</sup> The terms “non-Kosher flavor” and “flavor of a non-Kosher food” are equivalent—only those flavors that actually *derive* from a non-Kosher source are prohibited. Flavors derived from Kosher sources that mimic those naturally found in non-Kosher products are eminently Kosher.

<sup>2</sup> The Kosher status of musk (derived from glandular secretions of the musk ox) is subject to an interesting discussion among *Kashrus* authorities (see “The Story of Colors” in Chapter 17).

a compound is not Kosher, no refining and fractionation of the non-Kosher raw material, regardless of how complete, can serve to convert such a material into a Kosher compound.

Sources of flavor compounds that pose significant *Kashrus* concerns, other than those derived from inherently non-Kosher species, can be divided into the following categories:

- **Animal derivatives:**<sup>3</sup> Such ingredients include meat and meat broth. In addition, fats, fatty acids, fatty alcohols, emulsifiers, enzymes (for example, lipases and proteases), and glycerin are commonly used in the flavor industry and may be derived from animal sources.
- **Wine and grape derivatives:**<sup>4</sup> Such ingredients include wine, brandy (Cognac), and their derivatives. In addition, fusel oil, ethanol, and other distillation products commonly used in the flavor industry may be derived from such sources.<sup>5</sup>
- **Dairy derivatives:**<sup>6</sup> Such ingredients include butterfat (for example, cream, butter, and butter oil), lipolyzed butter oil, cheese, and starter distillate.<sup>7</sup>
- **Israeli produce:**<sup>8</sup> Flavor ingredients produced in Israel include spices, botanical extracts, and oils (for example, citrus oils and essential oils).

Because all sources of potentially non-Kosher flavor ingredients may be considered “natural”—derived from either animal or plant sources—one can reasonably conclude that all ingredients derived from “synthetic” sources (such as minerals or petrochemicals) pose little *Kashrus* concern. Thus, compounds designated as “synthetic” or “artificial” might be assumed to be acceptable, whereas those labeled “natural” would require verification as to their Kosher status. Although such a distinction may theoretically be correct, its practical application is mitigated by the following considerations: First, the Kosher status of even inherently Kosher synthetic chemicals would be compromised if processed on equipment that is also used to process non-Kosher products. Second, regulations relating to standards of identity require that many compounds comprising natural ingredients must nevertheless be designated as “synthetic.” Ingredients containing both natural and synthetic compounds must be declared synthetic, despite the inclusion of natural—and potentially Kosher-sensitive—components.

<sup>3</sup> Animal-derived ingredients must be produced from Kosher species, and slaughtered and processed in a prescribed manner (see Chapter 12, “The Meat and Poultry Industries”). Although it is theoretically possible to produce Kosher meat extracts and animal fat, Kosher requirements for such productions render such productions impractical (*ibid.*). Small amounts of Kosher animal meat products and fat may, however, be used in the flavor industry in the production of Kosher meat flavors.

In addition, special productions of Kosher animal-derived enzymes that create flavors (such as lipase) are produced for use primarily in dairy flavors (see Chapter 9, “The Dairy Industry”).

<sup>4</sup> Wine and grape juice are subject to an extraordinary Kosher requirement known as *S'tam Yaynam* (see Chapter 6, “Fruit and Vegetables”).

<sup>5</sup> Tartaric acid, on the other hand, is accepted by many Kosher authorities despite its source.

<sup>6</sup> Cheese is subject to extraordinary Kosher requirements (*G'vinas Akum*) (see Chapter 9, “The Dairy Industry,” and “The Story of Cheese and Casein” in Chapter 17). In addition, flavors containing Kosher dairy components must be certified as “Dairy,” as opposed to “Pareve,” and currently none is produced that can be considered *Cholov Yisroel* (see Chapter 9, “The Dairy Industry”).

<sup>7</sup> Alcohol produced through the fermentation of lactose is subject to both *Kashrus* and Dairy status concerns.

<sup>8</sup> Produce grown in Israel is subject to certain extraordinary Kosher requirements related to *T'rumos u' Ma'asros* (tithes) and *Sh'mitah* (the Sabbatical Year) (see Chapter 6, “Fruit and Vegetables”).

The practical application of *Kashrus* concerns involving ingredient sources includes the following, all of which require reliable Kosher certification:

- **Ethyl compounds:** The synthesis of many chemical compounds involves ethyl alcohol (ethanol), which may be derived from sources both Kosher (for example, distillation of grain or petrochemical synthesis) and non-Kosher (such as wine or lactose derived). Generally, industrial ethanol is considered a chemical commodity whose source is insignificant to users because it has no impact on functionality. Ethyl compounds, even those considered “synthetic” or “artificial,” are therefore subject to Kosher concerns.
- **Fatty acids and alcohols:** Fatty acids and fatty alcohols, and esters based on them, are key flavor components. They may be derived from many sources, including animal, vegetable, and petrochemical lipids. The Kosher status of such components is dependent on both their source and the Kosher status of the equipment in which they are produced.
- **Glycerin and triacetin:** Similarly, glycerin is commonly produced from both animal and vegetable fats, as well as from petroleum. Glycerin is often used as a diluent, emulsifier, and carrier of flavors, as well as serves as the starting base for triacetin and other flavor chemicals. It may also be used in the extraction of flavors from botanicals, such as in the production of vanilla extract.
- **Botanical extracts:** The flavor-bearing components of many botanicals (plants with strong flavors or odors) may be extracted from the host plant and concentrated, and commonly take the form of essential oils, resins (oleoresins and aquaresins), absolutes, and concretes. Most essential oils are obtained through steam distillation and pose few *Kashrus* concerns. Other types of extracts are obtained using solvent extraction, and the Kosher status of such solvents is critical to the Kosher status of the extract. Although petroleum solvents (such as hexane) pose no *Kashrus* concerns,<sup>9</sup> alcohol and vegetable-oil solvents require reliable Kosher certification. In addition, diluents and emulsifiers used in many liquid resin products may pose significant Kosher concerns.
- **Fermentations:** Flavor chemicals, such as starter distillate and discrete flavor components, may be produced through microbial fermentation. The Kosher status of fermentation products requires ensuring the Kosher status of the cultures and the fermentation media.<sup>10</sup>
- **Enzyme-catalyzed flavor components:** Flavors may also be produced through the enzymatic conversion of substrates through processes other than microbial fermentation, such as those involving the proteolytic and lipolytic degradation of proteins and fats. Enzymes used for such reactions may be derived from animal, plant, or microbial sources, all of which pose significant *Kashrus* concerns.<sup>11</sup>
- **Reaction flavors:** Certain flavors may be produced by chemical reactions using heat and pressure. Such products may be based on the reaction of proteins with sugars and often involve the use of meat proteins. Other processes involve the degradation of fats and oils, which may also be of animal origin.
- **Diluents:** Nonflavor components of flavor compounds may also pose significant *Kashrus* concerns. Liquid blends may contain glycerin, monoglycerides, polysorbates, oils, and alcohol, all of which may pose significant *Kashrus* concerns.

<sup>9</sup> Inherently Kosher solvents are typically recycled, and those used for non-Kosher productions may not be subsequently used for the extraction of Kosher products.

<sup>10</sup> See Chapter 8, “The Biotechnology Industry.”

<sup>11</sup> See “The Story of Enzymes” in Chapter 17.

## Kosher Supervision Programs in Flavor Companies

For a variety of reasons, as noted previously, many chemicals typically used by flavor chemists may pose significant *Kashrus* concerns. Although only a few may be inherently non-Kosher, Kosher versions of many others may be either more difficult to obtain or too costly for a flavor company to use in general production. Many flavor companies therefore choose to maintain both Kosher and non-Kosher productions, allowing them to use non-Kosher ingredients to meet the needs, in the most efficient manner, of those segments of the food industry that do not use Kosher products.

Certification of flavor production facilities involved in both Kosher and non-Kosher productions, as well as Kosher dairy and Pareve products, poses the following concerns:

- **Receiving of raw materials:** Appropriate controls must be put in place to validate the Kosher status of raw materials as they enter the raw-material warehouse. Many of the raw materials used in flavor production require specific Kosher designations on the label,<sup>12</sup> which must be confirmed in a reliable manner.
- **Compatible Kosher and non-Kosher ingredients:** Critical to any Kosher supervision program is ensuring that only Kosher ingredients are used in the production of Kosher-certified products. Establishing effective Kosher programs is contingent on a thorough evaluation of the methods by which a manufacturer controls the use of raw materials and a determination of the safeguards that must be in place to protect the integrity of Kosher productions.

In many facilities, computer programs are designed to prevent operators from introducing an ingredient that had not been approved as part of a formula. In such situations, the *Mashgiach* may have access to, or even control of, the ingredient allocation approval program so that he is able to monitor productions and ensure that only Kosher ingredients are indeed used in Kosher products.

Other approaches to addressing this concern include physically segregating non-Kosher ingredients under the control of the *Mashgiach*, thereby allowing the *Mashgiach* to control their use and ensure that such ingredients are used only in non-Kosher productions. Alternatively, the *Mashgiach* must personally supervise the dispensing of Kosher raw materials and their processing into a final product.

- **Maintaining the Kosher or Pareve status of production equipment:** An important component of Kosher production entails the use of equipment that is in Kosher service.<sup>13</sup> The Kosher status of many types of production equipment may be compromised when used to process non-Kosher items and may not be subsequently used for Kosher productions unless properly *Kashered*.<sup>14</sup> In general, all equipment used with heat (for example, cooking and reaction vessels, dryers, high-pressure extruders) is subject to such a concern. In addition, tanks in which liquids are stored for more than twenty-four hours virtually have identical concerns as those that are heated. Kosher-certification programs must ensure that the use of such equipment for Kosher and non-Kosher productions is

<sup>12</sup> See Chapter 1, “Kosher Certification: Theory and Application,” and Chapter 3, “Ingredient Management.”

<sup>13</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a discussion of the concept of *B’lios* and flavor absorption in equipment.

<sup>14</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a discussion of Kosherization procedures appropriate for different types of equipment.

adequately monitored and tracked. Even facilities that maintain an all-Kosher production system may nevertheless produce both Kosher dairy and Pareve products. In such cases, equipment used in the production of Pareve products is subject to similar concerns.

- **Designation of Kosher products:** The method by which the Kosher status of a product is indicated must also be carefully controlled. A manufacturer may produce a given flavor as both Kosher and non-Kosher products, with the distinction being limited to the equipment on which it is produced or the change in one component. When such concerns are noted, Kosher-certification agencies may require that the Kosher designation for a product be affixed only by the *Mashgiach* supervising the product, thus ensuring that only Kosher products are so labeled.

Because of the preceding concerns, many *Kashrus* agencies require that Kosher certification of flavor manufacturers be based on full-time Rabbinic supervision of flavor manufacturers.<sup>15</sup> Even if the supervision is not full time, the fact that both Kosher and non-Kosher products are produced in the same facility requires a much more intense supervision than is typical for other types of Kosher food-production facilities.

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<sup>15</sup> Because of the extremely sensitive nature of Kosher for Passover products, as well as the need to procure special Kosher for Passover raw materials for their manufacture, full-time supervision is required by virtually all Kosher-certifying agencies for products that are certified for Passover.

# 12 The Meat and Poultry Industries

The concept of “Kosher meat” is, in the eyes of many, the paradigm of Kosher food. Indeed, the vast majority of issues dealing with the sources of Kosher products relate to foods derived from the animal kingdom.<sup>1</sup> Although all foods that are part of a Jew’s diet must be Kosher, meat and poultry require the greatest vigilance in ensuring their Kosher status. The Kosher status of foods derived from the animal kingdom is dependent on several factors, including the species of the animal, the method by which it is slaughtered (known as *Sh’chitah*), and the manner in which it is subsequently processed and supervised.

The methods of Kosher slaughter and meat preparation are exacting. Indeed, many Kosher consumers who rely on general Kosher certifications for most of their needs insist on a particular Kosher certification for the meat and poultry<sup>2</sup> products that they consume.<sup>3</sup> Given the complexities inherent in Kosher meat production, as well as the personal preferences of many Kosher consumers, the vast majority of products that are certified for the broad Kosher market contain no meat or poultry components whatsoever and are thus certified as either Dairy or Pareve.<sup>4</sup>

## Kosher Species

The *Torah* establishes the parameters for determining the Kosher status of members of the animal kingdom. Kosher animals are divided into four groupings: terrestrial mammals,<sup>5</sup> birds, fish, and invertebrates. The Biblical criteria<sup>6</sup> for determining the Kosher status of such animals is unique to each specific category:

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<sup>1</sup> Notable regulations relating to the Kosher status of produce include special rules that apply to produce of the land of Israel (for example, tithing and the Sabbatical Year [*Sh’mitah*]), as well as those relating to wine and grape juice (*S’tam Yaynam*).

See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” and Chapter 6, “Fruit and Vegetables,” for a discussion of these and other rules that govern the Kosher status of foods sourced from the plant kingdom.

<sup>2</sup> Hereinafter, the generic use of the word “meat” includes poultry unless otherwise indicated.

<sup>3</sup> Historically, especially before the advent of refrigeration, each Jewish community maintained its own local *Sh’chitah* under the supervision and control of the local Rabbinic authorities. Today, local *Sh’chitah* has all but disappeared in most communities, with but a few large Kosher slaughterhouses and poultry-processing facilities meeting the needs of the Kosher-consuming public. Although many of these operations operate under excellent Kosher supervisory programs, some communities still maintain a policy of insisting that *all* meat products used in their communities be subject to the Kosher oversight of their local Rabbinic authorities. This concept, known as *Sh’chutei Chutz* (literally, “foreign *Sh’chitah*”), is the policy in certain Jewish communities to this day. The sale of Kosher meat and poultry in such communities, therefore, differs from that of all other Kosher products in that outside Kosher certifications—although generally accepted for all other products—are not accepted for meat or poultry.

<sup>4</sup> Certain ingredients derived from animal sources, however, are indeed considered Pareve. Eggs, although derived from poultry, are Pareve, as are fish. In addition, certain enzymes derived from animal tissue (that is, rennet and lipase), as well as gelatin derived from Kosher animal sources, are considered Pareve (see “The Story of Gelatin” and “The Story of Enzymes,” both in Chapter 17).

<sup>5</sup> Reptiles, whether terrestrial or amphibious, are not Kosher species.

<sup>6</sup> See *Leviticus* 11 and *Deuteronomy* 14.

- The *Torah* requires that Kosher terrestrial animals exhibit two characteristics. They must be ruminants (animals with four stomachs that chew their cud) and have completely cloven hooves. Animals commonly used for food that meet these criteria are cattle, sheep, goats, deer,<sup>7</sup> and buffalo (bison).<sup>8</sup> Species that either do not ruminates or do not have cloven hooves are non-Kosher. Animals commonly used for food that are not considered Kosher include swine, horses, camels (including llamas and alpacas), and rabbits.
- In contradistinction to animals (as well as fish and grasshoppers; see the end of this section), the *Torah* does not provide anatomical indicators for distinguishing between Kosher and non-Kosher species of birds. Rather, twenty-four species of non-Kosher fowl are enumerated, allowing for the presumed Kosher status of all other avian species. The *Talmud*,<sup>9</sup> however, notes four anatomical indicators common to all Kosher birds: it must be nonpredatory, must have an extra toe,<sup>10</sup> must have a crop, and must have a gizzard whose inner lining can be peeled from the outer muscle wall.

The practical application of these requirements for determining which birds may be considered Kosher involves the following two considerations: First, the exact translation of the non-Kosher birds listed in the Bible is unknown;<sup>11</sup> therefore, relying on Biblical criteria is impossible. Second, most authorities rule that reliance on *Talmudic* criteria is generally impractical because one cannot be assured of the absolute nonpredatory nature of any given species of bird. As such, virtually all *Halachic* authorities<sup>12</sup> concur on a normative standard that permits only birds subject to a tradition of being considered Kosher (*M'sorah*). Birds commonly used for food that are considered Kosher include chicken, turkey,<sup>13</sup> duck,<sup>14</sup> goose,<sup>15</sup> and quail.<sup>16</sup> (The *M'sorah* on pheasant is questionable, and pheasant is generally avoided by most *Kashrus* organizations.)

<sup>7</sup> Some authorities have questioned the Kosher status of certain species of elk and similar species that possess upper incisors (based on criteria discussed in the *Talmud*, *Chullin* 59a).

<sup>8</sup> Some authorities also require a tradition (*M'sorah*) of a Kosher status to presume the permissibility of an animal, similar to the requirement for birds (see the ensuing discussion of the *M'sorah* required for birds). Such a tradition clearly exists for cattle, sheep, goats, deer, and the European buffalo (*Bison bonasus*) that is mentioned in *Shulchan Aruch*. However, such a *M'sorah* may be lacking for certain other species of buffalo, such as the American bison (*Bison bison*). Although such American bison (buffalo) is currently being slaughtered as Kosher and accepted by many *Kashrus* agencies, some nevertheless decline to permit it because they consider it lacking an acceptable *M'sorah*.

<sup>9</sup> *Chullin* III:6.

<sup>10</sup> Most authorities define this extra toe as the hallux, a toe located behind and above the front three toes, because this toe configuration preempts its use for grasping prey. Others define it as a part of the middle front toe that makes that toe longer than the other two.

<sup>11</sup> Indeed, when preparing his landmark German translation of the *Torah*, Rabbi Samson Rafael Hirsch (1808–1888) chose not to translate the names of the non-Kosher birds, thus emphasizing the point that their identity is undetermined.

<sup>12</sup> *Rashi Chullin* 62a, *Shulchan Aruch Y.D.* 82:2, and *Rama*, *ibid.*, 3.

<sup>13</sup> The acceptability of turkey raises the obvious question of the lack of a tradition as to its Kosher status (*M'sorah*) because it was first discovered in the New World only five hundred years ago. Many authorities have dealt with this issue and have suggested a variety of reasons for permitting it and, indeed, some have declined to approve it because of the lack of a tradition. From a practical perspective, however, virtually all *Kashrus*-certifying agencies, including those that follow the most stringent (*M'hadrin*) standards, accept turkey as a Kosher species.

<sup>14</sup> Many authorities argue that not all species of duck should be accepted as Kosher because certain species have no accepted tradition (*M'sorah*). Many therefore decline to approve the use of a species known as the muscovy duck and its hybrid, known as mulard duck.

<sup>15</sup> Similarly, many authorities distinguish between domestic geese, for which a *M'sorah* exists, and various species of wild geese that lack a reliable tradition.

<sup>16</sup> Notwithstanding putative Biblical references to “quail” (*Exodus* 16:13 and *Numbers* 11:32), common translations of Biblical Hebrew names, as previously noted, may be less than accurate (in this case, rendering “*S'lov*” as “quail”).

- The *Torah* requires that marine animals have both fins and *Halachically* acceptable scales. Marine mammals, shellfish, crustaceans, and all other aquatic animals that lack scales and fins are not considered Kosher (see Chapter 10, “The Fish Industry,” for a detailed discussion of these criteria).
- The *Torah* prohibits virtually all invertebrates, the only exceptions being four distinct species of grasshoppers specifically permitted.<sup>17</sup> From a practical perspective, grasshoppers are not a significant Kosher issue, both because most Jewish communities have lost the *M’sorah* (tradition) necessary to identify the specific Kosher species and because grasshoppers are not eaten in most modern cultures.<sup>18</sup>

## Kosher Slaughter—*Sh’chitah*<sup>19</sup>

Kosher species of animals and birds<sup>20</sup> must be slaughtered in a prescribed manner, known as *Sh’chitah*, to be considered Kosher. *Sh’chitah*<sup>21</sup> involves severing the trachea, esophagus,<sup>22</sup> carotid arteries, and jugular veins<sup>23</sup> by an incision with an exceedingly sharp knife performed with a continuous slicing motion.<sup>24</sup> The individual who performs *Sh’chitah* is called a *Shochet*, who must undergo years of training in the laws and practical intricacies of *Sh’chitah* before being granted authorization to perform this rite. *Sh’chitah* is an exacting process, and failure to observe even seemingly minor aspects of its requirements may render the animal a *N’veilah* (carrion)—an animal that had not been killed through a proper *Sh’chitah*—and thus non-Kosher. Traditionally, therefore, only individuals exhibiting the highest moral character and piety are entrusted with the responsibility of becoming a *Shochet*.

All elements relating to Kosher slaughter must be under the direct control and supervision of Rabbinic authorities at all times; therefore, *Sh’chitah* is not amenable to the ongoing Kosher supervisory programs based on the random inspections that are appropriate for many other types of Kosher food production. Nevertheless, the complexities attendant to Kosher slaughter as they relate to issues of availability, variety, and cost of animal products are instructive:

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Many authorities, however, consider common quail to be subject to an acceptable *M’sorah*. Others, however, decline to accept it.

<sup>17</sup> *Leviticus* 11:21–22.

<sup>18</sup> Certain Yemenite Jewish communities, however, have maintained the tradition of eating Kosher grasshoppers, and do so until this day.

<sup>19</sup> The *Torah* specifically prohibits the consumption of animals that had died (carrion) (*Deuteronomy* 14:21) and requires *Sh’chitah*, although the written *Torah* does not specify its requirements. They are, however, alluded to in the verse “and you shall slaughter . . . as I have commanded you” (*Deuteronomy* 12:21) and are expounded on in great detail in the *Talmud*. (Virtually the entire tractate of *Chullin* is devoted to their elucidation.)

<sup>20</sup> Kosher fish and grasshoppers are exempt from the requirement of *Sh’chitah* and all the subsequent “processing” laws discussed later in this chapter.

<sup>21</sup> The laws of *Sh’chitah* are complex, and it is well beyond the scope of this work to provide a detailed description of all the issues relating to it. This chapter is therefore intended to provide only a broad outline of the *Sh’chitah* process.

<sup>22</sup> Theoretically, *Sh’chitah* of an animal requires severing both the trachea and the esophagus, whereas the *Sh’chitah* of a bird requires severing only one of these organs. In practice, however, *Sh’chitah* completely severs both, as well as the jugular veins and the carotid arteries in both animals and birds.

<sup>23</sup> Technically, *Sh’chitah* relates to the severing of the trachea and esophagus (or, in the case of birds, either of these two). Severing the arteries and veins in the neck are not required for a valid *Sh’chitah*. In practice, however, they are always cut as part of the *Sh’chitah* process.

<sup>24</sup> This incision typically involves a back and forth slicing motion, although any number of such slicing motions is permitted, provided that they are executed in an uninterrupted fashion.



- *Sh'chitah* may be performed only by a Jew who personally adheres to *Halacha* (Jew Law).<sup>25</sup> *Sh'chitah* performed by a non-Jew is *Halachically* invalid, even if it is performed in the prescribed manner and supervised by a Jew.
- The act of *Sh'chitah* involves the use of a large,<sup>26</sup> razor-sharp knife known as a *Cha'lef*. The *Shochet* must ensure the blade's exceptional sharpness and that it is free of nicks or imperfections. The use of a blade with even the slightest imperfection renders the *Sh'chitah* invalid. For this reason, the *Shochet* inspects the blade both before and after each *Sh'chitah* to verify the *Kashrus* of the blade.<sup>27</sup> If a nick or other imperfection is found on the blade after the *Sh'chitah*,<sup>28</sup> the animal is deemed non-Kosher.
- *Sh'chitah* involves a quick and uninterrupted incision in the designated area of the neck. Undue pressure, hesitation, or slaughter in an inappropriate area renders the animal non-Kosher.<sup>29</sup>
- *Sh'chitah* must be performed on a healthy, fully conscious animal or bird, which is able to stand on its own and exhibits no obvious indications of illness. If an animal or bird has been dropped any appreciative distance, it must be examined prior to *Sh'chitah* to ensure that it had not been damaged by the fall.
- Stunning prior to slaughter, whether by mechanical, electrical, or chemical methods, is prohibited.<sup>30</sup> After *Sh'chitah*, the animal must be allowed to bleed prior to the removal of the head or the severing of the spinal column. According to most authorities, postslaughter electrical stunning is prohibited.

<sup>25</sup> Such a person is commonly referred to as “*Shomer Shabbos*” (one who observes the Sabbath) because Sabbath observance is the historic indicator of one’s commitment to upholding Jewish law and its values.

<sup>26</sup> The size of the blade is relative to the size of the neck of animal. Generally, the blade must be at least twice as long as the width of the animal’s neck, although it is generally significantly longer.

<sup>27</sup> Many communities have a custom of insisting that two *Shochetim* must work together so that each would have an opportunity to check the other’s *Chalef* to ensure that it is proper.

<sup>28</sup> In the case of the *Sh'chitah* of animals, the *Chalef* is checked after each use.

When slaughtering fowl, however, the *Chalef* is often checked after slaughtering several birds, with the understanding that if a nick is found, all the birds that had been slaughtered since the previous valid inspection are now considered suspect and non-Kosher.

<sup>29</sup> The five major actions that may invalidate a *Sh'chitah* are:

*Sh'hayah*: Hesitation. Although the *Cha'lef* may be brought back and forth to effect the incision, the *Shochet* must maintain a constant cutting action.

*Hag'romah*: Cutting above or below the prescribed area. *Sh'chitah* must be made within a prescribed area of the trachea and esophagus.

*D'rasah*: Pressing. The incision must be made by means of a sliding cut; severing, by pressing the *Cha'lef* into the neck, is invalid.

*Cha'ladah*: Covering. The *Sh'chitah* must be made in an open manner, without skin or other material occluding the incision. For this reason, shaving the wool on the neck of sheep and lambs or other animals with long hairs is customary to ensure that *Cha'ladah* does not take place. Many similarly have a custom to pluck the feathers from the incision site on a bird for the same reason.

*I'kur*: Uprooting. *Sh'chitah* must involve an incision by a knife. Severing the trachea or esophagus by any other means is invalid. Indeed, doing so forms the basis for invalidating the use of a knife with a nick because the nick will cause a “tear” and not an “incision.”

Any of the preceding actions invalidate the *Sh'chitah* and cause the animal to be considered a *N'veilah* (carion) and thus non-Kosher.

<sup>30</sup> Although regulations related to humane slaughter practices in many countries typically require stunning the animal prior to slaughter, legislation in the United States and other countries specifically recognizes the exigencies inherent in Kosher slaughter and exempts it from requirements that are inimical to its proper performance.

- During slaughter, the animal or bird must be restrained to ensure that the animal does not move or collapse on the blade and invalidate the *Sh'chitah*.<sup>31</sup> Similarly, unless properly restrained, animals or birds may not be slaughtered while suspended on a conveyor (whether moving or not) because the animal would be free to move in a manner that may invalidate the *Sh'chitah*. Until the advent of large-scale abattoirs, an animal was tied and laid down on the ground prior to slaughter. Modern slaughtering facilities, however, may use any of the following methods:
  - With small fowl, the bird is held by hand in a manner that immobilizes it, after which the *Shochet* holds its head and performs the *Sh'chitah*.
  - With turkeys or other large fowl, the bird may be suspended on a stationary holder and properly restrained during *Sh'chitah*.
  - With smaller animals (such as sheep), the animal may be suspended and restrained. Alternatively, the animal may be laid on its back atop a specially designed cradle for *Sh'chitah*.
  - With larger animals, the following systems have been used:
    - a. The animal is hoisted by a hind leg and then laid onto its back for slaughter.
    - b. The animal is hoisted by a hind leg and then restrained by workers so that the *Shochet* is able to slaughter the animal while monitoring that it does not move during the process.
    - c. A specially designed device, known as the “ASPCA” pen, has been designed to immobilize the animal in an upright position. According to most Rabbinic authorities, such a device satisfies all *Halachic* requirements while avoiding undue stress and suffering on the part of the animal, and is the method most commonly used for Kosher slaughter in North America.
    - d. To address the traditional requirement of slaughtering the animal while it is lying on its back, various alternative slaughter pens have been devised that actually rotate the animal prior to slaughter. Some Rabbinic authorities prefer this arrangement.
  - The *Sh'chitah* of birds or undomesticated animals (such as deer) is subject to the requirement of *Ki'suy ha'Dam* (literally, “the covering of the blood”).<sup>32</sup> This involves placing a layer of earth or sawdust on the slaughter floor, onto which the blood from the *Sh'chitah* falls. This can be done at the beginning of the day, after which any number of birds or animals may be slaughtered. At the end of the *Sh'chitah* process, the blood is covered with another layer of earth or sawdust.

## Kosher Meat Inspection and Preparation

The requirements relating to the preparation of Kosher meat do not end at the point of *Sh'chitah*, however. Not all meat that had been subject to *Sh'chitah* may ultimately be considered Kosher. In addition, Kosher meat must be processed in specific way before it can be considered fit for use.

<sup>31</sup> Such movement on the part of the animal or bird can cause an invalid *D'rasah* (severing under pressure). In addition, if the action of the animal creates the incision, then the animal is considered to have “slaughtered itself” and the *Sh'chitah* is similarly invalid.

<sup>32</sup> This requirement is based on the verse in *Leviticus* 17:13 and does not apply to domesticated animals, such as cattle and domesticated sheep and goats. The status of buffalo (bison), however, is undetermined and is therefore subject to the requirements of *Ki'suy ha'Dam*.

### ***Inspection of Slaughtered Animals: “Kosher” and “Glatt”***

*Halacha* stipulates that animals exhibiting a mortal injury are not Kosher, even if they had been properly slaughtered. Such animals are called *T'reifos*<sup>33</sup> (literally, “torn”) and are subject to a Biblical prohibition.<sup>34</sup> The *Shochet*<sup>35</sup> is required to inspect animals or birds immediately after *Sh'chitah* to ensure that they do not suffer this disqualification; this process is known as *B'dikah* (literally, “inspection”).<sup>36</sup> Although the *Talmud* lists numerous injuries that could qualify an animal or bird as a *T'reifah*, absent any indications of a specific injury, *Halacha* requires an inspection only for such disabilities that are considered common. With poultry, inspections are typically made for lesions on the intestines, as well as for swelling at the juncture of the leg tendons.<sup>37</sup> Any obviously broken bones, discoloration or unusual anatomy of internal organs, and foreign material found in the body cavity are grounds for a more detailed examination and possible disqualification.

With other animals, the primary organs subject to inspection are the lungs,<sup>38</sup> which are prone to bearing lesions (known as “*Sirchos*”) that would render the animal a *T'reifah*. *Halacha* considers any puncture in the lung, regardless of size or subsequent healing, to be a mortal injury sufficient to render the animal a *T'reifah*, and a lesion on the outer surface of the lung is presumptive of a pulmonary puncture or impending puncture. The *Shochet* therefore opens the thoracic cavity<sup>39</sup> and inspects the lungs in situ by feeling the lobes of the lungs for lesions, after which he removes the lungs and conducts a visual inspection to verify the Kosher status of the animal. Should an animal exhibit lesions or other abnormalities that would render it a *T'reifah*, it is sold as non-Kosher meat.

The preceding approach applies to small animals, such as veal, sheep, goats, and deer. The requirements for inspecting adult cattle, however, are subject to several customs. According to *S'phardic* tradition, no *Halachic* distinction is made between cattle and other animals, and the existence of any lesion is presumptive evidence of a current or preexisting puncture. Therefore, all animals that exhibit any pulmonary lesions on inspection are considered non-Kosher. Animals that are free of such lesions are deemed Kosher by dint of the “smoothness” of their lungs, hence earning the appellation “*Chalak*” (Hebrew) or “*Glatt*” (Yiddish), both of which mean “smooth.”

*Ashkenazic* traditions, followed by Jewish communities in Europe and North America, are more lenient in this regard and do make a distinction between adult cattle and all other

<sup>33</sup> The terms “*T'reifah*” and “*T'reif*” have become synonymous with “non-Kosher” and are commonly used in that manner. The technical definition, however, is reserved to anatomical abnormalities or injuries that disqualify an animal from a Kosher status.

<sup>34</sup> *Exodus* 22:30.

<sup>35</sup> Technically, the person who performs such inspections is called a “*Bodek*”—an inspector. Traditionally, however, the *Shochet* was trained in both skills and is known as a “*Shochet u'Bo'dek*”—slaughterer and inspector.

<sup>36</sup> Anatomical abnormalities or injuries sufficient to effect a *T'reifah* status are not necessarily equivalent to those defects that are significant to veterinary inspection services, or vice versa. Animals or birds accepted by veterinary authorities may nevertheless not meet Kosher requirements, and certain defects considered acceptable from a *Kashrus* perspective may be rejected by veterinary authorities.

<sup>37</sup> Some authorities also inspect the lungs of turkeys.

<sup>38</sup> Some authorities also require inspection of the reticulum (one of the four stomachs) because cattle often consume sharp debris that may puncture that organ and similarly render the animal a *T'reifah*.

<sup>39</sup> Some authorities insist that the opening of the thoracic cavity be done without cutting the breastbone to avoid disturbing any latent lesions prior to inspection.

animals. According to this approach, the *type* of lesion found on the lungs of adult cattle may be evaluated to determine whether it is indeed presumptive of a puncture.

If the lesion can be removed easily, the lung is then inflated either by blowing into the lung or with mechanical equipment providing an equivalent air pressure; it is then immersed in warm water to see whether any air escapes. If this examination fails to detect the presence of any punctures, the animal can be considered Kosher.

Note, however, that although such animals are considered Kosher according to *Ashkenazic* custom, many *Ashkenazic* Jews prefer to maintain a standard that is closer to the *S'phardic* tradition. This standard generally requires that such lesions be relatively minor and few in number (typically no more than two) and is commonly referred to as “(*Ashkenazic*) *Glatt*.” Although this “*Glatt*” standard is considered more stringent than that for regular Kosher meat, it is not necessarily equivalent to its *S'phardic* cognate. To ensure that the two are not unduly confused, *S'phardic Glatt* is commonly distinguished by the designation “*Bais Yosef*” or “*Bait Yosef*”<sup>40</sup> *Glatt*, whereas the unqualified term *Glatt* refers to product meeting *Ashkenazic* standards.<sup>41</sup> From a practical perspective, virtually all the meat products certified by the major *Kashrus* agencies in the United States meet a (*Ashkenazic*) *Glatt* standard, a status that is usually indicated on the label. A “*Glatt*” designation does not presuppose a standard that meets *S'phardic* custom unless the product is labeled “*Bais* (or *Bait*) *Yosef Glatt*.” Products that merely indicate “Kosher” are assumed to meet regular Kosher standards.

### “Kashering” and Treiboring: Issues Relating to Blood, *Gid ha'Nasheh*, and *Cheylev*

Although an animal or bird may be deemed Kosher after the requirements of *Sh'chitah* and *B'dikah* are satisfied, certain parts of the animal or bird are nevertheless considered non-Kosher. Such prohibited parts include blood, the forbidden fats known as *Cheylev*, and the sciatic nerve (known as the *Gid ha'Nasheh*).<sup>42</sup>

- **Blood:** Blood of animals or birds<sup>43</sup> is subject to a Biblical prohibition<sup>44</sup> and must be removed before the animal or bird may be eaten. Such removal involves two distinct requirements: (a) the draining or removal of large blood vessels and (b) the removal of blood absorbed in the meat after the initial bleed-out during *Sh'chitah*.

<sup>40</sup> The term “*Bais Yosef*” (or “*Bait Yosef*” according to *S'phardic* pronunciation) refers to one of the greatest works of Rabbi Yosef Karo (1488–1575), the author of the *Shulchan Aruch* (The Code of Jewish Law). Rabbi Karo's *Halachic* rulings serve as the basis for most *S'phardic* customs, including that related to the *Kashrus* of animals with pulmonary lesions.

<sup>41</sup> In modern parlance, the term “*Glatt*” has become synonymous with a superior Kosher standard, unrelated to its anatomical provenance. Kosher chicken, for example, is often referred to as *Glatt*, even though pulmonary inspection is not germane to the species.

<sup>42</sup> Although another Biblical prohibition involves *E'ver Min ha'Chai*—flesh or limbs that have been severed from the animal prior to its death—this prohibition has virtually no practical application in modern food-processing systems.

<sup>43</sup> Fish blood is not included in this prohibition. However, its consumption is restricted to situations in which its source is obvious (for example, fish scales remain in the blood), lest the blood appear to be forbidden blood derived from animals or birds.

<sup>44</sup> *Leviticus* 3:13, 7:26–27, 17:1,12, 14; *Deuteronomy* 12:16, 23.

- a. Blood found in major arteries and veins must be removed from meat. In some communities, this requirement is satisfied by ensuring that all such veins and arteries are cut in such a manner that the blood will drain during the *Kashering* (salting) process (see the upcoming discussion relating to blood that is part of the flesh). Many communities, however, require that these veins and arteries be completely removed before *Kashering*, and most *Kashrus* organizations follow this approach. The removal of such veins and arteries, as well as other forbidden parts such as the *Cheylev* and *Gid ha'Nasheh* (see the items “*Cheylev*” and “*Gid ha'Nasheh*,” later in this list), is collectively known as *Nikkur* (Hebrew) or *Treiboring* (Yiddish).<sup>45</sup> (The need to butcher the animal to expose these veins and arteries tends to produce cuts of meat typical to the Kosher trade.<sup>46</sup>) In the case of fowl, the veins and arteries along the neck bone are cut or removed, and the tips of the wings are severed.
- b. Blood that is part of the flesh is not prohibited. However, a concern exists that a certain amount of “free” blood may remain in the meat even after the arteries and veins have been cut or removed. To address this concern, meat must be subject to a process known as “*Kashering*” (a Yiddish corruption of the Hebrew, literally meaning “to make Kosher”).<sup>47</sup> After *Kashering*, any blood remaining is considered part of the meat and is of no further *Halachic* consequence. *Kashering* may be accomplished on pieces<sup>48</sup> of meat or fowl<sup>49</sup> by either (i) salting or (ii) broiling:
  - i. *Kashering* by salting is the standard method of processing most<sup>50</sup> Kosher meat.<sup>51</sup> Operating under the theory that salt will draw blood out of the meat, it involves soaking the meat in cool water for thirty minutes, covering it with coarse salt,<sup>52</sup> and placing it on an inclined or perforated surface to allow the blood to drain away from the meat. After the draining period is completed, the meat is washed three times to remove any residual blood and salt, after which the meat may be cooked or otherwise prepared. The salting process must commence within seventy-two hours of slaughter<sup>53</sup> because the blood is assumed to be too congealed and set in

<sup>45</sup> *Treiboring*, as well as *Kashering*, may be performed by anyone (Jew or gentile) properly trained in the process, subject to appropriate Rabbinic supervision.

<sup>46</sup> Differing customs govern the method by which *Treiboring* must be accomplished, and *Kashrus* agencies determine the exact procedures used in operations under their certification.

<sup>47</sup> Such “*Kashering*” relates only to removing the concern of blood remaining in the meat. It *cannot* convert non-Kosher meat into a Kosher product.

<sup>48</sup> *Kashering* is ineffective on *ground* meat because coating each piece of meat with salt is impossible. In addition, the grinding process tends to express *liquid* blood into the ground meat, and *Kashering* is considered effective only in removing *embedded* blood.

<sup>49</sup> Some communities maintain a custom that requires fowl to be cut into two or more pieces prior to *Kashering* to ensure that the salting process is effective.

<sup>50</sup> Liver, however, is not subject to *Kashering* by salting and must be broiled (see upcoming text concerning *Kashering* by broiling).

<sup>51</sup> Although the consumer may purchase non-*Kashered* meat and either salt or broil it at home, many communities maintain a custom of prohibiting the sale of non-*Kashered* meat, lest the consumer not properly *Kasher* it. Virtually all *Kashrus* organizations require that meat under their certification be soaked and salted prior to sale.

<sup>52</sup> The use of coarse salt is required to ensure that the salt does not dissolve on the surface of the meat; this type of salt has earned the sobriquet “Kosher” salt because of its common use in the *Kashering* of meat. It is, however, no more “Kosher” than any other type of Kosher-certified salt and is used by the salt industry as a grain-size designation. Each salt company has its own “definition” of Kosher salt, and some *Kashrus* authorities prefer one brand to another.

<sup>53</sup> Traditionally, the *Shochet* labels the carcasses of Kosher animals with the date of the *Sh'chitah* to ensure that the meat is *Kashered* within seventy-two hours of slaughter.

the meat after this period to allow the salt to remove it.<sup>54</sup> When necessary, however, this period may be extended by soaking<sup>55</sup> the meat for thirty minutes before the seventy-two hours had elapsed, thereby allowing for an additional seventy-two hours before *Kashering* would be required.<sup>56</sup>

- ii. *Kashering* by broiling<sup>57</sup> operates under the theory that the direct heat of a fire will draw the blood out of the meat.<sup>58</sup> From a practical perspective, broiling is not the preferred method of Kosher meat preparation because the resulting meat is no longer raw. It is required, however, in the case of liver because the profusion of blood in this organ does not lend itself to removal by salting.<sup>59</sup> In addition, broiling may be the preferred method of *Kashering* whenever an extremely low sodium<sup>60</sup> diet is indicated.

Meat or poultry<sup>61</sup> that is cooked before *Kashering* is prohibited and may not be rendered Kosher by any subsequent *Kashering* process.

- ***Cheylev***: Biblical law prohibits the consumption of certain types of fat known as *Cheylev* (“hard fat”),<sup>62</sup> most of which are found on the flanks, kidneys, liver, stomach, and other internal organs. These non-Kosher fats must therefore be removed from the meat before it can be consumed, and this part of the *Treiboring* (or *Nikkur*) is one of the most important responsibilities of a Kosher butcher. It must therefore be accomplished by people properly trained in the procedure and must be under appropriate supervision to ensure the efficacy of the process. The removal of such *Cheylev* must occur before the *Kashering* process.

The prohibition of *Cheylev* applies only to that of domesticated animals, such as beef, sheep, and goats. The fat of nondomesticated animals (such as deer) and fowl is exempt and need not be removed. The *Halachic* status with respect to domestication of the buffalo (bison) is unclear, however, and *Cheylev* must therefore be removed from its meat.

- ***Gid ha’Nasheh***: Biblical law prohibits the consumption of the sciatic nerve, its offshoots, and the fats surrounding it. This prohibition applies to both domesticated and wild animals, but not to fowl.

<sup>54</sup> Some authorities have ruled that *frozen* meat is exempt from this restriction, arguing that the congealing process is arrested during the time the meat is frozen.

Most *Kashrus* organizations, however, follow opinions that make no such allowance.

<sup>55</sup> Some authorities permit washing the meat instead of soaking it. Most *Kashrus* agencies, however, insist on *Kashering* the meat within seventy-two hours, do not permit washing, and permit soaking only in extenuating circumstances.

<sup>56</sup> For those *Kashrus* agencies that permit this process, the process may be used for up to three cycles.

<sup>57</sup> Equipment used to *Kasher* meat or liver by broiling may not be used to broil or cook previously *Kashed* meat.

<sup>58</sup> Meat that had not been *Kashed* by salting within seventy-two hours may nevertheless be broiled. However, such broiled meat may not subsequently be cooked.

<sup>59</sup> After broiling, liver may be cooked or otherwise prepared. Many authorities, however, rule that if the liver had not been broiled within seventy-two hours of slaughter, it may not subsequently be cooked.

<sup>60</sup> Most authorities require the use of conventional salt—sodium chloride—for *Kashering*. Salt substitutes, such as potassium chloride, are therefore not acceptable for this purpose.

<sup>61</sup> This restriction creates a significant processing challenge in the poultry industry, in which traditional methods of removing feathers from non-Kosher poultry involve the use of scalding water. Using hot water is prohibited in processing Kosher chickens because such water would “cook” the chicken prior to *Kashering*.

Feathers from Kosher chickens must therefore be removed with a cold-water process that is considerably more costly and less effective.

<sup>62</sup> *Leviticus* 7:24–25.

Because the *Gid ha'Nasheh*, as well as much of the *Cheylev*, is found in the hind section of the animal, many communities maintain the custom of abstaining from the use of the hindquarter of the animal,<sup>63</sup> thereby avoiding the need to remove these forbidden fats and nerves. Virtually all *Kashrus* agencies in North America and Europe<sup>64</sup> follow this custom and, for this reason, many popular cuts of meat (for example, filet mignon and T-bone steak) are not available in the Kosher market.<sup>65</sup>

### ***Organs, Meat Trimmings, Rendered Fat, and Edible Oil***

As noted, the Kosher slaughter of an animal does not necessarily produce Kosher meat. Despite the care taken by a *Shochet*, deficiencies in the *Sh'chitah* process (such as a nick found in the *Cha'lef* subsequent to the *Sh'chitah* or the movement of the animal during the process) will render the animal a non-Kosher *N'veilah*. Discovery of anatomical deficiencies during *B'dikah* (such as lesions on lungs) may render the animal a non-Kosher *T'reifah*. Ensuring that all recovered parts of an animal or bird are traceable is therefore critical to guarantee their Kosher status; that is, only those organs from animals ultimately approved as Kosher find their way into the Kosher market.

In the case of fowl, the bird and all internal organs are kept together until its Kosher status is determined, after which edible offal (such as gizzards and liver) may be recovered as Kosher product. In the case of animals, however, processing at the abattoir typically involves severing the head from the carcass and removing the lungs and other edible offal (for example, tongue, liver, spleen, and heart) prior to the *B'dikah* that will determine their Kosher status. To maintain the necessary ability to correlate these separated parts, they are typically marked or tagged with a number so that the parts of Kosher-approved animals may be marked as Kosher on the final determination of each animal's status. In many cases, special *Mashgichim* serve as assistants to the *Shochtim* to track and mark approved carcasses and offal as Kosher.

Kosher processing requirements also serve to restrict the availability of meat trimmings, byproducts, and rendered fat that are otherwise available for use in the non-Kosher meat-processing applications. Much of the fat and meat trimmings (for example, esophageal muscle tissue, ears, lips, and cheeks) are harvested from the carcass in a manner that makes maintaining their traceability to specific animals from which they derive difficult, either because of the small amounts of meat involved or because of the automated nature of their harvest. In addition, non-Kosher trimmings and fats (that is, *Cheylev* and *Gid ha'Nasheh*) removed during the *Treiboring* process may be intermingled with other recovered trimmings, thus rendering the maintenance of the Kosher status of such trimmings impractical. For these reasons, virtually all Kosher meat used in processed meat products derives from skeletal muscle and not from meat trimmings recovered at the abattoir. In addition, requirements to

<sup>63</sup> The hindquarters are sold in the non-Kosher market, as are the animals that were classified as *T'reifos*.

<sup>64</sup> In Israel, however, where the market for non-Kosher meat is limited, all parts of the animal—including the hindquarters—are *Treibored* to remove both *Cheylev* and the *Gid ha'Nasheh*. Israeli consumers of Kosher meat are therefore able to enjoy virtually all cuts of meat.

<sup>65</sup> Many authorities aver, however, that the custom to avoid the hindquarter is not obligatory, even in countries where this custom has enjoyed general currency. As such, some Kosher-certifying agencies in North America allow the *Treiboring* of the hindquarter and the sale of cuts of meat derived from it.

segregate and *Kasher* Kosher fats effectively precludes the production of Kosher tallow as a source of edible fat.<sup>66</sup>

## Supervision of Kosher Meat and Poultry

Given the extraordinary requirements attendant to the production of Kosher meat, *Halacha* insists on extraordinary safeguards to ensure the Kosher integrity of meat and poultry products. These include:

- ***Hashgacha T'midis* (full-time supervision):** All aspects of meat and poultry processing, from the time of slaughter until final packaging, must take place under the constant supervision of a *Mashgiach*. Typically, only the *Mashgiach* is allowed to maintain the keys or lock combinations to the meat-storage areas in the factory and the seals used in the packing of the finished product, thus ensuring their integrity.<sup>67</sup>
- **Two seals:** To ensure the integrity of Kosher meat or poultry, such products must bear at least two Kosher seals or markings identifying them. For this reason, packaged Kosher meat or poultry<sup>68</sup> typically is wrapped twice, or the bulk packaging of such products has two separate seals. After being properly marked or sealed, the product may be handled or shipped without further Rabbinical supervision. After the seals are broken by the consumer, the meat must be under the constant supervision of a Jew.
- ***Ba'sar she'Nis'alem min ha'Ayin*:** A special rule involves meat whose chain of custody has been broken. In many situations, merely leaving a piece of meat or fowl without a proper means of identifying it renders it ipso facto non-Kosher, unless its provenance can be properly established.

<sup>66</sup> Small amounts of Kosher-rendered beef and chicken fat may be produced for use in flavoring applications or other specialty applications by carefully collecting the fat during the trimming operations taking place after *Kashering*.

<sup>67</sup> Some *Kashrus* agencies maintain a policy of not certifying meat-processing facilities that are not owned or operated by individuals who are personally religiously observant and adhere to Kosher dietary laws.

<sup>68</sup> Traditionally, Kosher chickens were identified with a metal seal affixed to the wing. This seal was originally fashioned by inserting a small wire through the wing and sealing the two ends with a bit of lead crimped in place bearing the seal of the *Shochet*—hence the sobriquet *plumbe* from the Latin *plumbum* (lead). Today, this seal typically takes the form of a metal tag that clips onto the wing.



# 13 The Oils, Fats, and Emulsifier Industries

The Kosher status of oils, fats, and fat-based emulsifiers is based on the source of the lipid, the equipment on which the products are produced, and the ingredients added to them. Fat-based ingredients figure prominently in virtually all processed food products and ensuring their Kosher status is one key to maintaining a viable Kosher program. The term “pure” or “100 percent” vegetable oil is insufficient to guarantee an acceptable Kosher status, because their erstwhile Kosher status may be compromised by the manner in which they are processed or by small amounts of non-Kosher ingredients that may be lawfully added to them.

## Lipid Sources

Most dietary lipids are derived from either animal or vegetable sources.<sup>1</sup> Animal-based fats commonly used on a commercial basis include lard (swine), tallow (beef or mutton), and marine oils (mammalian—for example, seal and whale, or fish) and their application to commercial Kosher productions is extremely limited. Lard is an inherently non-Kosher material because its source is an animal species that is non-Kosher.<sup>2</sup> Tallow, although sourced from Kosher species of animals, is nevertheless a non-Kosher material because it is generally not derived from animals that have been processed according to Kosher law.<sup>3</sup> Marine mammals (such as whales) are not Kosher species, thereby precluding the use of this type of oil. Oil derived from Kosher species of fish, however, may be considered Kosher, provided that appropriate supervision is maintained to ensure that only Kosher fish species are used in its manufacture.<sup>4</sup> From a practical perspective, however, most fish oil do not comply with this requirement, and marine oils are generally not used in commercial Kosher oil products.<sup>5</sup> Virtually all lipids used as Kosher food ingredients derive from

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<sup>1</sup> Petroleum is considered a Kosher source of lipids and, although not generally used for food, is often used as a base in the manufacture of food-grade lubricants and as trough grease and panning oil in the bakery industry (see Chapter 7, “The Baking Industry,” and “The Story of Release Agents” in Chapter 17).

<sup>2</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

<sup>3</sup> Commercial production of tallow involves the use of animals that had not been slaughtered according to *Halachic* requirements (*Sh'chitah*). For a variety of reasons, segregating and processing Kosher fat from Kosher-slaughtered animals is also impractical (see Chapter 12, “The Meat and Poultry Industries”). Even if such processing would be practical, the resulting fat would have a Meat status and thus be unsuitable for general Kosher use, involving Pareve or Dairy products. Small amounts of rendered chicken or beef fat are produced, however, for flavoring purposes.

<sup>4</sup> See Chapter 10, “The Fish Industry.”

<sup>5</sup> Small amounts of Kosher fish oil may be produced for use as a food supplement.

vegetable sources. Virtually all vegetable lipids<sup>6</sup> are also inherently Kosher,<sup>7</sup> including the commercially significant sources of soy, corn, canola (rapeseed), coconut, cottonseed, peanut, palm, palm kernel, sunflower, safflower, and olive, as well as specialty oils such as walnut oil.

## Processing Issues

Most vegetable oils and fats<sup>8</sup> require significant refining to make them suitable for use as a food. In addition, many vegetable oils are fluid at room temperature and must be “hardened” to change their physical and functional properties to be satisfactory for many applications. These processes, in and of themselves, may pose no *Kashrus* concern. However, (non-Kosher) animal and marine fats are also subject to the same processes, and this commonality of processing is what leads to *Kashrus* concerns as they relate to the production of vegetable oil. These areas of commonality extend from the time the crude oil is transported until the final packaging and shipment of the finished product, and Kosher certification involves consideration of significant *Kashrus* issues as they relate to the following processes and procedures:

- **Crude vegetable-oil manufacture:** The manufacture of crude vegetable oil typically takes place in facilities dedicated to the extraction of oil from that plant source. In some cases, this involves a solvent extraction process; in other cases, it involves a form of physical extraction. Because animal fats are not subject to similar extraction processes, crude vegetable oil is generally considered inherently Kosher.
- **Transport of bulk oil:** Crude vegetable oil is often produced in the very same areas of the world as where the source plant is grown. Palm, palm kernel, and coconut oils, known as “tropical oils” because of the affinity of the palm oil and coconut trees for warm climates, come primarily from Malaysia, Indonesia, and the Philippines. After the oil is extracted from the fruit, it may be shipped to other countries as crude or partially refined product for final processing. Generally, this crude material is shipped as a bulk liquid in the hold of a ship, which raises several potential concerns inasmuch as such shipping holds are also used for the transport of non-Kosher products.<sup>9</sup> First, shipping holds that

<sup>6</sup> The Kosher status of grape seed oil produced from grape seeds derived from non-Kosher grape juice production is the subject of debate. Many authorities accept such grape seed oil as Kosher because it is produced from dried seeds and has no grape flavor. (This approach is similar to that used to approve cream of tartar produced from non-Kosher wine and grape juice.) Others, however, decline to accept such material as Kosher.

<sup>7</sup> Oils approved for use on Passover include olive, palm, palm kernel, cottonseed, and coconut. Other sources, such as soy, corn, and canola, are considered *Kitniyos* and are not acceptable according to *Ashkenazic* custom. (Some authorities do, however, accept peanut oil; see Chapter 5, “Kosher for Passover,” and “The Story of *Kitniyos*” in Chapter 17.) Many, but not all, *Kashrus* certifications allow for the production of Passover-approved oils on equipment that is also used for *Kitniyos* oils, without the need for *Kashering*. Wheat germ oil, however, is prohibited on Passover and equipment used to produce it would require *Kashering* to produce Passover oils.

<sup>8</sup> Traditionally, the term “oil” (derived from the Latin *oleum*, meaning olive oil) was reserved for vegetable products that are typically liquid at room temperature, whereas “fat” or “grease” referred to animal products that were solid at room temperature.

Modern processing methods have blurred this distinction; fats from both sources now exist as both liquids and solids at room temperature.

<sup>9</sup> Identical Kosher concerns exist for the shipment of refined products (see the item “Transport and certification of finished products” in the following list).

were used to transport non-Kosher materials would become non-Kosher themselves, and their subsequent use to transport Kosher products may compromise the Kosher status of that product.<sup>10</sup> Second, Kosher and non-Kosher products may be stored in adjacent holds in the ship, in which case *B'lios* (flavor transfers) from the non-Kosher product may transfer through the common wall and compromise the Kosher product. Third, oils and fats must be heated during transport, and the use of a common recirculating steam and possibly hot-water system may similarly compromise the Kosher status of the product.

*Kashrus* organizations have developed different approaches in dealing with such issues and have worked with the major international shipping companies to maintain a program to ensure the Kosher status of commodities under their certification. The following list presents several of the approaches commonly used to address these issues:

- Kosher product should be shipped only in ships' holds that have not been used to transport inherently non-Kosher products for (at least) the previous three shipments.<sup>11</sup>
- Ships' holds adjacent and sharing a wall with those containing Kosher products should not contain non-Kosher products.
- Recirculating hot-water and steam systems should be monitored to determine that they are *Pagum* (having an unpleasant taste),<sup>12</sup> which would serve to obviate any concerns of flavor transfers through such utilities.

*Kashrus* agencies typically inspect shipping records and manifests, as well as loading records within the ship, to verify compliance with these requirements.

*Kashrus* concerns relating to the handling of bulk shipments of oil (as well as glycerin and similar products), however, do not end at the conclusion of transoceanic transport. Typically, such bulk shipments are pumped from the ship into large storage tanks, where the material is inventoried and from which it is distributed as needed. Facilities with many such storage tanks, known as storage terminals, are located near ports that handle such shipments and are used to handle virtually all shipments of such bulk materials. Indeed, bulk shipments may be transferred through several storage terminals in various countries until they arrive at their final destination. Because the storage facilities at such terminals may be used for a variety of products, including both Kosher and non-Kosher commodities, the Kosher status of those tanks for Kosher products must be guaranteed. In addition, such terminals may use recirculating steam and hot-water systems to maintain the appropriate temperature of product in storage, which may create a significant *Kashrus* concern where such utilities are common to both Kosher and non-Kosher products. Kosher certification of storage terminals is often required to address such issues.

Domestic sources of crude vegetable oil (for example, soy and canola) are not immune from Kosher concerns relating to their transport. Extraction of crude oil often takes place in facilities near the area where the oil seeds are grown, whereas refining may take place elsewhere. River barges are often used to transport crude oil and are subject to concerns similar to those related to oceangoing ships. Truck trailers or railcars are also

<sup>10</sup> Non-Kosher animal fats are maintained at hot temperatures during shipment, thereby causing non-Kosher *B'lios* to be absorbed into the walls of the hold. Even if the holds were used to transport cold non-Kosher products, their status would still be compromised because the non-Kosher product would remain in the hold for more than twenty-four hours (*Ka'vush*) (see Chapter 2, "Basic Halachic Concepts in *Kashrus*," for a discussion of these concepts as well as those relating to common steam and hot-water systems).

<sup>11</sup> Given their tremendous volume, effecting a Kosherization of such holds with boiling water is virtually impossible.

<sup>12</sup> See Chapter 2, "Basic Halachic Concepts in *Kashrus*," for an explanation of this requirement.

used for this purpose and their Kosher status must similarly be monitored. Many *Kashrus* organizations maintain a certification program on such transport, ensuring that trailers, barges, and railcars remain in Kosher service and are *Kashered* should their Kosher status be compromised by the transport of non-Kosher products. The shipping records of companies that operate such Kosher-certified transport are subject to periodic review by the Kosher-certifying agency; these companies are provided with letters of Kosher certification for such trailers and railcars.

- **Refining and processing:** Virtually all animal and vegetable oils must be refined and processed before they are considered finished products.<sup>13</sup> Because many of these processes are similar for both animal and vegetable oils and fats, manufacturing facilities often produce both types on the same processing systems interchangeably. The use of the following types of equipment for both animal and vegetable processing raises the following *Kashrus* concerns:
  - *Deodorizers.* A deodorizer, or distillation column, operates by heating the oil in a vacuum, thereby allowing undesirable volatile components to separate from the product.<sup>14</sup> Such pieces of equipment operate at very high temperatures and their use with non-Kosher products requires an appropriate *Kashering* before Kosher productions. Any potential *Kashering*, however, is complicated by the precondition that all non-Kosher residue from the equipment be removed prior to Kosherization. For a deodorizer, the sediment and deposits that typically build up on the inside surfaces and distillation pans make the requisite cleaning a very difficult process. The *Kashering* of a deodorizer is therefore seldom undertaken, certainly not on an ongoing basis.
  - *Pipes, filters, and storage tanks.* All equipment used to transport, filter, and store non-Kosher animal fats may not be used for Kosher vegetable-oil production unless the equipment is properly Kosherized. The Kosherization of pipes and filters may be accomplished by flushing with boiling water after being subject to all normative Kosherization requirements, such as the twenty-four-hour waiting period. The *Kashering* of large oil-storage tanks, however, presents significant challenges because they would need to be filled with boiling water.
  - *Hydrogenation.* Many types of vegetable oils are composed of mostly unsaturated fat and are liquid at room temperature. Many applications, however, require a more saturated product, a requirement that has traditionally been met by the hydrogenation of the fat molecule with the aid of a powdered nickel catalyst.<sup>15</sup> Because some animal fats are also hardened, the use of common hydrogenating system for both animal and vegetable products raises concerns for the Kosher status of both the equipment and

<sup>13</sup> Virgin olive oil, or cold-pressed olive oil, is the exception to this rule; it is produced by extracting the oil directly from the fruit without further processing.

*Pomace* olive oil, however, is recovered from the pressed olive fruit (pomace) after the initial pressing and is subject to the same refining process and Kosher concerns as vegetable oils from other sources.

<sup>14</sup> The vapors that distill from the product are often recovered, and this deodorizer distillate is a valuable source of mixed tocopherols (vitamin E) and the sterols used in various drugs and cholesterol-reducing foods. The Kosher status of this material is therefore important to manufacturers of such products.

<sup>15</sup> The hydrogenation process tends to produce some fats with a *trans* configuration within the fat molecule, and recent research has raised questions as to the health impact of such products. Newer technology for hardening fats, known as *interesterification*, avoids the creation of significant amounts of *trans* fats. The latter process makes use of certain chemicals or lipase enzymes to modify the fat in the desired manner. When lipase is used in the production of Kosher-interesterified products, its Kosher status must be ensured.

the powdered catalyst. When such systems are to be *Kashered*, the catalyst must also be replaced.<sup>16</sup>

- *Swept surface heat exchangers (Votators®)*. Although hydrogenated oils may be shipped in bulk, they are often packaged in solid cubes. Such products require controlled crystallization of the hydrogenated fat, which is typically accomplished through the use of equipment that continuously cools thin layers of the oil and compresses it into a solid plastic form.<sup>17</sup> Such swept surface heat exchangers may be *Kashered*, provided that they are thoroughly cleaned to remove residue from all areas of the equipment.
- *Utilities*. The refining of oil involves the use of tremendous amounts of heat in the form of a thermal fluid, hot water, or steam. The use of common recirculating utilities to process Kosher and non-Kosher products raises significant concerns, involving the potential transfer of flavors between the products.<sup>18</sup>

Note that virtually no mainstream *Kashrus* agency will certify vegetable oil processed in equipment that is also used to process animal fat<sup>19</sup> (unless the equipment is properly *Kashered*),<sup>20</sup> nor will it accept it for use in other Kosher-certified products. In addition, they essentially consider such vegetable oil as being in the same category as non-Kosher animal fat and require the Kosherization of equipment in which such vegetable oil had been handled.

- **Transport and certification of finished products:** Kosher certification of bulk oil products generally includes ensuring the Kosher status of the vehicles in which they are transported,<sup>21</sup> similar to those requirements discussed above concerning the transport of crude oil. If the manufacturing facility is entirely Kosher, Kosher certification can generally be granted on an ongoing basis, subject to periodic inspection by a *Mashgiach*. For facilities in which dual Kosher and non-Kosher productions take place, albeit in dedicated systems, certification of bulk shipments is generally limited to specific shipments, thereby ensuring that the oil being certified was indeed dispensed from the Kosher system. Such shipments are typically certified by a specific letter issued and signed by the

<sup>16</sup> The catalyst itself, known as *Raney nickel* (after its inventor), is composed of nickel and aluminum, neither of which poses a *Kashrus* concern. Kosher certification of this material is, however, necessary because of its pyrophoric (spontaneously inflammable) nature and the consequent need to protect it from exposure to air.

Such catalysts are therefore typically prepared for use in the hydrogenation of oils by encapsulating them in fat, and this fat requires a reliable Kosher certification.

<sup>17</sup> Such equipment is often referred to as a “Votator®,” after the name of one of its earliest manufacturers.

<sup>18</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a discussion of potential solutions to such problems.

<sup>19</sup> Some Kosher-certifying agencies have taken an approach that allows for the interchangeable use of equipment for both non-Kosher animal and Kosher vegetable-oil processing, based on certain *Halachic* considerations. Virtually all mainstream Kosher-certifying agencies follow the consensus of most *Halachic* authorities in rejecting such approaches and consider such products to be non-Kosher.

<sup>20</sup> Most *Kashrus* organizations will *Kasher* equipment in an oil facility, provided that such Kosherization meets all *Halachic* requirements. Some *Kashrus* organizations, however, regard such a procedure as too complex and fraught with the possibility of error or too difficult to perform properly. They therefore decline to accept any oil produced in such systems, even if the product bears an otherwise acceptable Kosher certification. In addition, some *Kashrus* organization decline to accept vegetable-oil products that are manufactured in facilities where animal products are produced, even if the production systems are completely isolated from one another.

<sup>21</sup> An exception may be made, however, if the Kosher-certification specially states that the customer is responsible for ensuring the Kosher status of transport.

*Mashgiach* who supervised the loading of the shipment, in which the trailer or tanker, as well as the serial numbers of the seals used on it, are identified (such products generally being referred to as “Group 5” ingredients).<sup>22</sup>

## Supervision

All *Kashrus* agencies prefer to certify edible-oil refineries that are dedicated to vegetable oils. If a facility produces both animal and vegetable products, Kosher certification is generally granted only under the following conditions:

- The Kosher and non-Kosher production systems must be physically separated from each other, such that introducing non-Kosher product into the Kosher system is impossible. (Provision may be made to allow the one-way transfer of otherwise Kosher vegetable oil into the animal fat system for use in the production of non-Kosher animal/vegetable blends.)
- Acceptable methods of segregation must also be maintained in the recovery and reprocessing of off-spec material (rework).
- Receiving systems, flexible hoses, and crude storage tanks must be dedicated for Kosher use, and a system of monitoring their use must be established.
- Deodorizers, hydrogenators, and intermediate handling systems must be dedicated to the Kosher vegetable system, with no connection between them and the non-Kosher processing operation.
- Finished product storage tanks, as well as systems used to fill trailers or railcars, must be dedicated to the Kosher production system.
- If Votating<sup>®</sup> or packaging lines cannot be dedicated to Kosher production, such systems must be *Kashered* under the supervision of a *Mashgiach* prior to each Kosher production.
- Intensive Rabbinic supervision is required to ensure the ongoing integrity of the Kosher system. In many situations, a full-time *Mashgiach* is assigned to such a facility, who must be present whenever bulk Kosher shipments are prepared (see previous mention of letters of certification), as well as when Kosher product is packaged.
- Finished product labels bearing the Kosher designation are generally kept under the physical control of the *Mashgiach*.

## Additives

Many ingredients that are often added to oil products as preservatives, processing aids, or to modify their functionality require reliable Kosher certification for the following reasons:

- The emulsifiers used in emulsified shortening require reliable Kosher certification. Even “100 percent vegetable shortening” may contain emulsifiers of animal origin.
- Antifoams added to certain oil products may contain animal components.
- Soy lecithin is a byproduct of soybean-oil refining and may be considered inherently Kosher. However, fatty acids of non-Kosher origin may be blended into it, necessitating a reliable Kosher certification for all soy lecithin.

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<sup>22</sup> See Chapter 3, “Ingredient Management,” for a discussion of the ingredient groupings.

Even oils and shortening from all-vegetable refineries require reliable Kosher certification.

### Emulsifiers<sup>23</sup>

Many types of emulsifiers, such as monoglycerides, monostearates, and monooleates, are based on fatty acids that may be derived from either animal or vegetable sources. Others, such as polysorbates, are based on fatty acids, which may be of animal, plant, or petrochemical derivation. *Kashrus* issues, policies, and supervisory requirements of emulsifier-manufacturing facilities are similar to those of oil refineries.<sup>24</sup>

The production of certain types of emulsifiers, known as diacetyl tartaric acid esters of monoglycerides (DATEM), involves the esterification of monoglycerides with tartaric acid. Such products raise an additional concern relating to the Kosher status of tartaric acid, which is generally derived from non-Kosher wine or grape juice. Although many authorities accept tartaric acid as a Kosher ingredient and certify DATEM emulsifiers, others decline to accept them.<sup>25</sup>

### Margarine<sup>26</sup>

Margarine is an emulsion of an oil and aqueous phase and is often produced in facilities that process other oils and shortenings. Each of the two phases occurs separately. The lipid (oil) phase typically contains oil, fat-soluble vitamin A, colors (for example, beta-carotene), emulsifiers, and fat-soluble flavors. The aqueous phase contains water, salt, water-soluble flavors, and sometimes preservatives. It may also contain dairy solids. The aqueous phase is generally pasteurized and cooled prior to blending with the heated oil, after which the two phases are blended into an emulsion and cooled in a swept surface heat exchanger to develop the plastic crystal structure of the finished product.

The following issues relate to the Kosher status of margarine:

- **Lipid phase:** Originally, the type of fat used in margarine was of animal origin because naturally saturated animal fat was necessary for margarine to be a solid at room temperature. With the advent of hydrogenation and other fat-hardening technologies, vegetable oils have achieved greater currency, although lard and tallow margarines are still manufactured. Kosher margarine must be produced with Kosher vegetable oil, and all additives must similarly be Kosher approved.
- **Aqueous phase:** Traditionally, the aqueous phase of margarine was skim milk, although most manufactures today use whey or other dairy solids for this purpose. Kosher margarine containing this type of aqueous phase is certified as dairy. Non-dairy Pareve margarine is also produced, substituting salt and other flavorings for the dairy components.

<sup>23</sup> See “The Story of Emulsifiers,” in Chapter 17, for a full discussion of *Kashrus* issues relating to such products.

<sup>24</sup> Emulsifiers intended for use in Passover products must be produced from Passover-approved vegetable oils.

<sup>25</sup> See “The Story of Emulsifiers” in Chapter 17.

<sup>26</sup> See “The Story of Margarine” in Chapter 17.

- **Equipment:** Margarine production involves the use of heat at many points of the production because the hardened oil and subsequent emulsion will harden at room temperature. In addition, the inner surfaces of the equipment used to pump or move the plastic margarine after crystallization must be heated to allow the smooth transfer of the product through the product filling system. Equipment used to produce Kosher margarine is generally dedicated to such productions. For the production of non-Kosher margarine, all the processing equipment must be properly *Kashered* prior to Kosher productions.

A similar concern relates to the production of Pareve margarine. Pareve productions require that equipment must be dedicated to such products or *Kashered* after dairy productions prior to each Pareve production.<sup>27</sup>

- **Utilities:** The heating of ingredients in the production of margarine generally involves the use of indirect steam or hot water, or both. As noted previously, heating systems that recirculate steam or hot water may create *Kashrus* concerns if they are used to heat both Kosher and non-Kosher, or dairy and Pareve, products. Areas of concern include heated mixing tanks, melting tanks, and heated (traced) pipes used to convey plastic margarine.
- **Gelatin:** Standard margarine is composed of approximately 85 percent oil and 15 percent aqueous phase. (Legally, margarine must, like butter, be 80 percent oil.) In an effort to reduce the number of calories in the product, manufacturers have developed methods of creating emulsions (imitation margarine) with a higher level of water that still exhibits many of the functional properties of margarine.<sup>28</sup> In many cases, such emulsions rely on the use of monoglycerides and other similar emulsifiers that are available as Kosher ingredients. Some very low fat margarines, however, rely on the use of gelatin as a stabilizer, an ingredient that is generally not available as a Kosher ingredient on an economical basis.<sup>29</sup>
- **Rework:** The production of margarine typically creates a significant amount of material that cannot be sold, either because of defects in packaging or because of off-spec formulation, and such margarine must be reworked into new product. In facilities in which both Kosher and non-Kosher margarines are produced, great care must be taken to ensure that non-Kosher rework is handled independently of Kosher reworked material and that it is not used in the production of Kosher product. Such segregation must include separate melting, storage, and filtering equipment, a means of ensuring that the two systems are not interchangeable, and the ultimate disposition of the recovered product. Such concerns may be exacerbated by modern filtering systems, in which reworked margarine is processed to recover and refine the oil phase to the point at which the resulting filtered rework is virtually as pristine as virgin oil. Such purity notwithstanding, purified non-Kosher margarine remains non-Kosher and may not be used in the production of Kosher product. Similar concerns exist with the production of dairy and Pareve margarine.

<sup>27</sup> Such *Kashering* must also include the aqueous pasteurization system (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a discussion of issues related to the *Kashering* of pasteurizers).

<sup>28</sup> Generally, such products are not suitable for use in baking or frying, however.

<sup>29</sup> See “The Story of Gelatin” in Chapter 17.



## Lipids Used As Incidental Ingredients

In addition to their use as a food (for example, oil, shortening, or margarine) or as a functional ingredient therein (for example, emulsifiers), fats and oils may be used in ways regarded by the food industry as “processing aids” rather than as “ingredients.” Such uses may include antifoam compounds, lubricants designed to prevent food from adhering to production surfaces,<sup>30</sup> and agents used in microencapsulation. In many cases, such compounds, according to the Food and Drug Administration, need not be listed on an ingredient declaration, despite the fact that they are indeed incorporated, if only infinitesimally, in the food produced using them. From a *Kashrus* perspective, however, all compounds added to a Kosher product for any reason are considered ingredients and subject to Kosher requirements.

Additives such as antifoams may contain fatty acids and compounds based on them, which require reliable Kosher certification. Even products labeled as “silicon-based” or “petroleum-based” may nevertheless contain such chemicals. The production of Kosher versions of such products, in addition to ensuring the Kosher status of their components, also entails ensuring the Kosher status of production equipment and utilities used in their manufacture.

Similarly, processing aids such as nonstick compounds<sup>31</sup> are subject to Kosher concerns because they often contain fatty acid compounds that may derive from non-Kosher sources, even when labeled “petroleum-” or “silicon-”-based. Although not added directly into the food, these compounds nonetheless become incorporated into the foods with which they are processed. In addition, the use of such non-Kosher compounds on equipment surfaces would tend to compromise the Kosher status of the processing equipment. Such concerns further extend to parchment paper (for example, Quilon®) and similar materials that directly contact the food being processed.

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<sup>30</sup> See “The Story of Release Agents” in Chapter 17.

<sup>31</sup> The use of fatty acids and similar compounds in the manufacture of aluminum foil has been the subject of *Halachic* discussion, although most authorities have ruled that aluminum foil poses no significant *Kashrus* concern (see “The Story of Release Agents” in Chapter 17). Some authorities have similarly expressed a concern with the Kosher status of zinc stearate and other chemicals used in the manufacture of molded plastic utensils and Styrofoam® and have recommended against their use unless ensuring that only Kosher ingredients had been used in their manufacture is possible. Most *Kashrus* authorities, however, have ruled that the minute amount of such chemicals added to plastic poses no *Kashrus* concern.

# 14 The Food-Service Industries

Historically, food preparation had been centered around the home. The household chef cooked, baked, and prepared virtually all the foods served to the family. Even when one did not have access to “home cooking,” the food service at the ubiquitous wayfarer’s inn was essentially an extension of the home cooking of the tavern owner—the proverbial *table d’hôte*. Travelers adhering to a Kosher diet would ensure that they patronized inns operated by Kosher-observant proprietors<sup>1</sup> or traveled with their own Kosher provisions.

Despite the domestic focus on meal preparation, the production of certain basic foods had long ago devolved to commercial enterprises, as certain types of food preparation were seen to benefit from the specialized skill of the preparer or the equipment at his disposal. For example, not every household was equipped with an oven capable of producing bread and other baked goods, or the ingredients necessary for the successful production of these items. Communal bakeries therefore developed, in which the baker would satisfy the needs of the local populace for bread and similar staples. However, their place in the food-supply chain was essentially limited to supplying “raw materials” to the home-based food preparation system. Meal service remained the purview of the home.

In the mid-1700s, however, the concept of commercial meal preparation developed in Paris, with the opening of the first modern “restaurant,” a place where a diner might obtain “restorative” fare. As the concept of commercial meal preparation gained acceptance, it created an entirely new industry encompassing restaurants, catering, and communal eating establishments (such as cafeterias).

Maintaining the *Kashrus* of early commercial food “industries” was fairly straightforward. Bakeries, for example, tended to use few ingredients, and even when the local baker was not Jewish,<sup>2</sup> the operation of the local bakery could easily be monitored to ensure compliance with Kosher requirements. Although the variety and complexity of commercial food manufacturing far exceeds that of the primitive local bakery, the *Halachic* theories under which the *Kashrus* of commercially produced foods may be certified are based on those established for these early food preparation entrepreneurs.<sup>3</sup> Modern Kosher-certification systems are typically structured around the fact that commercial food manufacturers produce a defined set of products, follow prescribed production procedures and equipment,

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<sup>1</sup> *Halacha* does not mandate a formal *Hashgacha* (Kosher certification) to establish the Kosher status of a food. Any Orthodox Jew who demonstrably adheres to the laws of *Kashrus* may be relied on to warrant the Kosher status of food that he or she personally prepares.

<sup>2</sup> See Chapter 7, “The Baking Industry,” and “The Story of Bread,” in Chapter 17, regarding the permissibility of eating *Pas Palter*—Kosher bread baked by a non-Jewish baker.

<sup>3</sup> See Chapter 1, “Kosher Certification: Theory and Application,” for a detailed discussion of the *Halachic* theories by which products may be certified as Kosher in the absence of full-time supervision of a Kosher-observant individual.

and use ingredients purchased on a regular basis—all of which are conducive to the non-continuous *Kashrus* oversight necessary for ongoing Kosher certification.

Food-service industries, on the other hand, typically operate in a manner that does not lend itself to such predictability. Restaurants often change menus to reflect seasonal availabilities or to maintain the novelty of their fare, and will typically purchase ingredients in small quantities and on a frequent basis, factors that add to the complexity of ingredient oversight. In addition, food-service establishments are geared toward providing full, balanced meals, which often include ingredients that pose special *Kashrus* concerns. Fresh eggs should be inspected to check for bloodspots,<sup>4</sup> and many types of vegetables require intensive scrutiny or cleaning, or both, to ensure that they do not harbor forbidden insects;<sup>5</sup> these are requirements that cannot be satisfied by the Kosher-certification and oversight programs that are effective in many industrial settings.

Additional concerns stem from the fact that catering establishments, cafeterias, and residential food-service environments (for example, hospitals, nursing homes, and retirement home facilities) often prepare both dairy and meat dishes in the same facility. Consequently, appropriate segregation needs to be maintained between dairy and meat products and the equipment used in their respective preparation, especially in light of the numerous small utensils (such as pots, pans, dishes, and silverware) that are inherently part of such operations. Restaurants, although typically operating as either a meat or dairy establishment (but not both), must nevertheless maintain appropriate segregation between meat and fish production.<sup>6</sup> Methods of maintaining equipment segregation appropriate to industrial settings, such as ensuring that meat and dairy production equipment is incompatible with each other, are impractical in what is essentially an expanded kitchen-type environment.<sup>7</sup>

Many other *Halachic* considerations come into play in maintaining a Kosher-certification program for the food-service industries, such as issues relating to *Shabbos* (the Sabbath), the ritual immersion of certain vessels (*T'vilas Kelim*; see later in this chapter for more about the responsibilities of *Mashgiach*), and checking vegetables for insect infestation. Kosher supervision systems for these industries must therefore be designed to address all these concerns. Indeed, the *Kashrus* challenges posed by the food-service industry have been recognized by the *Kashrus*-certification agencies, many of which prepare specific food-service manuals outlining their certification policies and requirements.

## Restaurants

Kosher restaurants and delicatessens have been a fixture in heavily Jewish neighborhoods for years, generally specializing in ethnic fare reflecting the heritage of their Jewish clientele.<sup>8</sup>

<sup>4</sup> See “The Story of Eggs” in Chapter 17.

<sup>5</sup> See Chapter 6, “Fruit and Vegetables.”

<sup>6</sup> In all cases, no food from outside sources may be brought into the restaurant or commissary. In contradistinction to factories, where employees eat their meals in a separate cafeteria, meals in food-service operations are typically taken within the confines of the food preparation area. It is therefore critical to impress on employees the importance of not bringing *any* food into the facility unless approved by the *Mashgiach*.

<sup>7</sup> Equipment segregation in a classic Kosher household involves maintaining two entirely separate sets of cooking equipment, serving utensils, and china and cutlery for dairy and meat products. Even the dish-washing areas are kept separate. (Some houses even have separate dishwashers for dairy and meat dishes!) Typically, these sets of utensils are distinguished by differing patterns or colors, with all members of the household attuned to the need to maintain their segregation.

<sup>8</sup> Contrary to a common misconception, no true “Jewish cuisine” exists. Jewish communities tended to adopt the cuisine of the countries in which they lived, subject, of course, to Kosher requirements. Thus,

Today's ubiquity and variety of Kosher restaurants, on the other hand, is a relatively recent phenomenon, one caused by several factors. Kosher eating establishments now specialize in cuisine that heretofore had not been generally associated with Kosher food. Restaurants serving quality Continental<sup>9</sup> fare are burgeoning, with other ethnic cuisine styles, such as Asian<sup>10</sup> and Mexican, becoming increasingly popular in the Kosher market. Furthermore, Kosher restaurants are no longer solely located in areas with large Jewish populations, and the quality of many Kosher restaurants places them on par with many upscale non-Kosher eating establishments. Kosher-certifying agencies are therefore called upon to provide *Kashrus*-certification services to an array of restaurants with widely varying menus.

All issues relating to a Kosher-certification program for restaurants are encompassed in the *Kashrus* standards and guidelines discussed earlier in this book. Their application in a restaurant setting, however, raises practical questions and challenges relating to their implementation that are unique to this industry. Identifying those issues and the methods by which they may be addressed is therefore critical.

### ***Kosher Standards and Nomenclature***

Just as manufactured food products are subject to differing Kosher designations,<sup>11</sup> distinctions in the Kosher designation of a restaurant are central to its Kosher status. Moreover, much as the type of cuisine served in a restaurant defines it and the market it seeks to serve, the details of its Kosher status similarly "define" its market niche. In the Kosher market, restaurants are first grouped according to their respective Kosher status and then by other factors.

The primary factor determining a restaurant's Kosher designation is its "Dairy" or "Meat" status, based on the requirement to maintain strict segregation between meat and milk (*Ba'sar b'Cholov*). The rules of *Ba'sar b'Cholov* prohibit serving both meat and milk foods together or using common equipment in their preparation or service.<sup>12</sup> Virtually all Kosher restaurants<sup>13</sup> are therefore grouped as either "Meat" or "Dairy" establishments.<sup>14</sup>

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Jews who lived in Poland and Russia tended to favor foods traditional to Eastern Europe, whereas Jews in Mediterranean countries adopted foods common to those areas.

<sup>9</sup> Both French and Italian cuisines pose interesting challenges in maintaining Kosher standards. Aside from the use of pork and shellfish that must be eschewed, the widespread use of creamed sauces, butter, and cheese (for veal Parmesan, for example) in their meat dishes is proscribed because of concerns of *Ba'sar b'Cholov* (the prohibition of mixing meat and milk). A Kosher version of such dishes may be prepared, however, by using Pareve dairy substitutes, such as margarine, and soy-based milk products for meat products or vegetable-based meat analogs for dairy products.

<sup>10</sup> The popularity of Chinese cooking in the Kosher market may be a function of the absence of dairy ingredients in basic Asian cuisine and the substitutability of beef and fish for many pork and shellfish dishes.

<sup>11</sup> See Chapter 1, "Kosher Certification: Theory and Application."

<sup>12</sup> See Chapter 2, "Basic *Halachic* Concepts in *Kashrus*," for a discussion of the rules of *Ba'sar b'Cholov*.

<sup>13</sup> The designation of a Kosher restaurant as "vegetarian" is subject to a definition conundrum common to all vegetarian establishments. A Kosher vegetarian restaurant that includes dairy products in its menu would be certified as a dairy establishment. When a "vegan" regimen is maintained, however, such a Kosher restaurant may be certified as Pareve. (Eggs are Pareve and their use is of no significance in determining the potential Kosher status of a restaurant.)

<sup>14</sup> Kosher consumers expect all items served in a "meat" restaurant to be dairy free: "ice cream" and coffee "creamer" are made from soymilk, Pareve margarine replaces butter, and "cheesecake" is made from tofu or other substitutes that meet the appropriate regulations. Similarly, "dairy" restaurants eschew the use of any meat product: the "pepperoni" on a pizza is vegetarian (or dairy), and a "cheeseburger" is made with imitation (Pareve) chopped meat.

In addition to the broad distinction between meat and dairy restaurants, differing approaches to certain other rules in *Kashrus* tend to create additional major restaurant categories.<sup>15</sup> The following *Halachic* concepts and terms are often used to differentiate restaurants based on these various approaches to certain Kosher issues:

- ***Cholov Yisroel*<sup>16</sup> (dairy restaurants):** Milk from Kosher species of animals (for example, cows, goats, and sheep) is inherently Kosher, whereas milk from non-Kosher species (such as camels, horses, and pigs) is not. Milk commonly used in most countries today derives from cows, and many *Kashrus*-certifying agencies follow the *Halachic* opinion that permits the use of standard milk where regulatory authorities ensure that milk indeed does not derive from other (non-Kosher) sources. Other authorities, however, require that milk be supervised to ensure that it had not been adulterated with non-Kosher material, a status known as *Cholov Yisroel*. According to *this approach*, *Kosher dairy products* must be produced exclusively with *Cholov Yisroel*.

Dairy restaurants are grouped according to their approach to *Cholov Yisroel*. In many countries (for example, the United States and Canada), the common custom is to follow the more lenient position and consider regular milk to be Kosher. Dairy restaurants enjoying reliable Kosher certification therefore generally do not use *Cholov Yisroel*, unless otherwise noted. Such establishments are simply referred to as “Kosher Dairy” restaurants.

However, those establishments that do use *Cholov Yisroel* products exclusively feature the designation “*Cholov Yisroel*” as a prominent part of their Kosher designation.<sup>17</sup>

- ***Glatt* (or *Glatt Kosher*) (meat restaurants):** Kosher restaurants that serve meat products are divided into two broad categories: Kosher and *Glatt* Kosher. Although the technical definition of *Glatt* relates to issues involving the Kosher status of animals exhibiting certain types of lesions on the lung of a Kosher-slaughtered animal,<sup>18</sup> the term is commonly used to connote a high standard of *Kashrus*. A *Glatt* Kosher certification for a restaurant, although not a substitute for a reliable Kosher certification, is indicative of the use of *Glatt* Kosher meat as well as maintains stricter Kosher standards (see later in this list, concerning *Glatt Beit Yosef*). Restaurants enjoying such a certification feature the term “*Glatt* Kosher” prominently as part of their Kosher designation. A plain “Kosher” designation, although not necessarily a sign of lax Kosher standards, is often perceived by Kosher consumers as such.
- ***Pas Yisroel*<sup>19</sup> (all restaurants):** Bread as well as cake, cookies, and other products produced in a non-Jewish bakery are *Halachically* acceptable, even if no Jewish involvement occurred in the baking, provided that all ingredients comply with Kosher requirements. Such products are known as *Pas Palter* and are certified by many reliable *Kashrus*

<sup>15</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” Chapter 7, “The Baking Industry,” Chapter 9, “The Dairy Industry, and Chapter 12, “The Meat and Poultry Industries,” for detailed discussions of the *Halachic* standards that are discussed in this section.

<sup>16</sup> See Chapter 9, “The Dairy Industry,” for a discussion of the concept of *Cholov Yisroel*. Chapter 1, “Kosher Certification: Theory and Application.”

<sup>17</sup> Some restaurants may offer both *Cholov Yisroel* and non-*Cholov Yisroel* items, in which case the distinction is clearly noted on the menu.

<sup>18</sup> See Chapter 12, “The Meat and Poultry Industries,” for a discussion of the technical distinctions between *Glatt* and regular Kosher meat.

<sup>19</sup> See Chapter 7, “The Baking Industry,” for a discussion of the distinction between *Pas Yisroel* and *Pas Palter*.

agencies.<sup>20</sup> Some Kosher consumers, however, prefer to use baked products in which a Jewish individual is involved in the baking process, with such products being known as *Pas Yisroel*. Many restaurants insist on using only *Pas Yisroel* products, thereby broadening their potential customer base. Such a policy will typically be indicated on their Kosher Letter of Certification, as well as in their advertising.

- **Yoshon (all restaurants):** Certain types of grains (wheat, rye, oats, barley, and spelt) are subject to a seasonal restriction known as *Yoshon* (literally, “old”), which stipulates that the new crop of such grain may not be used until after the second day of Passover.<sup>21</sup> According to some *Halachic* opinions, however, this rule is restricted to grain that is grown in the Land of Israel and does not apply to produce of other countries.<sup>22</sup> Many *Kashrus*-certifying agencies outside Israel therefore allow the use of grain products without *Yoshon* concerns. Other authorities, however, rule that the requirements of *Yoshon* apply in all countries, and restaurants that adhere to the strictures of *Yoshon* typically include the statement of “*Yoshon*” in their Kosher designation.
- **M’hadrin (all restaurants):** In the context of Kosher certification, the term *M’hadrin* may be defined as “scrupulous” or “adhering to exceptionally strict *Kashrus* standards.” Although the term *M’hadrin*—in contradistinction to designations such as *Cholov Yisroel* and *Pas Yisroel*—is not subject to adherence to any specific *Kashrus* criteria, it is nevertheless often used to connote *Kashrus* certification meeting the most stringent standards.<sup>23</sup> Generally, a restaurant designated as *M’hadrin* will use only *Pas Yisroel* products, as well as only *Glatt* Kosher meat or *Cholov Yisroel* dairy products.<sup>24</sup> In Israel, the term *M’hadrin* is used to connote a *Kashrus* standard that follows the more stringent applications of rules relating to *Sh’mittah* (the Sabbatical Year) and *T’rumos u’Ma’asros* (tithes).<sup>25,26</sup>
- **Bishul Beit Yosef and Glatt Beit Yosef:** The rules of *Bishul Akum* stipulate that the Kosher status of certain types of cooked foods is contingent on some type of Jewish involvement in the cooking process.<sup>27</sup> Adherence to the requirements of *Bishul Akum* is mandatory and

<sup>20</sup> The rules of *Pas Yisroel* and *Pas Palter* differ significantly from those of *Bishul Akum* in that, whereas *Pas Yisroel* may be regarded as an optional stringency, the prohibition of *Bishul Akum* (where applicable) is a *Halachic* requirement.

<sup>21</sup> See Chapter 7, “The Baking Industry,” for a detailed discussion of the concept of *Yoshon* and its application.

<sup>22</sup> In this regard, the restrictions of *Yoshon* are similar to those of *T’rumos u’Ma’asros* (tithes), which also apply to produce of the Land of Israel.

<sup>23</sup> Some communities will ascribe the term *M’hadrin* only to restaurants owned and managed by Jews who personally adhere to such scrupulous interpretations of Kosher law, regardless of the controls maintained by the Kosher-certification service or the presence of a full-time *Mashgiach*.

<sup>24</sup> Adherence to the rules of *Yoshon*, however, is not automatically subsumed into the term *M’hadrin*.

<sup>25</sup> See Chapter 6, “Fruit and Vegetables,” for a discussion of these requirements and differing approaches to dealing with them.

<sup>26</sup> By way of illustration, the Chief Rabbinate of Jerusalem provides two levels of Kosher certification for restaurants: “regular” and *M’hadrin*. The regular certification allows, for example, for the use of produce grown by Jewish farmers who rely on the *Heter M’chirah* (the sale of the land to a non-Jew during the Sabbatical Year). It also allows the use of meat that had been frozen for more than seventy-two hours prior to soaking and salting (see Chapter 12, “The Meat and Poultry Industries,” for a discussion of the requirement for soaking and salting meat and the need for this process to take place within seventy-two hours of slaughter).

Restaurants certified as *M’hadrin*, however, eschew reliance on a *Heter M’chirah* and ensure that meat is soaked and salted within seventy-two hours of slaughter.

<sup>27</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a detailed discussion of the rules of *Bishul Akum*.

is an integral part of the *Kashrus* program of any Kosher restaurant. The definition of the *level* of Jewish involvement, however, is subject to differing interpretations. *Ashkenazim* follow the *Halachic* opinions that allow for a minimal Jewish involvement in the cooking (such as lighting the stove at the beginning of the day or, according to some opinions, the lighting of a pilot light). *S'phardim*, however, require a Jewish involvement in the actual cooking of each piece of food (such as placing the food on the fire, lighting the fire under the food to be cooked, or stirring the pot of food while it is cooking). By default, most Kosher certifications follow the *Ashkenazic* approach to this matter. Those restaurants that adhere to *S'phardic* customs, however, include the designation “*Bishul Beit Yosef*”<sup>28</sup> in the Kosher certification.

Another significant distinction between the customs of *S'phardim* and *Ashkenazim* involves the definition of *Glatt* Kosher as it applies to beef.<sup>29</sup> Beef from Kosher-slaughtered animals that exhibit certain types of pulmonary lesions may be acceptable according to *Ashkenazic* tradition and considered *Glatt* Kosher and yet may not be considered acceptable according to *S'phardic* customs. Restaurants that adhere to *S'phardic* custom and use beef that meets *S'phardic* requirements—known as *Glatt Beit Yosef*—include such a designation in their Kosher certification.

At this point, it is critical to note other designations frequently employed in the food-service industries that are imprecisely associated with “Kosher” food. In many contexts, the term “Kosher” has become synonymous with a style of food, unrelated to its traditional fealty to religious dietary requirements. A “Kosher pickle” is no more Kosher than any other pickle but earns its sobriquet—and a legal standard of identity—from the style and flavoring of the gherkin that has often been served in Jewish delicatessens. Many restaurants, delicatessens, and other food-service establishments serve foods commonly associated with “Jewish cuisine,” although, ironically, such cuisine is typically the native non-Jewish foods of the countries where Jews have lived.<sup>30</sup> Such establishments have therefore geared their businesses to such “Jewish”—or “Kosher-style”—foods without necessarily ensuring compliance with any standard of Kosher law. Such establishments are therefore not “Kosher,” regardless of the ethnic market niche to which they are geared. Indeed, many states have passed Kosher enforcement laws that mandate some type of compliance with minimal standards of *Kashrus* when claiming a Kosher standard; they have done so as a measure of consumer protection against misrepresentation.<sup>31</sup>

Finally, one should note that although the choice of a Kosher certification, its reputation, and the standards to which it subscribes are critical to the Kosher consumer’s acceptance

<sup>28</sup> The term “*Beit Yosef*” derives from the name of one of the seminal *Halachic* works of Rabbi Yosef Karo, whose *Halachic* decisions serve as the nominal basis for *S'phardic* customs.

<sup>29</sup> See Chapter 12, “The Meat and Poultry Industries,” for a detailed discussion of the *Ashkenazic* and *S'phardic* definitions of the term *Glatt*.

<sup>30</sup> Foods commonly considered classic Jewish, such as knishes, blintzes, and pirogues, are actually standard fare in Eastern Europe. The quintessential “Israeli” food—falafel—is actually a standard Arab dish.

<sup>31</sup> Kosher laws in certain states have been challenged based on their being construed as an impermissible state enforcement of religion. In certain cases, the courts have struck down such laws. In other cases, however, these laws were structured to mandate an accurate disclosure of the Kosher status of the establishment and have been sustained by the courts as a legitimate interest of the state in protection against consumer fraud.

of any food product or service,<sup>32</sup> these factors are decisive in determining the market to which a Kosher restaurant will appeal. Even though many Kosher consumers accept *factory-manufactured products* that are certified by generally recognized *Kashrus* agencies, their approach to a restaurant or a caterer may markedly differ. Such establishments engender a much more visceral and personal relationship to their commitment to maintaining their Kosher standards because their customers often regard food-service establishments as an extension of their own kitchen. As such, the personal reputation of the Kosher certification for a restaurant or a caterer may be given significant weight in the purchasing decisions of its clientele.

### **Supervision**

The level of *Kashrus* supervision necessary in a restaurant environment is typically significantly more intensive than that of a factory environment. Factory productions often involve the use of clearly defined ingredients that are not changed frequently and are purchased from specifically approved vendors. Furthermore, raw materials may be purchased on a contract basis, thus ensuring consistency of *Kashrus* as well as a stable supply. In addition, ingredients approved for use in Kosher factory productions are typically those whose Kosher status may be monitored based on purchasing records and spot inspections. Ingredients that require intensive supervision, such as meat and vegetables that are prone to insect infestation,<sup>33</sup> generally not appropriate to Kosher supervision programs based on periodic inspections.

The monitoring of the Kosher integrity of ingredients used in a restaurant, on the other hand, does not enjoy similar safeguards. Restaurants purchase comparatively small amounts of ingredients from numerous vendors, with both ingredients and vendors subject to change on a moment's notice. In addition, companies that supply ingredients to restaurants typically do not manufacture those ingredients; they are usually brokers that resell products purchased from various suppliers. Fresh vegetables, including those that pose significant insect-infestation issues, are invariably part of a restaurant menu. All deliveries of meat and filleted fish must be supervised by an individual who adheres to Kosher law and must be maintained under his control at all times. Fresh eggs are often used in a restaurant setting and must usually be inspected as each is opened to ensure that they do not contain any bloodspots.<sup>34</sup> Additional monitoring concerns in Kosher restaurants arise from the need to ensure that the rules of *Bishul Akum* are not violated and that the appropriate segregation between meat and fish is maintained.<sup>35</sup> Kosher supervision of a restaurant is generally not amenable to the type of periodic supervision appropriate to many factory situations.

To address the aforementioned concerns, the presence of a *Mashgiach* (*Kashrus* supervisor) or a Kosher-observant manager or worker is, therefore, generally a requirement in all restaurant settings. In the case of restaurants that serve meat, the presence of a full-time, Kosher-observant individual is a virtual requirement, because Kosher meat loses its Kosher

<sup>32</sup> See Chapter 1, "Kosher Certification: Theory and Application," for a discussion of the factors that may be taken into account in determining an appropriate certification service.

<sup>33</sup> See Chapter 6, "Fruit and Vegetables," for a discussion of the *Kashrus* issues relating to the types of vegetables subject to concerns of insect infestation.

<sup>34</sup> See "The Story of Eggs" in Chapter 17.

<sup>35</sup> See Chapter 2, "Basic *Halachic* Concepts in *Kashrus*."



status if, at any time, it ceases to be verifiable as a Kosher product.<sup>36</sup> In such situations, the individual responsible for maintaining the Kosher integrity of the facility must be in full control of many critical aspects of its operation, including (but not limited to) locking or sealing all food products when he<sup>37</sup> is not present, as well as ensuring that the cooking equipment and serving pieces may not be used in his absence. Dairy restaurants pose less of a concern in this regard because the strict rules of *Ba'sar she'Nis'alem min ha'Ayin* do not apply to dairy products. Depending on individual circumstances, Kosher-certification programs may be appropriate wherever frequent, albeit not full-time, supervision is maintained.

If a *Mashgiach* is assigned to a restaurant, he is typically classified, somewhat paradoxically, as a “working” *Mashgiach*. Although all *Mashgichim* are “working” at their profession, the responsibilities of a *Mashgiach* assigned to factory supervision are typically related to supervision on a management level and not to actual factory production. The financial structure of a restaurant often cannot support the full-time salary of a *Mashgiach* whose sole involvement is limited to *Kashrus* supervision, however, nor would such supervision serve to occupy all his time constructively. A *Mashgiach* may therefore be expected to assist in other aspects of restaurant operations. Indeed, such involvement is not inimical to his *Hashgacha* responsibilities because it allows the *Mashgiach* the opportunity to monitor the ongoing kitchen operations from an insider’s perspective. Some food preparation operations are directly related to maintaining the *Kashrus* program, such as cleaning and inspecting the vegetables to ensure the absence of insect infestation, and packaging and sealing the meat and other food products to guarantee their Kosher status, both within the restaurant and when being shipped to customers. Other aspects of restaurant operations may also be assigned to a *Mashgiach*, such as assisting in food preparation in the kitchen or assuming management responsibilities, such as that of a *maitre d’*. Indeed, such involvement in restaurant operations allows him to maintain the oversight of restaurant operations necessary to ensure its compliance with Kosher requirements. Such assignments, however, must always be considered tangential to the *Mashgiach*’s primary responsibility: monitoring and ensuring the integrity of the Kosher-certification program. Any such assignments must therefore be limited in both their scope and their time allocation so that they do not impinge on the *Mashgiach*’s primary *Kashrus* duties.

Also critical to note is that the *Mashgiach*, as the on-site representative of the *Kashrus*-certification agency, is the sole arbiter of all issues relating to *Kashrus*. In the context of a Kosher restaurant, this confers on him supreme authority in determining kitchen operations. Such authority supersedes that of the chef, owner, manager, or any other employee or principal in a restaurant that enjoys Kosher certification. Failure to follow the directives of the *Mashgiach* in maintaining Kosher standards may, in cases of extreme violations of *Kashrus* regulations, require the *Mashgiach* to disallow the use of food or equipment that has been compromised and, ultimately, close the entire kitchen if so required.

Recognizing the unique authority vested in the *Mashgiach*, it is incumbent on the management of a Kosher-certified restaurant to recognize that both the *Mashgiach*’s religious

<sup>36</sup> See Chapter 12, “The Meat and Poultry Industries,” for a discussion of the requirements for maintaining the Kosher integrity of meat (known as *Ba'sar she'Nis'alem Min ha'Ayin*).

<sup>37</sup> A Kosher-observant individual on whom Kosher supervision may be relied is not limited to being one with Rabbinic training. Any religiously observant male or female may satisfy this requirement (and all references in this section to the male gender apply equally to females).

and fiduciary responsibilities are to the *Kashrus* organization that he represents. Whether a *Mashgiach's* assignments are limited to *Kashrus* supervision or also include other duties, he is considered an employee of the *Kashrus*-certification agency, regardless of whether his salary is paid by the certification agency or the restaurant.<sup>38</sup> Any ancillary tasks assigned to the *Mashgiach* must therefore be consistent with his level of authority in the management of the kitchen and should in no way detract from the respect that he must command by dint of his position. Cleaning floors, washing dishes, and emptying garbage are emphatically *not* assignments appropriate to his position.

To ensure the smooth functioning of the Kosher-certification program in a restaurant setting, the *Mashgiach* should have the following responsibilities:

- **Procuring ingredients and controlling inventory:** Freshness and variety are the hallmark of restaurant fare, and ingredients may be ordered—varied—on a daily basis. Assigning the *Mashgiach* to place food orders and monitor the inventory puts him in an excellent position to ensure that only appropriate products are ordered. In addition, the relatively small quantities of certain ingredients used by a restaurant on a daily basis creates a temptation to purchase them “on the fly” from a local supermarket. Although such purchases do not, in and of themselves, pose a *Kashrus* concern, they are outside the chain of normal purchasing controls and oversight and must be strictly monitored by the *Mashgiach*.
- **Receiving ingredients:** Regardless of the diligence with which food orders are placed, restaurant suppliers are prone to deliver items that may not fully comply with ordering specifications. Such discrepancies may arise from simple error or because a supplier maintains several sources of the same ingredient or product (some of which may be Kosher, others not) and ships the wrong product by mistake or to replace an out-of-stock item.<sup>39</sup> It is therefore critical for the *Mashgiach* to inspect all shipments on receipt to

<sup>38</sup> Ultimately, of course, a *Mashgiach's* compensation derives from the restaurant, just as other Kosher-certification fees and expenses are borne by the entity that enjoys the certification. To preserve the authority of the *Mashgiach*—and to ensure that both he and management recognize that he is primarily beholden to the certification agency and not to restaurant management—many *Kashrus* organizations insist that the *Mashgiach's* salary be paid to the agency. The agency, in turn, pays the *Mashgiach*, thus preserving the clear relationship between the agency and its *Mashgiach*, as well as his independence of restaurant management. Indeed, many Kosher-certification agencies have a policy that, should a *Mashgiach* be forced to take actions unpopular with restaurant management, or even to terminate the certification, the *Mashgiach* would continue to draw his salary from the certification agency until another suitable position can be found and thus be shielded from potential conflicts of interest in the performance of his duties. In other situations, such a payment scheme is not feasible, and the restaurant management pays the *Mashgiach* directly. Such arrangements may be necessary because of workmen's compensation issues, which are employee benefits that would otherwise be unavailable to the *Mashgiach*, or because of accounting constraints on the part of the certification agency. Even in such situations, however, all parties must recognize the primacy of the *Mashgiach's* allegiance to the Kosher-certifying agency.

<sup>39</sup> The procurement of the disparate provisions required by a restaurant has evolved into a streamlined business, with certain major enterprises arranging for the supply of everything needed to provision a food-service establishment, ranging from the proverbial soup to nuts. These food-service suppliers typically arrange for products from various manufacturers to be packaged under their own private label and have more than one supplier for each product. To meet the needs of their Kosher customers, these companies often make “private label” arrangements with their suppliers, allowing the use of the Kosher certification and the symbol enjoyed by the food manufacturer to appear on the “private label” of the food-service supply company (see Chapter 1, “Kosher Certification: Theory and Application,” for a full discussion of Private Label Agreements). Although such private label arrangements have vastly increased the convenience and availability of Kosher food-service supplies, they highlight the need for vigilance on the part of those monitoring

verify that they indeed meet Kosher requirements.<sup>40</sup> In addition, certain ingredients, such as meat and fish, must be received with a Kosher seal, which must be inspected and verified by the *Mashgiach* before the seal may be broken. (Any product received that is not acceptable and cannot be returned immediately must be well marked so that it will not be used by any restaurant personnel.)

- **Controlling equipment:** All restaurant equipment, whether used in food preparation or service, must be dedicated to Kosher use. Such equipment must enter service as new equipment, or it must be Kosherized prior to use. In either case, it may be subject to the laws of *T'vilas Kelim* (the requirement to immerse certain vessels in a *Mikveh*<sup>41</sup> prior to their first use). A *Mashgiach* is responsible to ensure that all such requirements are fulfilled.<sup>42</sup>
- **Ensuring *Bishul Yisroel* (all restaurants):** As noted earlier concerning the standards of Kosher restaurants, Kosher law mandates some type of Jewish involvement in the cooking of certain types of foods, a concept known as *Bishul Yisroel*. Failure to properly address this concern will confer a *Bishul Akum* status on such food, rendering it non-Kosher. Depending on the policies of the *Kashrus* organization, the required Jewish involvement may take the form of having the *Mashgiach* light the pilot light, turn on the cooking flame, or actually participate in the cooking process.<sup>43</sup> Regardless of the method by which this issue is addressed, the *Mashgiach* must monitor its implementation.<sup>44</sup> Concerns of *Bishul Akum* tend to pose greater challenges in restaurants than in factories, given the modern designs of many pieces of kitchen equipment that lack pilot lights or other permanent sources of heat.

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the Kosher-certification programs to ensure the receipt of appropriately certified Kosher products on each delivery from such suppliers.

<sup>40</sup> Even certain types of fresh produce are subject to Kosher verification where a concern arises with ensuring that the special rules of fruit and vegetables from Israel are observed. Many fresh herbs are of Israeli origin, as are the famous “Jaffa” oranges and other types of citrus products. In addition, fresh bell peppers and tomatoes may also be sourced from Israel. In all such cases, the *Mashgiach* must be alert to such products to ensure that their Kosher status is maintained.

<sup>41</sup> A *Mikveh*, often referred to as a “ritualarium,” is a specially constructed pool of water containing a specified amount of rainwater, immersion in which constitutes a ritual purification. For purposes related to food utensils and equipment, certain types of metal and glass implements must be immersed in a *Mikveh* before being used for the first time. This requirement applies only to such vessels owned exclusively by a Jew that, in turn, had been purchased from a non-Jew. The requirement of *T'vilas Kelim* does not apply to equipment that is owned or partially owned by non-Jews, which may be used for Kosher purposes without *T'vilas Kelim*. Furthermore, it does not apply to disposable vessels, or to those made of plastic. Although some authorities require *T'vilas Kelim* for glazed china, most *Kashrus* agencies follow opinions that limit the requirements of *T'vilas Kelim* to vessels made of metal or glass.

<sup>42</sup> Chefs often prefer to use their personal knives and other equipment, and to take such equipment home with them. Such personal control of equipment is not possible in the context of a Kosher restaurant because all food-processing equipment must be under the control of the *Mashgiach*. Although a chef may choose to use his personal equipment, it must first be Kosherized and then stored in the restaurant.

<sup>43</sup> See Chapter 2, “Basic Halachic Concepts in *Kashrus*,” and in particular the section entitled “Methods of Creating a *Bishul Yisroel* Status.”

<sup>44</sup> Concerns of *Bishul Akum* tend to pose greater challenges in restaurants than in factories. Modern ovens and other cooking devices often lack pilot lights or other permanent sources of heat that may be lit by the *Mashgiach*, which would remain effective in obviating *Bishul Akum* concerns for long periods of time. In addition, some types of equipment, such as convection and microwave ovens, actually turn off when they are opened, requiring the *Mashgiach* to relight them on a frequent basis.

- **Avoiding mixing fish and meat (meat restaurants):**<sup>45</sup> Although fish is Pareve and may therefore be served in a meat restaurant, *Halacha* prohibits foods in which fish and meat are combined.<sup>46</sup> This concern extends not only to cuisine composed of a mixture of fish and meat but also to the processing of meat or fish in equipment from which residues of the offending material have not been removed.<sup>47</sup> Because many meat restaurants include fish dishes on their menus, the *Mashgiach* must ensure that meat and fish remain separate during storage, cooking, and serving.
- **Inspecting produce:** Restaurants often pride themselves on using fresh fruit and vegetables in season. Many types of vegetables (such as broccoli, cauliflower, asparagus, dill, parsley, lettuce, and cabbage) as well as some fruit (such as raspberries, blackberries, and strawberries) are often infested with insects, rendering them unsuitable for Kosher use while so infested.<sup>48</sup> One of the most demanding tasks performed by a *Mashgiach* is the inspection<sup>49</sup> and cleaning of such fruit and vegetables, and *Kashrus* agencies specify acceptable procedures for cleaning and inspecting various types of produces.<sup>50</sup>
- **Checking eggs:** Eggs that contain bloodspots are not considered Kosher, and the *Mashgiach* will typically crack and inspect all fresh eggs used in a restaurant.<sup>51</sup>
- **Separating Challah:**<sup>52</sup> The preparation of dough for the production of many types of products (such as bread, cake, donuts, pizza, and dumplings) may occasion a requirement to separate a small amount of it as *Challah* (which is subsequently burned).<sup>53</sup> This requirement applies to dough made from the five major types of grains (wheat, rye, oats, barley, or spelt) that is owned by a Jew, and failure to do so will render foods produced from such dough non-Kosher. A *Mashgiach* typically performs the act of separating *Challah* because it is valid only when performed by a Jew.
- **Sealing shipments of prepared food:** Restaurants typically prepare “take-out” food, which may be picked up by customers or delivered to them. Because the Kosher

<sup>45</sup> The other major Kosher prohibition involving mixtures—that of milk and meat (*Ba'sar b'Cholov*)—is generally not a practical issue in a restaurant setting because virtually all restaurants serve either meat or dairy products, but not both.

<sup>46</sup> Some authorities permit meat to be prepared with condiments containing small amounts of fish (such as Worcestershire sauce). See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” and “The Story of Condiments,” in Chapter 17.

<sup>47</sup> Normative Kosher standards allow for the use of common equipment for both meat and fish (provided that no residue remains). This is in contradistinction to the prohibition of mixing meat and milk, where the use of common equipment is prohibited (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”).

<sup>48</sup> See Chapter 2, Basic *Halachic* Concepts in *Kashrus*.”

<sup>49</sup> Such methods may include strong agitation, soaking in cleaning chemicals approved for food, and careful inspection with the aid of a “light box” (a source of bright light similar to that used by photographers in inspecting negatives and slides).

<sup>50</sup> Because of the heavy infestation of certain types of produce and the difficulty in cleaning them to *Halachically* acceptable standards, many Kosher-certifying agencies prohibit or severely restrict the use of these items. Raspberries, blackberries, and asparagus may be banned completely from a restaurant menu, whereas lettuce, broccoli, and other produce are subject to rigorous cleaning procedures. The advent of commercially washed produce, such as various types of salad blends, necessitated an evaluation by *Kashrus* authorities as to the efficacy of the cleaning procedures employed, and some companies have succeeded in obtaining Kosher certification for their products. Certain brands of such prewashed (and inspected) produce may be accepted by many, but not all, Kosher-certifying agencies as *Halachically* insect free.

<sup>51</sup> For *Cabalistic* (mystical) reasons, some *Kashrus* agencies require that a small amount of salt or other ingredients be added to liquid eggs (as well as peeled onions and garlic) left overnight (see “The Story of Eggs” in Chapter 17).

<sup>52</sup> See Chapter 7, “The Baking Industry,” for a detailed discussion of the rules of *Challah*.

<sup>53</sup> The requirement to separate *Challah* is a function of the initial production of the dough; it does not apply to dough or dough products (such as unbaked frozen bread) that are purchased from outside sources.

certification of food is valid only while under the supervision of the *Mashgiach*, he will typically use specially printed labels or tape to seal all food deliveries<sup>54</sup> before they leave the restaurant,<sup>55</sup> thereby maintaining their Kosher status until they reach the customer.

- **Maintaining physical control of the restaurant:** *Halacha* mandates that the integrity of Kosher food, as well as the equipment with which it is prepared, must be maintained under the supervision of one who personally adheres to Kosher law. *Halacha* also recognizes various levels of such control, differentiated mainly by the types of foods involved. Meat is one of the most sensitive categories in this regard, and all meat and meat products must be supervised, locked, or otherwise maintained under Kosher seal lest their Kosher status automatically lapse. For this reason, the *Mashgiach* is typically charged with locking or sealing a meat restaurant—or, at a minimum, food storage and preparation areas—when he is not present, thereby maintaining the Kosher integrity of the operation. If the owner of the restaurant or its management is not Kosher observant, the *Mashgiach* will typically be the only individual with the key to the establishment.<sup>56</sup> Dairy or vegetarian restaurants may require less stringent controls, and each situation must be evaluated by the *Kashrus*-certifying agency charged with maintaining the Kosher status of the establishment.

### ***Wine, Whisky, and Liqueur***

As with all foods used in a Kosher restaurant, the *Kashrus* of wine, beer, whisky, and liquors must be ensured. Although such items may not be significant ingredients in most factory productions, they are important components of restaurant fare. Two factors, however, tend to complicate maintaining the required Kosher status of these products, which require special vigilance on the part of the *Hashgacha*:

- ***S'tam Yaynam*:**<sup>57</sup> *Halacha* stipulates that Kosher grape wine (and juice) may be produced only by Jews who adhere to Kosher law. All grape juice and wine (as well as wine brandy) served in Kosher restaurants must therefore be sourced from specially supervised productions.<sup>58</sup> The rules of *S'tam Yaynam* further stipulate that Kosher grape-based beverages lose their Kosher status when handled by non-Jewish individuals unless they had been “cooked” (heat treated to the point of being no longer considered the type of wine subject to the rules of *S'tam Yaynam*). Such wine is called *M'vushal* (literally,

<sup>54</sup> Meat, cheese, and wine products require two separate seals for verification of their Kosher integrity. The Kosher status of most other foods may be indicated with one such seal.

<sup>55</sup> Foods delivered by Kosher-observant agents, as well as those picked up by the customer, need not be sealed, because such agents may be relied on to verify its Kosher status. However, many Kosher-certifying agencies require that all food sold by a restaurant as a “take-out” be sealed by the *Mashgiach* as a matter of policy.

<sup>56</sup> Note that no supervisory system is foolproof and, unfortunately, egregious *Kashrus* violations on the part of unscrupulous “Kosher” restaurateurs have occasionally taken place. Some Kosher-certifying agencies, reasoning that the personal integrity of the proprietor is an additional safeguard of the *Kashrus* of the establishment, therefore maintain a policy of restricting Kosher certification of meat restaurants to those owned and operated by individuals who personally adhere to Kosher law.

<sup>57</sup> See Chapter 6, “Fruit and Vegetables,” and “The Story of Wine, Beer, and Alcohol,” in Chapter 17, for full discussions of the rules of *S'tam Yaynam*.

<sup>58</sup> In recent years, the quality and variety of Kosher wines have improved to the point of being often on a par with some of the best non-Kosher vintages, allowing Kosher restaurants to maintain wine lists on a par with their other offerings.

“cooked”) and, given the typical presence of non-Jewish waiters and other staff, is the only type of Kosher wine that may be served in a Kosher restaurant.<sup>59</sup>

- **Alcoholic beverages.**<sup>60</sup> The group of products known as alcoholic beverages poses a unique paradox in the food industry in that it comprises its most regulated segment and yet remains exempt from the requirements of an ingredient declaration applicable to most other food products. Although many popular whiskies bear no Kosher certification, they may nevertheless be approved for Kosher use, and many *Kashrus* organizations maintain lists of approved alcoholic beverages. The following *Kashrus* issues for these products should be noted:

- *Whisky.* Most brands of bourbon, Scotch, and other types of whiskies enjoy no formal Kosher certification. However, many types are generally accepted by *Kashrus* authorities because the ingredients used in their production are inherently Kosher. Some *Kashrus* organizations, however, restrict the use of two varieties. One type is “blended” bourbon,<sup>61</sup> whose restriction is based on a concern that non-Kosher wine may be used in its preparation. These authorities insist on the use of “straight” bourbon or brands of blended bourbon that have been researched and verified to be free of this concern. Other authorities, however, have ruled that this issue poses no *Halachic* concern; these authorities allow the use of all blended bourbons.<sup>62</sup>

The second variety of whisky that poses a concern involves Scotch because it is often, although not always, aged in casks that had previously been used to age non-Kosher sherry wine.<sup>63</sup> Many *Kashrus* agencies have ruled that such a matter is not of *Halachic* concern and permit the use of all types of Scotch. Others, however, disallow Scotch whose use of sherry casks is declared, but they allow the use of other types of Scotch when the source of its aging casks is not known.

- *Rum, vodka, and flavored vodka.* As is bourbon, rum is generally considered inherently Kosher. Some authorities, however, question the Kosher status of dark rum, concerned that non-Kosher coloring or wine may have been added to it. Similarly, *unflavored* grain-based<sup>64</sup> vodka is generally accepted; flavored varieties require Kosher certification (see below concerning liqueurs).
- *Liqueurs.* Liqueurs are beverages in which alcohol, sweeteners, and flavorings are blended together, and Kosher verification is required because of *Kashrus* concerns inherent in many of these components.<sup>65</sup> Many liqueurs bear a reliable Kosher

<sup>59</sup> Recognizing that the cooking process compromises the quality of wine (which, somewhat paradoxically, is the reason that it is desired in a restaurant as not being subject to the restriction of *S'tam Yaynam*), vintners often produce both *M'vushal* and non-*M'vushal* versions of the same product. One must therefore be careful to ensure that each bottle indeed bears the “*M'vushal*” (or “*Mevushal*”) appellation.

<sup>60</sup> See “The Story of Wine, Beer, and Alcohol,” in Chapter 17, for a discussion of the *Kashrus* issues relating to various types of popular whiskies and liqueurs.

<sup>61</sup> Blended scotch, however, is not subject to this concern, although it may pose concerns regarding the casks in which it is aged (see immediately following text concerning scotch aged in sherry casks).

<sup>62</sup> This approach is based on a *Halachic* position that non-Kosher wine is considered *Batul* at a ratio of 1 to 6 (see “The Story of Wine, Beer, and Alcohol” in Chapter 17).

<sup>63</sup> Bourbon, on the other hand, does not suffer from this concern because federal law requires the use of new oak casks for its aging.

<sup>64</sup> Vodka that does not indicate that it is derived from grain may be produced from lactose or wine, in which case it would not be considered Kosher.

<sup>65</sup> Mixed drinks that are prepared in a restaurant must comply with all Kosher requirements, including maintaining the Pareve status of all beverages served in a meat restaurant. Creamed drinks must therefore be produced with Pareve milk replacers in such situations.

certification and will therefore appear on a Kosher liquor lists. The Kosher status of others has been researched by *Kashrus* authorities, with such Kosher verification accepted by some (and included on Kosher liquor lists) and rejected by others.

### **Shabbos, Holiday, and Other Halachic Considerations**

In addition to compliance with Kosher food law, maintaining the Kosher status of a restaurant entails compliance with a number of other *Halachic* requirements. Such requirements include accommodations for the Sabbath and other Jewish holidays,<sup>66</sup> special dietary requirements during specific periods, and the decorum that may be required as is consistent with Jewish custom.

- **Shabbos (or Shabbat, the Jewish Sabbath that occurs every Saturday):** *Shabbos* begins on Friday afternoon at sundown and continues until Saturday evening.<sup>67</sup> During this period, Jewish people are forbidden from performing many types of work, including cooking, lighting fires, writing, and carrying anything in public (outdoor) areas.<sup>68</sup> Extensions of these regulations include prohibitions against turning on electric lights, talking on the telephone, driving a car, handling money, and transacting business. In addition, a Jew may not generally request a non-Jew to perform such actions for him. Because of these constraints, Kosher restaurants are typically closed for business on *Shabbos*. Furthermore, to accommodate the needs of the *Mashgiach* and other religious personnel, a restaurant must close several hours before *Shabbos* begins (earlier during the short winter days and later in the summer). Similarly, a Kosher restaurant may not open for business for a certain period of time after *Shabbos* formally ends; it does so to allow for the return of the *Mashgiach* and other *Shabbos*-observant employees after the conclusion of *Shabbos*. (No food preparation may take place until the *Mashgiach* arrives and, indeed, the *Mashgiach* should normally be the only person having the keys to the kitchen and food storage areas.)

In two situations, however, Kosher restaurants may operate on *Shabbos*. The first, which is an increasingly common situation, involves non-Jewish-owned fast food eateries, primarily donut and ice cream concessions, which must typically be open on Saturdays and Jewish holidays to serve their non-Jewish clientele. Because the Kosher certification of such operations typically does not require the ongoing presence of a *Mashgiach*, many *Kashrus* organizations will certify such facilities on an ongoing basis even though they operate on *Shabbos*, provided that they are owned and operated by non-Jewish personnel.

The second situation is much more limited in scope and involves special arrangements whereby *Shabbos* meals are purchased from a restaurant in advance. Such arrangements are typically made in hotel and other restaurants designed to meet the needs of tourists,

<sup>66</sup> See Chapter 4, "Rabbinic Etiquette," for a listing and description of Jewish holidays.

<sup>67</sup> The end of the *Halachic* day is defined as when three medium-sized stars become visible (*T'zeis ha'Kochavim*). Authorities differ, however, as to the exact time of the occurrence. Many accept a time of forty-two minutes after sunset for this purpose; others rule that the proper time may extend to as long as seventy-two minutes after sunset. The time of *T'zeis ha'Kochavim* is significant to restaurant operations in that it determines the end of *Shabbos* and the time when a restaurant may open for business on Saturday night. Each *Kashrus* certification will therefore establish its policy in this regard, which must be adhered to by the restaurant.

<sup>68</sup> The *Talmud* lists thirty-nine major categories of labor forbidden on *Shabbos* (known as *M'lachos*), each of which includes numerous subcategories and Rabbinically ordained prohibitions.

and only those guests who have made such prior arrangements may be served at the restaurant on *Shabbos*. In addition, all food served on *Shabbos* must have been cooked before *Shabbos* and kept warm; they must also be prepared and served in accordance with *Shabbos* regulations.<sup>69</sup>

- **Yom Tov:** Restrictions similar to those of *Shabbos* apply to a number of major Jewish holidays, such as *Rosh ha'Shanah*, *Yom Kippur*, *Sukkos*, *Pesach*, and *Sh'vuos*. Although the laws pertaining to these holidays (with the exception of *Yom Kippur*<sup>70</sup>) permit more aspects of food preparation, carrying, cooking, and the use of fire, many other *Shabbos*-type proscriptions (such as those prohibiting writing, turning on electric lights, and transacting business) remain. Kosher restaurants are therefore typically closed on such holidays unless special *Shabbos*-type arrangements are made.
- **Pesach (Passover):** During the holiday of *Pesach*, an additional set of Kosher regulations is superimposed over year-round *Kashrus* requirements.<sup>71</sup> Most grain products are prohibited lest they had become *Chometz* (leavened); they are permitted only when baked into *Matzah* (unleavened bread). In addition, many types of legumes are avoided (according to *Ashkenazic* custom). All foods eaten on Passover must therefore be certified “Kosher for Passover,” and equipment used to process non-Passover food—even if otherwise Kosher for year-round use—must be Kosherized before it can be used to process Kosher-for-Passover foods. Given the difficulties involved in Kosherizing their facilities for Passover, as well as the inherently *Chometz* fare served in others (such as pizzerias and falafel shops), many Kosher restaurants choose to close for the entire Passover holiday (even during the intermediate days of the holiday (the middle four) when they might otherwise conduct business).<sup>72</sup> Others, however, go through the process of Kosherizing their establishments, purchasing different dishes and other equipment specifically for Passover, and changing their menus to comply with Passover requirements.
- **Sukkos:** The Holiday of *Sukkos* (or *Sukkot*—Tabernacles) is highlighted by the requirement for a Jew to dwell and eat his meals in a small hut, known as a *Sukkah*. Many Kosher restaurants therefore construct a *Sukkah* adjacent to their premises, thereby enabling their religious clientele to patronize their establishments during the intermediate days of the holiday while still adhering to the requirement of eating their meals in a *Sukkah*.<sup>73</sup>
- **Fast days:** Aside from *Yom Kippur* (on which all Kosher restaurants are closed), the Jewish calendar contains five additional fast days. *Tish'ah b'Av* (the ninth day of the month of *Av*, usually occurring in the month of July or August) commemorates the destruction of both of the Holy Temples in Jerusalem. It is a day of mourning throughout the Jewish community, and most Kosher restaurants are closed in its observance. Four other fast days<sup>74</sup> are less stringent in their observance, and many Kosher-certification agencies will

<sup>69</sup> See the “Caterers” section for a more detailed description of *Shabbos* requirements.

<sup>70</sup> *Yom Kippur*, the Day of Atonement, is both a major holiday and a fast day. All Kosher restaurants are closed on this holiday.

<sup>71</sup> See Chapter 5, “Kosher for Passover,” for a detailed discussion of the *Kashrus* requirements related to *Pesach*.

<sup>72</sup> Jewish-owned restaurants must also remove or sell all *Chometz* in their possession, as discussed in Chapter 5, “Kosher for Passover.”

<sup>73</sup> Some Kosher-certification agencies make the construction of a *Sukkah* a condition of Kosher certification.

<sup>74</sup> These four other fast days are known as:

- *T'zom G'daliah* (The Fast of Gedliah): The third day of the month of *Tishrei* (the day after *Rosh ha'Shanah*)



allow Kosher restaurants to remain open on these days to serve their non-Jewish clientele or those who choose not to fast.

- **The “Nine Days”:** From the beginning of the month of *Av*, and in anticipation of the fast on its ninth day, a period of mourning known as “the Nine Days” is observed. During this period,<sup>75</sup> many Jews abstain from meat and wine and typically eat dairy or fish meals. Some Kosher certifications require restaurants to remove meat and wine from their menus during this period.<sup>76</sup> Others, however, allow the continued inclusion of these products while simultaneously ensuring that an adequate number of fish dishes are available.
- **The Kosher milieu:** As noted in the introduction to this work, the term “Kosher” literally means “fit” or “appropriate.” Although the Kosher certification of a restaurant may be perceived primarily as a function of ensuring that food served therein complies with Jewish dietary law, it also presumes deference to other *Halachic* norms and requirements. Some of these requirements relate directly to the food-service aspect of the restaurant, such as the need to provide proper facilities for the ritual hand washing required before eating bread.<sup>77</sup> In addition, Kosher certification will not be granted to a venue in which clear violations of *Kashrus* take place, such as a restaurant that serves both Kosher and non-Kosher food, or both milk and meat products concurrently. Other requirements involve compliance with more general aspects of *Halacha*. For example, most Kosher certifications will decline to certify a restaurant in which Jewish norms of decency and modesty are not maintained.<sup>78</sup>

## Caterers

Kosher catering is subject to virtually all the rules and regulations applicable to restaurants. From a *Kashrus* perspective, however, the operations of the catering industry differ from those of classic restaurant operations in several significant aspects, each of which raises additional *Kashrus* concerns.

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- *A'sarah b'Te'ves* (The Tenth of *Te'ves*): Occurring about one week after *Chanukah*
  - *Ta'anis Esther* (The Fast of Esther): Occurring on the eve of *Purim* (or the prior Thursday, if *Purim* falls on Sunday)
  - *Shiv'ah A'sar b'Tamuz* (The Seventeenth of *Tamuz*): Occurring in early or mid-July, beginning the three-week mourning period culminating in *Tish'ah b'Av*

<sup>75</sup> According to *S'phardic* customs, however, the requirement to abstain from meat and wine begins only during the week (starting on Sunday) in which *Tish'ah b'Av* actually occurs.

<sup>76</sup> Some *Kashrus* organizations will arrange for an individual to conduct a *Siyum*—the conclusion of the study of a full *Talmudic* tractate—in a restaurant on each day of the Nine Days. According to *Halacha*, a *Siyum* occasions a party to celebrate the event, at which meat may be served. All guests dining in the restaurant on the day of the *Siyum* are considered participants in the celebration and may partake in the meat meal served.

<sup>77</sup> *Halacha* stipulates that one wash his hands with a cup of water in a prescribed manner and say a special blessing before eating bread. This ritual, known as *N'tilas Ya'dayim*, may not be performed in a bathroom or other location inappropriate to a religious rite, and Kosher restaurants typically install a special “washing station” for this purpose in the main area of the restaurant.

<sup>78</sup> Several *Halachic* issues in this regard should be noted. Many *Kashrus* agencies will not certify a restaurant in which social dancing (men and women dancing together) takes place, nor where women singers perform in the presence of a male audience (*Kol I'shah*). Furthermore, restaurant décor should be in keeping with the requirements of *t'znius* (modesty), and wait staff should be dressed modestly and conduct themselves with deference to religious sensibilities (see Chapter 4, “Rabbinic Etiquette,” for examples of such issues).

### **Segregation of Meat, Milk, and Pareve Productions in the Same Facility**

Caterers often produce both dairy and meat products in the same commissary, a practice not generally permitted in a restaurant setting. Appropriate segregation of all processing equipment in such situations is therefore essential. Typically, such a commissary is constructed with two independently functioning sections, one for meat and one for dairy, with duplicate sets of permanent equipment (such as ovens, tables, and steam kettles<sup>79</sup>) installed in distinct areas within the facility. In addition, each piece of movable equipment (such as sheet pans, pots, frying pans, mixing bowls, and ladles) is color coded for meat and dairy use. Often, additional equipment is segregated and marked for Pareve use.

Such segregation, however, is not limited to food preparation equipment. Just as a Kosher caterer must maintain a full set of Kosher service equipment, flatware, and china, it must maintain *two* sets of all such equipment—one for meat and one for dairy—when providing both types of service. In such cases, the patterns of the china and flatware should be easily distinguishable from one another and all other equipment clearly marked as either meat or dairy.

### **Categories of Catering Services**

As regards Kosher certification, different types of catering services present distinct Kosher concerns:

- **Drop-offs:** Kosher caterers may be engaged solely to prepare food for a client, with the management of the affair and the service of the food left to either the client or other contracting entity. In such cases, the *Mashgiach* will seal the packages of Kosher product before they leave the Kosher commissary, after which the caterer's *Kashrus*-certifying agency takes no responsibility for the manner in which it will be served.<sup>80</sup> In addition, none of the caterer's serving equipment (such as warmers, chafers, and sheet pans) may be supplied with a drop-off because the Kosher status of such equipment would be compromised on leaving the control of the certifying agency. All food supplied as a drop-off must therefore be provided in disposable packaging.<sup>81</sup>
- **On-site catering:** Many Kosher catering concerns are engaged in providing both the food preparation and the hosting of an affair, and often operate facilities that house not only food preparation facilities but also the hall in which the catered affair is hosted. Because such a Kosher catering operation will generally maintain all the utensils needed for both aspects of the catering service, no routine Kosherization of equipment is required (see the next section for information concerning rental of additional equipment).

<sup>79</sup> The use of common steam systems for both meat and dairy productions, even in separate equipment, may pose a *Kashrus* concern when the condensate is recovered and returned as steam (see Chapter 2, "Basic Halachic Concepts in *Kashrus*").

<sup>80</sup> Indeed, it will typically insist that the foods so provided are not served under the name of the Kosher-certified catering establishment, lest guests erroneously assume that the standing Kosher certification enjoyed by the caterer (who prepared the food) is valid for the food as it is being served (which is no longer subject to its Kosher supervision).

<sup>81</sup> Some *Kashrus* organizations may permit Kosher equipment to be included in a drop-off, provided that it is *Kashered* on its return.

- **Off-premises catering:** Kosher catering may take place at halls or other venues that are not used exclusively for Kosher affairs. The food may be prepared at a Kosher commissary and delivered to the site of the affair, where it may be heated or finished in the on-site kitchen. Alternatively, the caterer may prepare all food on-site. In either scenario, all equipment used in food preparation (such as ovens, kettles, warmers, and tables) must be properly *Kashered*.

The Kosher caterer may use his own Kosher preparation equipment (such as pots and pans) or he may *Kasher* in-house equipment when appropriate. Similarly, Kosher service equipment (such as china and flatware) must be provided by the caterer, or on-site equipment must be properly *Kashered* for the Kosher affair (see the table that follows for an outline of the types of such equipment that may be *Kashered* ).

Note that all aspects of such catering functions must take place under the supervision of a *Mashgiach*. These include the *Kashering* of equipment, the receipt of all foods and Kosher equipment, preparation of the food at the site of the affair, and its being served to the guests. Depending on the size and complexity of the affair, several *Mashgichim* may be required to monitor all critical aspects of the function.

In addition, all Kosher food and equipment shipped from the caterer to the site of the event must be maintained under Kosher seal. A *Mashgiach* must therefore seal the containers (or truck) with such provisions at the time it is shipped, and such seals may be broken only by the *Mashgiach* at the point of receiving. This requirement applies equally to Kosher equipment and any food that is returned from the site of the event to the Kosher caterer.

One additional point must be noted regarding the distinction between Kosher certification of events that take place in Kosher establishments (such as restaurants) and those that take place in venues that do not enjoy an ongoing Kosher status. Restaurants and catering halls with a dedicated Kosher status may be granted a general Kosher certification, and a letter attesting to such certification may be displayed to advise customers of their Kosher status. Halls and other venues that are not dedicated to Kosher service, however, may be certified only on an event-by-event basis. In such cases, many Kosher-certification agencies require that a specific letter or notification be issued for each Kosher-certified affair. In many cases, a special card indicating the Kosher certification is prepared, dated, and signed by the *Mashgiach* and placed on each table.

- **Hotel catering:** In addition to providing the venue for an affair, hotels typically provide their own catering services. Although many hotels work with outside Kosher caterers to provide Kosher services, some have developed their own in-house Kosher catering departments. Such programs are subject to the same Kosher requirements as those for any other Kosher caterer, including the need for the full-time supervision of a *Mashgiach* during the entire Kosher catering operation.<sup>82</sup> Non-Kosher equipment that is amenable to *Kashering* (such as ovens and flatware) may be *Kashered* under appropriate conditions and supervision. Conversely, in the case of equipment that may not be *Kashered* (such as sheet pans and china), distinctive equipment must be dedicated for Kosher use and must be kept under the seal of *Mashgiach* when not in use.

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<sup>82</sup> The use of a special specific notification of the Kosher status of the event is critical when catering is provided by in-house catering because the hotel's nominal service is non-Kosher.

Some hotels that maintain a Kosher catering division have opted to dedicate a section of their kitchen (or an entirely independent kitchen) to exclusive Kosher use. By so doing, they reduce or eliminate the conflict between Kosher and non-Kosher operations and the need to *Kasher* equipment, potentially reducing the operational costs of the Kosher program.

### **Renting Additional Equipment**

If a caterer does not own sufficient quantities of service items (such as china or flatware) or food preparation equipment for a large event, he may have the option of *renting* such equipment. To ensure their Kosher status, however, such equipment must be rented under the following conditions:

- **Non-Kosher rental companies:** Certain types of non-Kosher equipment may be *Kashered*, the process by which non-Kosher equipment is rendered fit for Kosher use.<sup>83</sup> Equipment that is suitable for such *Kashering* may be rented from a non-Kosher equipment rental concern and subsequently *Kashered* under the supervision of a *Mashgiach*. Alternatively, arrangements may be made to rent *new* equipment from a rental company; all types of brand-new equipment may be used without prior *Kashering*.<sup>84</sup>
- **Kosher rental companies:** Some rental companies maintain an inventory of Kosher-certified equipment, which may be rented without the need to *Kasher* it prior to use. Rental of such equipment, however, is subject to two considerations. First, it is contingent on a reciprocal Kosher recognition between the rental company and caterer because the rental of equipment for use by a caterer whose Kosher standards are considered deficient will compromise the Kosher status of the equipment rented. Second, the maintenance of the Kosher status of such equipment is the responsibility of the caterer and its *Mashgiach*, who must rent and return such Kosher equipment under Kosher seal.

### **Equipment Kashering Issues**

Many types of equipment that had been used for non-Kosher processing may be *Kashered* (or *Kashered* for Passover) and subsequently considered suitable for Kosher use. *Kashering* processes are discussed in detail in Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” and are each appropriate to different types of equipment. The following is a brief outline of the various methods of *Kashering*:

- ***Libun Chamur* (glowing):** Heating equipment to over 900°F
- ***Libun Kal*:** Heating equipment to approximately 450°F (the temperature at which paper or straw would burn)

<sup>83</sup> See the ensuing section, “Equipment *Kashering* Issues,” as well as Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for detailed discussions on the types of equipment suitable for *Kashering* and the methods by which *Kashering* must take place.

<sup>84</sup> If the non-Kosher rental company is owned by a non-Jew, equipment rented from it will also not be subject to the requirements of *T'vilas Kelim*.

- **Hag'olah (boiling):** Immersing or covering a utensil in boiling (or very hot) water<sup>85</sup>
- **Iruy:** Pouring hot water over a utensil or equipment

From a practical perspective, the following general points relating to *Kashering* should be noted:

- One may not generally *Kasher* Kosher dairy equipment in order for it to be used for meat production or *Kasher* meat equipment for dairy use.<sup>86</sup> However, one may *Kasher* Kosher meat or Kosher dairy equipment for Pareve use.
- In most cases, equipment must be completely clean, with all traces of non-Kosher food removed prior to *Kashering*. (This is not a requirement when performing *Libun Chamur*, however, because the temperatures attained during this process will incinerate any non-Kosher food residue.)
- Equipment used for performing *Hag'olah*<sup>87</sup> should be clean and *unused* for twenty-four hours prior to the *Kashering*—a status known as *Ayno Ben Yomo*. (According to most authorities, this requirement does not apply to *Kashering* with either *Libun Chamur* or *Libun Kal*. Many *Kashrus* organizations, however, maintain a policy of requiring an *Ayno Ben Yomo* status for *all* equipment prior to *Kashering*, regardless of the process to be used.)
- Under certain circumstances, the *Ayno Ben Yomo* requirement for *Hag'olah* may be met by a process known as *P'gimah*.<sup>88</sup> *P'gimah* involves adding a bitter chemical (such as ammonia, bleach, or soap) to the boiling water in which the utensils are immersed, thus obviating the need to wait twenty-four hours before performing *Hag'olah*. As a matter of policy, many *Kashrus* organizations do not allow the use of *P'gimah* under routine circumstances and insist on waiting the full twenty-four hours. Others will allow its use but may insist on performing the *Hag'olah* twice—once with a bittering chemical and a second time with plain water.

Table 14.1 lists equipment commonly used in the catering (and restaurant) industry, as well as generally accepted approaches to their Kosherization. Be aware that although these approaches represent normative standards followed by many major *Kashrus* organizations, they are intended only as a guide. Each *Kashrus* organization follows policies established by its *Halachic* authorities; such policies may differ from those noted in this section.

## Shabbos

Observance of *Shabbos*, the Jewish day of rest, involves significant changes from a Jew's weekday routine. As noted in the discussion regarding restaurants, the requirement to abstain from doing business on *Shabbos* generally precludes Kosher restaurants from operating as

<sup>85</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a discussion of the minimum temperature required for *Hag'olah*.

<sup>86</sup> Some authorities will allow a dishwasher to be used for both meat and dairy dishes, provided that it is thoroughly cleaned and subjected to an intervening hot-water cycle. Given the difficulties in ensuring that such procedures are performed properly, however, most authorities reject the ongoing use of a dishwasher for both meat and dairy purposes.

<sup>87</sup> Some *Kashrus* organizations follow a custom that requires utensils that had been *Kashered* with *Hag'olah* to be immersed or sprayed with cold water immediately after their immersion in boiling water.

<sup>88</sup> See the section concerning *P'gimah* in Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

**Table 14.1.** Equipment commonly used in the catering (and restaurant) industry, and generally accepted approaches to their Kosherization

Equipment	Kosherization Issues
Sheet pans	Most <i>Kashrus</i> agencies do not allow <i>Kashering</i> of sheet pans, since they are typically fabricated out of aluminum and cannot withstand the temperatures of <i>Libun Chamur</i>
Ovens (regular and convection)	Generally <i>Kashered</i> by thoroughly cleaning them and then heating to the highest possible temperature for several hours
Deep fryers	All residues must be removed, including any that had been burned onto the surface of the heating tubes and in the oil draining section. The thermometer may need to be removed to allow access for proper cleaning. The unit may then be <i>Kashered</i> with <i>Hag'olah</i> or <i>Libun Kal</i>
Frying pans	Some authorities require a <i>Libun Chamur</i> , while others allow <i>Hag'olah</i> <sup>89</sup>
Pots	May be <i>Kashered</i> with <i>Hag'olah</i> or <i>Libun Kal</i> . However, crimped areas and riveted handles tend to be repositories of significant residue, and a <i>Libun Chamur</i> (prior to <i>Hag'olah</i> ) of those areas may be required to incinerate material encrusted therein
Warming boxes <sup>90</sup>	Generally <i>Kashered</i> by thoroughly cleaning them and then heating them to their highest temperature for several hours (Canned heating units— <i>Sternos</i> <sup>®</sup> —are often used to heat them to a high temperature)
Stovetops	Generally <i>Kashered</i> by covering with layers of aluminum foil and then turning the stovetop on. The resulting trapped heat will effect a <i>Libun Chamur</i>
Braziers (tilt skillet)	Most <i>Kashrus</i> authorities are concerned that this piece of equipment is often used to sear meat without liquids, in which case it would require <i>Libun Chamur</i>
Steam-jacketed kettle <sup>91</sup>	Fill with water and bring to an overflowing boil (and ensure that the valve has been thoroughly cleaned)
Steamers	Most authorities permit such equipment to be <i>Kashered</i> by performing a thorough steaming
Dishwashers	Must be thoroughly cleaned and then flushed with boiling water <sup>92</sup>
Sinks	<i>Kashered</i> with <i>Iruy</i> or <i>Libun Kal</i> <sup>93</sup>
China	Cannot be <i>Kashered</i>
Flatware	Flatware composed of single piece of metal may be <i>Kashered</i> with <i>Hag'olah</i> . “Two-piece” flatware—where the handle is glued or soldered to the base—may not be <i>Kashered</i>
Hotel pans (chafing dishes)	Pans in which food is heated in the absence of liquid require <i>Libun Chamur</i> (The pans that hold hot water, however, may be <i>Kashered</i> with <i>Hag'olah</i> )

(continued)

<sup>89</sup> The issue of *Hag'olah* versus *Libun Chamur* revolves around the question of whether food is generally cooked in a frying pan in the presence of liquids (in which case *Hag'olah* would suffice) or the food actually cooks on the surface of the pan (in which case it would require *Libun Chamur*).

<sup>90</sup> The *Kashering* of a specific type of warming box, known as an Alto-Sham<sup>®</sup>, may pose greater difficulties in that it cannot typically be heated to a very high temperature, and food is actually cooked in (and may touch its inner surfaces). For this reason, some authorities do not allow the *Kashering* of this type of equipment.

<sup>91</sup> All equipment that uses steam may be subject to issues relating to recirculating steam (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”).

<sup>92</sup> The *Kashering* of an industrial dishwasher is a complicated and tedious task. All filters must be removed and cleaned and the temperature controls modified or bypassed to allow the water in all chambers to reach the temperature necessary for *Hag'olah*.

<sup>93</sup> The efficacy of coating its surfaces with a flammable substance (such as the contents of a *Sterno*<sup>®</sup>) and igniting it is a popular myth that has no *Halachic* basis.

**Table 14.1.** Equipment commonly used in the catering (and restaurant) industry, and generally accepted approaches to their Kosherization (*Cont.*)

Equipment	Kosherization Issues
Drinking glasses	Most authorities permit glasses used for <i>cold</i> drinks <sup>94</sup> without the need to <i>Kasher</i> them for year-round use <sup>95</sup>
Glass plates	When used for hot foods, most <i>Kashrus</i> agencies rule that they may not be <i>Kashered</i> <sup>96</sup>
Sieves	Sieves should not be <i>Kashered</i> , since it is difficult to ensure that all residues are removed
Tabletops	Stainless steel tabletop may be <i>Kashered</i> with <i>Iruy</i> or <i>Libun Kal</i> . Wood tabletops that do not have significant cracks may first be sanded and then <i>Kashered</i> with <i>Iruy</i>
Steam tables	Must be filled with water and brought to a boil
Ladles, serving spoons, and so on	Those made from a single piece of steel may be <i>Kashered</i> with <i>Hag'olah</i> . Those fashioned from two pieces that are welded together first require <i>Libun Chamur</i> on the welded area

usual on that day.<sup>97</sup> Prearranged catering services, however, may be provided on *Shabbos*, subject to compliance with all *Shabbos* regulations.

The rules of *Shabbos* are characterized by the prohibition of performing “labor,” the *Halachic* definition of which is not limited to “hard work.” Rather, the term “labor” as it relates to *Shabbos* entails thirty-nine basic types of *creative actions*, ranging from making a fire, cooking, weaving, shearing, and carrying objects outside of a private area, such as a house. Although detailing all the rules applicable to *Shabbos* observance is far beyond the scope of this work, the following outline highlights the major issues that relate to the food-service industry:

- **Cooking food:** Raw food may not be cooked<sup>98</sup> on *Shabbos*. As is true for any Jewish homemaker, a caterer must cook all food destined for consumption on *Shabbos* prior to the onset of the holiday. A non-Jew, although not personally subject to *Shabbos* restrictions, may nonetheless not cook food on *Shabbos* for Jewish clientele. All cooking must be done before *Shabbos*.

<sup>94</sup> Some authorities do not allow the use of such glasses for sharp or pungent beverages (such as alcohol), reasoning that they have the *Halachic* status of a *Da'var Cha'rif* (sharp food) and are not considered “cold” beverages.

<sup>95</sup> For use on Passover, however, they should be *Kashered* with *Hag'olah*, or by soaking them in water for twenty-four hours, and then repeating this process with fresh water two additional times (*Mi'huy v'Iruy Sh'losheh P'amim*—“filling and emptying three times”).

<sup>96</sup> Some authorities, however, follow opinions that glass does not absorb any *B'lios* (absorbed flavors). They thus allow the use of glass plates for both hot meat and dairy use (or non-Kosher food) without *Kashering*.

<sup>97</sup> As noted earlier, special arrangements may be made to allow a restaurant to serve guests who had made dining arrangements prior to *Shabbos*. In such cases, *Shabbos* operations would be handled in the same manner as those of caterer, as discussed in this section.

<sup>98</sup> The term “cooking” includes all manner of heating raw food to make it edible, such as boiling, broiling, frying, and baking. Heating certain types of previously cooked foods may not be considered “cooking” in the context of *Shabbos* regulations, although such actions are subject to other considerations (see below concerning “warming food”).

- **Warming food:** One is not expected to subsist on cold food during *Shabbos*; the eating of hot food is considered important for the enjoyment of the holiday.<sup>99</sup> The methods by which hot food may be eaten on *Shabbos* are, however, subject to several considerations. First, although the reheating of previously cooked solid food does not violate the prohibition of “cooking,” a Jew may not light, modify, or extinguish a fire on *Shabbos*. Second, cold liquids may not be reheated (even if previously cooked). Third, cooked solid foods may not be reheated in a routine manner.<sup>100</sup> Hot foods are therefore permitted on *Shabbos* under the following circumstances:
  - Foods (both solid and liquid) may be left on a fire (or in an oven) from before *Shabbos*, after which they may be removed from the fire on *Shabbos* and served. A metal covering, known as “*blech*” (from the *Yiddish* word for “tin”), should be placed on a stovetop, and control knobs (where accessible) should also be covered.<sup>101</sup>
  - Cooked *solid* foods may be reheated by placing them on top of pots of food that had been left on a fire (covered by a *blech*) from before *Shabbos*. (Some authorities also permit placing food on other types of warming surfaces that are not generally used to cook raw food.)<sup>102</sup>
- **Other types of food preparation:** Many other types of labor relating to food preparation are restricted on *Shabbos*, including grinding, separating, squeezing, and kneading. Appropriate guidance from the *Kashrus*-certifying agency will be provided as to the types and manner of food preparation that are permitted.<sup>103</sup>
- **Non-food-related issues:** The use of most types of electric instruments is restricted on *Shabbos*, which may be significant when catering an event on that day. Electric lights may not be turned on or off by a Jewish person, although timers set before *Shabbos* (“*Shabbos* clocks”) may be used. The same restriction applies to the use of telephones, electronic door locks, electric doors operated by sensors, and elevators.<sup>104</sup> In addition, a rule known as *Muktzah* restricts the manner by which certain items may be handled. Appropriate guidance from the *Kashrus*-certifying agency will be provided as to the best manner to address issues raised by these restrictions.
- **Jewish and non-Jewish workers:** Although non-Jewish staff is not personally subject to any *Shabbos*-related restrictions, significant restrictions exist as to when and how he may perform such actions for a Jewish person. In addition, allowing Jewish staff (even if not personally religiously observant) to perform forbidden activities poses a significant concern. Appropriate guidance in addressing this issue will be provided by the *Kashrus*-certifying agency.

<sup>99</sup> Many authorities actually *require* the inclusion of at least one hot dish on the *Shabbos* menu, in order to enforce the *Halachic* position that fire may be used on *Shabbos*, provided that it is not lit or modified. (A heretical movement, known as the *Quaraites*, had argued that the verse “Thou shalt not burn a fire in your dwellings on the day of the *Shabbos*” [Exodus 35:3] prohibited *any* use of fire.)

<sup>100</sup> This Rabbinic prohibition was enacted to ensure that any reheating does not appear to be an act of cooking.

<sup>101</sup> This Rabbinic ruling was instituted to ensure that the fire would not inadvertently be adjusted on *Shabbos*.

<sup>102</sup> Although a non-Jew may not cook raw food for a Jew on *Shabbos*, some authorities permit a non-Jew to reheat solid foods in a normal manner.

<sup>103</sup> Some authorities also prohibit a Jew from opening a can on *Shabbos*, or even opening a breakaway cap on a bottle. Virtually all, however, permit a non-Jew to perform such acts on behalf of a Jew.

<sup>104</sup> Many authorities permit the use of elevators that have been preprogrammed to stop on every floor without the need for the client to press any buttons or otherwise affect its operation. Such a system is commonly referred to as a “*Shabbos* elevator.”



- **Transportation and carrying:** Driving a car or other delivery vehicle is prohibited on *Shabbos*. In addition, carrying items in a “public” area, or between a private area and a public area, is prohibited on *Shabbos*.<sup>105</sup> Although these rules do not apply to non-Jewish workers, one may not plan a catered affair on *Shabbos* that presumes that food or other equipment must be delivered to the site or moved through a public area in contravention of these rules.
- **Yom Tov (Jewish holidays):** Cooking is permitted on all Jewish holidays other than *Shabbos* (and *Yom Kippur*). Fires can be increased (but not created) and raw food may be cooked and reheated in a normal manner. In addition, one may carry items in a public domain. In the case of two consecutive days of *Yom Tov*,<sup>106</sup> however, one may not make preparations on one day for the next (or from *Yom Tov* for another day).

## Hospitals and Long-Term Care Facilities

Hospitals and long-term care facilities are often called upon to provide Kosher food to their clients. In such situations, Kosher dietary requirements may be met by serving the client Kosher meals prepared by outside suppliers or by maintaining a Kosher food preparation system.

### *Prepared Kosher Meals*

In many such situations, Kosher food service takes the form of meals prepared off-site (similar to airline meals). It may consist of freshly prepared fare delivered to the care facility on a daily basis or frozen meals that are stored in the facility. In either case, such meals are designed to be delivered, stored, heated,<sup>107</sup> and served in a sealed package on disposable dishes (and served with disposable utensils), thereby maintaining the Kosher status of the meal until it reaches the client.

Ideally, a prepackaged Kosher meal should be functionally and nutritionally complete, allowing the client to rely solely on the food included therein for his or her complete dietary needs. Unfortunately, however, such is rarely the case. No off-the-shelf meal can account for the special dietary needs of all patients in medical care facilities. Many patients typically require meals individually tailored to their specific nutritional requirements, as well as supplementary nutrition apart from regular meals. Staff dietitians therefore review a patient’s dietary needs and may determine that a patient on a Kosher diet requires changes or additions to foods included in the standard Kosher package. The following is an outline of factors that should be taken into account when adjusting the diet of a patient observing a Kosher diet:

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<sup>105</sup> Generally, a “public area” is defined as any outside area that is not enclosed by *Halachically* defined walls, whereas a “private area” is an indoor area or an outdoor area bounded by such walls. Large public areas may be converted into *Halachically* defined “private areas” by constructing a special enclosure around them. Such an enclosure, commonly referred to as an *Eruv*, may involve construction of a series of poles with strings or wires running atop them—which are considered *Halachic* “doorways”—thus conferring a private status to the enclosed area, even though it is “outside.”

<sup>106</sup> See Chapter 4, “Rabbinic Etiquette,” for an explanation of the concept of “two days of *Yom Tov*.”

<sup>107</sup> Typically, meals consist of two components, each sealed separately. The cold section includes all parts of the meal that are not heated, including salads, condiments, and service items. The hot section is sealed in packaging that allows the food to be heated while remaining sealed. Typically, it is “double sealed,” allowing the food to retain its Kosher status despite being placed in a non-Kosher oven.

- Under no circumstances should the sealed package of Kosher food be opened or otherwise tampered with without the express approval of the patient. Should such seals be broken, the Kosher status of food may be deemed compromised and rejected by the patient.
- Condiments from standard hospital supplies that may be served with a Kosher meal (such as ketchup, mustard, crackers, and so on) should come in individual portion packs and bear an acceptable Kosher-certification symbol.
- Most fresh fruit and vegetables, other than those from Israel,<sup>108</sup> pose no *Kashrus* concern and are acceptable even if cut in the general kitchen.<sup>109</sup> Fruit and vegetables that have been *cooked* in the general kitchen, however, should not be served with a Kosher meal.
- Although non-Kosher diets may include a glass of milk with every meal, it should not be included when serving a Kosher meat meal. The same restriction applies to dairy dietary supplements (such as Ensure<sup>®</sup><sup>110</sup>), Kosher yogurt, dairy cookies, and other dairy foods.
- Hot beverages (such as coffee and tea) pose no *Kashrus* concern. Care must be taken, however, to ensure that any condiments served with them, such as creamers, meet Kosher requirements. In addition, a dairy creamer should not be included with a meat meal. Noncaloric sweeteners should also have an acceptable Kosher-certification symbol.
- Bread and rolls should not be included in a Kosher meal unless their Kosher status has been verified. Gelatin desserts, soups, and other foods typically included in specific types of meals must meet Kosher requirements.
- Some care facilities may not offer prepared Kosher meals for breakfast but will supply Kosher breakfast cereals, milk, fruit, and other standard items from the regular menu. The dietitian should work with the patient to ensure that all such items meet his or her Kosher requirements.
- The heating of Kosher meals on *Shabbos* by non-Jewish workers generally poses no *Halachic* concern in medical care settings.
- During the holiday of Passover, special Passover meals should be supplied to the client. In addition, many foods that are Kosher for year-round use are not Kosher for Passover.

### ***Kosher Food-Service Systems***

Some hospitals, especially those originally chartered by Jewish philanthropic organizations, as well as Jewish nursing homes maintain Kosher food service throughout the facility. Such food-service operations are subject to the same basic *Kashrus* requirements as other Kosher caterers. They will typically have a staff of *Mashgichim* to oversee their operation, and they maintain separate kitchens (or sections of the kitchen) and equipment for meat and dairy.

<sup>108</sup> Produce of Israel is subject to certain special considerations (see Chapter 6, “Fruit and Vegetables”).

<sup>109</sup> This would remain true even if non-Kosher knives were used to cut the produce, because non-Kosher *B’lios* are not transferred in the absence of heat (see Chapter 2, Basic *Halachic* Concepts in *Kashrus*). Items considered *Cha’rif* (sharp), such as lemons and onions, however, are not subject to this leniency and may not be considered Kosher even if cut with a cold (non-Kosher) knife.

<sup>110</sup> Such dairy supplements are often served to clients as an evening snack. Some clients may prefer to avoid such foods for several hours after a meat meal (see Chapter 2, Basic *Halachic* Concepts in *Kashrus*).

*Halacha* does recognize, however, the exigencies involved in caring for the ill and infirm, and the use of foods or ingredients not generally approved for Kosher use may be permitted where medically indicated.<sup>111</sup> In addition, certain types of heating and cooking are permitted on *Shabbos* that would otherwise not be allowed in standard catering operations. Also critical to note is that all *Shabbos* restrictions are waived in life-threatening situations.

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<sup>111</sup> All foods may be eaten in life-threatening situations. Further, foods that contain small amounts of non-Kosher material (such as hypoallergenic casein hydrolysates manufactured with non-Kosher proteases [for example, Nutramigen<sup>®</sup>]) are permitted for any medical reason.

# 15 The Candy and Confection Industries

## Ingredient Issues

In the context of providing energy, “sugar” may be considered the basic vehicle of nourishment. While foods provide a variety of nutrients essential to nutrition, it is sugar—either native to the food or metabolized therefrom—that provides critical sustenance to each cell in the body. Most children—as well as many adults—have an innate affinity to sugar, and this craving has been the historical impetus for the development of a class of foods broadly known as confections. While erstwhile candies may have been no more complicated than rock candy and crystallized honey—and similarly innocuous from a *Kashrus* perspective—the modern sweet tooth is bombarded by array of confections that test the ingenuity and expertise of both the candy maker and the Kosher certifier. The purpose of this chapter is to review the various types of confectionary products, in terms of both ingredient issues and production techniques, to assess the issues and requirements inherent in their Kosher production.

Various types of candies may pose a mixture of both conventional and unique *Kashrus* concerns that must be addressed appropriately for the successful production of a Kosher product. Ingredient and production issues unique to specific confections will be dealt with specifically. Basic ingredient issues, however, transcend virtually all types of confections, and *Kashrus* issues relating to them—for both year-round and Passover<sup>1</sup>—will be dealt with as an introduction to Kosher candy production.

## *Sugar and Sweeteners*<sup>2</sup>

Candies, virtually by definition, are based on sugar or some other sweetening agent. Some candies (such as boiled hard candies) are essentially flavored sugar, while others (such as chocolate) incorporate substantial amounts of other ingredients. In all cases, however, sugar<sup>3</sup> (or its substitute) is a critical ingredient, and the production of Kosher candies must, perforce, deal with Kosher issues relating thereto.

- **Sucrose:** Whether derived from cane or beet, crystallized sucrose poses few *Kashrus* concerns.<sup>4</sup> It is inherently Pareve, and may be used for Passover productions,<sup>5</sup> subject to the following concerns:

<sup>1</sup> See Chapter 5, “Kosher for Passover,” for a detailed discussion of Passover rules and restrictions.

<sup>2</sup> See “The Story of Sugar and Sugar Alcohols,” in Chapter 17, for a detailed discussion of *Kashrus* issues relating to these ingredients.

<sup>3</sup> The obvious exceptions, of course, are “sugar-free” candies. This distinction, however, may be somewhat of a sleight of hand, since they often take the form of sugar alcohols and starch hydrolysates that are chemically similar to and contribute significant, albeit fewer, calories than conventional sugar.

<sup>4</sup> See “The Story of Sugar and Sugar Alcohols” in Chapter 17.

<sup>5</sup> Granulated sugar, in contradistinction to glucose and fructose derived through starch hydrolysis, are “native” sugars, as they exist naturally in that form. They are thus free from the Passover concerns of

- Liquid sugar generally poses no inherent concern, although Passover use may require special supervision of the tanker in which it is shipped.<sup>6</sup>
- Invert sugar may pose a Passover concern due to the agent used in the inversion,<sup>7</sup> and an acceptable Passover certification is required.
- Powdered (or confectionary sugar) is often blended with cornstarch, wheat starch, flour, or calcium phosphate to prevent caking. When required for Passover productions, it may be produced with a Passover-grade anticaking agent or it may be milled immediately before use.
- **Glucose:**<sup>8</sup> Virtually all glucose commercially available today is derived through the hydrolysis of starch.<sup>9,10</sup> While virtually any starch may be hydrolyzed into glucose, the source of the starch varies in each country, depending on the most economical and readily available raw material. In the United States, commercial glucose is invariably produced from corn (maize), while much of the glucose produced in Europe is derived from wheat (or barley) starch. In Asian countries it may be made from tapioca, sweet potato, or rice.
 

The original process of converting starch into sugar was based on acid hydrolysis, and posed little *Kashrus* concern.<sup>11</sup> Modern production relies on enzyme conversion, however, and the Kosher status of glucose presumes the Kosher status of such enzymes.<sup>12</sup> In practice, virtually all glucose is acceptable for year-round use. Glucose for Passover productions, however, is subject to the following considerations:

  - Glucose derived from starch from the five major grains (wheat, rye, oats, barley, or spelt) is considered *Chometz*, and may not be used for Passover productions. In addition, equipment on which such glucose was processed must be Kosherized prior to any Passover production.<sup>13</sup> Furthermore, steam and hot-water utilities that had

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*Kiniyos* that relate to sugars derived from cornstarch or *Chometz* concerns that relate to sugars derived from wheat and other grain starches. In addition, sucrose is not produced through enzymatic degradation, thus avoiding possible Passover concerns that may arise from otherwise Passover-acceptable starches hydrolyzed with non-Passover enzymes. Although small amounts of enzymes may be used in processing aids in the clarification of sucrose, these are generally considered insignificant and do not compromise their inherent acceptability for Passover use.

<sup>6</sup> As noted in Chapter 1, “Kosher Certification: Theory and Application,” the transportation of all liquid products should be undertaken in Kosher-approved tankers. Generally, the sweetener industry carefully monitors the transport of its products and often restricts it to sugars and sweeteners (as well as juices). As such, the transport of such products creates few *Kashrus* concerns. Since many of these sweeteners are not Passover approved, the Kosher for Passover status of tankers used in shipment of Passover liquid sucrose requires special attention.

<sup>7</sup> The inversion of sucrose may be accomplished by acidification or by the enzyme invertase. Commercial production of invert sugar through acidification generally utilizes inorganic acids, which pose no Passover concerns. Invertase, however, is generally derived from yeast, and requires special Passover certification.

<sup>8</sup> *Kashrus* issues relating to glucose are not limited to its use as a sweetener per se. It serves as the basis for sorbitol and fructose, and is used in the fermentation of L-phenylalanine (a component of aspartame).

<sup>9</sup> Glucose was originally identified as the primary sugar in grapes, and had historically been known as “grape sugar” (*Traubenzucker*—German). Although this appellation is still used in some languages, it is of historic derivation rather than an accurate description.

<sup>10</sup> Sucrose is sometimes used as a source of both glucose and fructose, which are produced by the hydrolysis of sucrose with the invertase enzyme.

<sup>11</sup> Although processed starch may pose some *Kashrus* concerns (see “The Story of Starch” in Chapter 17), the simple starches used to produce glucose are generally free of them.

<sup>12</sup> Indeed, one of the earliest sources of amylases used in starch conversion was malted barley, which is quintessentially *Chometz*.

<sup>13</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a detailed discussion of Kosherization procedures.

been used to heat such glucose must be reviewed, and possibly modified, for Passover production.<sup>14</sup>

- Glucose derived from corn, rice, and other legumes is considered *Kitniyos*,<sup>15</sup> and according to most opinions,<sup>16</sup> may not be used as a sweetener according to *Ashkenazic* custom. From a practical perspective, most Kosher-certifying agencies follow this approach and do not permit the use of corn-derived glucose in Passover-certified products.<sup>17</sup>
- Glucose derived from sucrose or Passover-acceptable starches (for example, tapioca and potato) may be used for Passover. The enzymes used in their production, however, must be acceptable for Passover use. As such, glucose that is acceptable for Passover use must be specially certified for that purpose.

An additional concern relating to wheat- and barley-derived glucose concerns the issue of *Chodosh*.<sup>18</sup> This is a significant concern in Israel and in some *M'hadrin* certifications that adhere to this stringency.

- **Fructose:** Fructose is found naturally in honey, many types of fruit, and may be produced by the inversion of sucrose and subsequent separation of the resulting glucose and fructose. From a practical perspective, however, it is generally produced through enzymatic conversion of glucose and is subject to the same *Kashrus* considerations as its source material.

Fructose is generally not available for Passover use because it is usually derived through the hydrolysis of non-Passover starches.<sup>19</sup> Even where fructose is derived through the inversion of sucrose, the invertase enzyme used for the inversion is generally not approved for Passover.

- **Sugar alcohols:**<sup>20</sup> Sugar alcohols are produced commercially through the hydrogenation of sugars, utilizing a Raney nickel catalytic process that is essentially common to the production of all sugar alcohols. While the hydrogenation process itself poses few *Kashrus* concerns,<sup>21</sup> the same equipment—and, indeed, the same catalyst material—may be used for the production of both plant-based sugar alcohols and lactitol (hydrogenated

<sup>14</sup> See *ibid.* for a detailed discussion of utility issues.

<sup>15</sup> See Chapter 5, “Kosher for Passover,” and “The Story of *Kitniyos*,” in Chapter 17, for a full discussion of *Kitniyos*.

<sup>16</sup> A very small minority of certifying agencies do permit the use of corn sweeteners for Passover productions (see “The Story of *Kitniyos*” in Chapter 17). Nonetheless, the vast majority of Rabbinic authorities and the Kosher-consuming public do not accept this approach.

<sup>17</sup> Some Passover certifications for *S'phardim*—especially in Israel—may allow the use of Passover-approved corn syrup.

<sup>18</sup> See Chapter 3, “Ingredient Management,” and Chapter 7, “The Baking Industry,” for a full discussion of the concepts of *Yoshon* and *Chodosh*.

<sup>19</sup> An additional concern stems from the potentially non-Passover status of the glucose isomerase enzyme used to convert glucose into fructose.

<sup>20</sup> See “The Story of Sugar and Sugar Alcohols,” in Chapter 17, for a detailed discussion of sorbitol and other sugar alcohols.

<sup>21</sup> In the food industry, Raney nickel is used widely in the hydrogenation of oils (to create hydrogenated fat) and sugars (to create sugar alcohols). Due to the pyrophoric nature of Raney nickel (a function of the high porosity of the alloy and the residual hydrogen retained therein), this material must be protected from contact with oxygen. When destined for oil hydrogenation, Raney nickel is typically embedded in a fat matrix, protecting it from atmospheric oxygen until use, with the protective fats flushed from the catalyst during use. Such Raney nickel preparation requires a reliable Kosher certification to ensure the Kosher status of the fats used in the preservation. In the case of Raney nickel destined for sugar alcohol production, however, the catalyst is typically handled as water slurry, a form that poses no Kosher concern.

lactose). Lactose (milk sugar) is Dairy and potentially non-Kosher (see below), and equipment used to process lactitol would assume the same *Halachic* status. In such a situation, the erstwhile Kosher and Pareve status of the plant-based product may be compromised unless the catalyst were changed and the equipment proper *Kashered*. Kosher sugar alcohols are, therefore, generally produced on equipment not used for the production of lactitol.

Sugar alcohols enjoy popularity in the production of “sugar-free” candies for, while based on sugars, their hydrogenation confers on them both a legal and nutritional distinction. This distinction manifests itself in a number of ways. Sorbitol, for example, is hydrogenated glucose, yet its caloric content is approximately one-third less than that of glucose. In addition, sugar alcohols are not metabolized with insulin, so they are more suitable for use in candies geared to diabetics. Furthermore, sugar alcohols do not promote the growth of dental caries, making them more “tooth friendly.”

The following is a list of sugar alcohols commonly used in the confectionary industry, as well as their various functional qualities:

- **Sorbitol** is widely used in reduced calorie sweets, because of both its lower caloric availability and the fact that it is metabolized without insulin, making it more suitable for diabetics. It is produced by the hydrogenation of glucose<sup>22</sup> and is thus subject to *Kashrus* concerns identical to those pertaining to glucose.
- **Mannitol** is produced by the hydrogenation of fructose and is subject to any *Kashrus* concerns of that base material.
- **Xylitol** is produced by the hydrogenation of the wood, sugar xylose, and poses no inherent *Kashrus* concern.
- **Polyols** is a category of hydrogenated dextrans, and enjoys the same *Kashrus* status as sorbitol.
- **Isomalt**<sup>®</sup> exhibits many of the properties of sugar, and is commonly used in the production of sugar-free candies. It poses no *Kashrus* concerns.<sup>23</sup>
- **Lactitol** is produced by the hydrogenation of lactose. Lactose requires a reliable Kosher certification, since it is typically derived from whey.<sup>24</sup>

Since most sugar alcohols are produced from starches, they pose significant *Chometz* and *Kitniyos* concerns for Passover use.

- **Honey:**<sup>25</sup> Although, perhaps, the earliest confectionary sweetener, it is rarely used for that purpose today. Its modern primary application is that of a flavoring agent and, in general, poses little *Kashrus* concern.
- **Artificial sweeteners:** Traditional sweets are based on sugars and are, therefore, relatively high in calories. While sugar’s *sweetness* may be replicated by a number of extremely sweet and virtually calorie-free agents,<sup>26</sup> sugar’s other functional properties, such as bulk and mouthfeel, are not as easily duplicated. Confectioners rely on a variety of polyols,

<sup>22</sup> Although found naturally in the fruit of the genus *Sorbus* (after which it is named) and certain drupes, sorbitol is never derived from these sources on a commercial basis.

<sup>23</sup> See “The Story of Sugar Replacers,” in Chapter 17, for more information concerning Isomalt<sup>®</sup>.

<sup>24</sup> See Chapter 9, “The Dairy Industry,” and “The Story of Whey,” in Chapter 17, for a full discussion of *Kashrus* issues relating to whey and lactose.

<sup>25</sup> See “The Story of Honey and Royal Jelly,” in Chapter 17, for a full discussion of the *Kashrus* issues related to honey.

<sup>26</sup> See “The Story of Sugar Replacers,” in Chapter 17, for a full discussion of the *Kashrus* issues related to these products.

dextrins, and modified starches, often in concert with artificial sweeteners, to effect the appropriate functional characteristics of the confection.

Most *pure* synthetic artificial sweetening agents (for example saccharin and cyclamates) pose no *Kashrus* concerns, and the diluents commonly used in consumer versions of these products are typically absent in product destined for industrial use. Indeed, they are generally approved for Passover use. The production of aspartame generally involves components produced by fermentation and thus requires a Kosher certification for general and Passover use. Sucralose,<sup>27</sup> at the time of this printing, enjoys a Passover certification.

- **Rework:** Modern candy production systems create a significant amount of “rework,” edible and wholesome product that, for a variety of reasons, cannot be packaged or sold. As in many industries, the goal is to recycle as much of this material as possible into saleable product, and various approaches have been developed for that purpose. Traditionally, relatively bland flavored product may be added to batches of more pungent items in amounts carefully calibrated not to compromise its flavor. In situations where production involves items with varying Kosher statuses (Kosher and non-Kosher or Dairy and Pareve), it is critical to ensure that the status of any rework added conforms to the product’s Kosher status. Fortunately, from a Kosher perspective, some of these concerns may have been alleviated by sensitivity to allergen issues, whereby rework from a Dairy product would be proscribed from being added to a non-Dairy item irrespective of *Kashrus* concerns.

A modern variant of this system involves the liquefaction of off-spec candies, with the resulting sugary syrup filtered and purified to the point where the resulting glucose retains none of the flavors of the candies from which it was derived. From a practical *Kashrus* perspective, however, products that contain dairy ingredients will remain Dairy even after filtration and non-Kosher products will similarly remain non-Kosher.

## **Gelatin<sup>28</sup>**

Of all ingredients commonly used in the production of confections, gelatin arguably enjoys the greatest controversy and notoriety. Gelatin is derived hydrolyzed collagen that, by definition, can only be found in animals or fish. *Halachic* opinions differ as to the acceptability of gelatin derived from non-Kosher species (for example, porcine material and non-Kosher fish) and non-Kosher-slaughtered animals (for example, beef and veal), and some confectionary manufacturers do use such material in Kosher-certified products.<sup>29</sup> From a practical perspective, however, the consensus of the vast majority of Rabbinic authorities, as well as the major Kosher-certifying agencies, is to consider such materials non-Kosher.

<sup>27</sup> The term “sucralose” refers to both the sweetening agent and the retail sweetener blend. Passover approval is restricted to the industrial (pure) sweetener, as explained in Chapter 15.

<sup>28</sup> See “The Story of Gelatin,” in Chapter 17, for a full discussion of the *Halachic* issues related to this material.

<sup>29</sup> Virtually all gelatin manufacturers produce “Kosher-certified” gelatin from various non-Kosher materials, relying on *Halachic* opinions that permit such gelatin for a variety of reasons. Indeed, some manufacturers list such material as “Kosher gelatin” on the ingredient panel, which may be considered somewhat disingenuous given the broad consensus disapproving of such a Kosher status.



Faced with the inability to use conventional gelatin for Kosher production, the following alternatives are available where the qualities of gelatin are required:

- **Gelatin derived from Kosher beef sources:** Kosher gelatin produced from Kosher-slaughtered beef is available, and generally performs as well as its non-Kosher equivalent. Unfortunately, the costs involved in maintaining the Kosher status of the material from slaughter to final processing serve to make the product far more expensive than conventional gelatin, to the point where it is rarely economical for general production. Specialty items geared for the Kosher market, however, may be able to absorb the added cost of this relatively small component of the final product.
- **Gelatin derived from Kosher fish sources:** The use of Kosher fish for the production of gelatin offers certain economies over beef processing.<sup>30</sup> Nonetheless, virtually all Kosher fish gelatin is produced as special productions in an otherwise non-Kosher gelatin-processing facility, requiring Kosherization of equipment and special supervision, all of which also conspire to significantly raise the cost of the product. Again, however, production of confections geared to the Kosher market using such gelatin is often considered cost-effective.
- **Gelatin alternatives:** A number of plant-based alternatives have been developed that replicate many of the functional properties of gelatin. These materials, all varieties of polysaccharides, include natural gums, microbially derived gums (for example, gellan), pectin, and specially modified starches. While they cannot completely emulate all of the functionality of gelatin, they are used to produce acceptable nongelatin versions of many types of confections.

### **Food Colors<sup>31</sup>**

Color plays a very important part in the production of many confections, and may be divided into two categories—synthetic and natural. In their pure form, synthetic colors<sup>32</sup> pose no *Kashrus* concerns for year-round or Passover use. Color *preparations*, however, may contain additives such as glycerin, requiring a reliable Kosher certification.

Manufacturers of *natural* confections, however, must eschew the use of synthetic colors and rely on coloring agents found in nature, either in plants or in insects. While most coloring agents derived from plants (for example, cabbage, beet, carrot, and plum extracts) are inherently Kosher, certain commonly used natural colors pose significant *Kashrus* concerns:

- **Enocianina** (grape skin extract) is subject to the rules of *S'tam Yaynam*<sup>33</sup> and is generally not available as a Kosher product.

<sup>30</sup> Fish require no ritual slaughtering, deveining, soaking and salting, and other requirements attendant to beef. The sole requirement is to ensure that the material derives from a Kosher species of fish.

<sup>31</sup> See “The Story of Colors,” in Chapter 17, for a full discussion of *Kashrus* issues related to food-coloring agents.

<sup>32</sup> Synthetic colors approved for use in the United States are known as FD&C colors, some of which, such as Red #40, may be illegal for use in other countries. Similarly, several synthetic colors approved for use outside the United States, such as Amaranth (Red #2) and Ponceau (Red #4), are banned for use in the United States.

<sup>33</sup> See Chapter 6, “Fruit and Vegetables,” in the section “Wine and Grape Juice—*S'tam Yaynam*.”

- **Carmine** is derived from the cochineal scale insect. While approved by some authorities, most *Kashrus* organizations do not accept it as a Kosher ingredient.<sup>34</sup>
- **Caramel color** is produced by heating a sugar to the point where it caramelizes into a brown color. This sugar may be sucrose, glucose, or a maltodextrin, all of which may be presumed Kosher.<sup>35</sup> *Kashrus* concerns are limited to Passover, where only caramel color derived from Passover-approved sugar (typically sucrose) may be used.

## Glazes

In addition to color, the appearance of many candies, such as jelly beans, is enhanced with the application of a polishing agent, which also serves to preserve the candy and reduces its stickiness. These glazes may contain one or more of the following components, with their *Kashrus* concerns noted:

- **Gums:** These may include gum Arabic and locust bean gum, both of which pose no *Kashrus* concerns.
- **Oils:** Mineral oil is commonly used as a glaze. It poses no *Kashrus* concerns for year-round and Passover use. Vegetable oils are also acceptable, but require Kosher certification. Passover production requires the use of non-*Kitniyos* oils.
- **Shellac:** This material is often referred to as “resinous glaze” or “confectioners glaze” and is the exudation of the lac insect. Many authorities and major *Kashrus* organizations accept this material as Kosher,<sup>36</sup> although virtually all *M'hadrin* certification do not.
- **Zein:** Zein is corn protein, and it has been adapted for use as a replacement for resinous glaze. It poses no *Kashrus* concerns, but is considered *Kitniyos* and therefore subject to Passover restrictions.

## Production

Although many ingredients may be common to virtually all candies, each category of candy production poses its own, often unique, sets of *Kashrus* concerns. The following is a list of major candy categories and specific *Kashrus* issues related to them.

### Boiled Candies

Hard sugar candies are produced by boiling sugar syrups under vacuum, thereby reducing the level of water to the point where the sugar mass crystallizes on cooling. The resulting material, still quite hot, has the consistency of a thick dough, into which flavors and colors are kneaded to create base candy. This material is then formed as desired. *Kashrus* issues involve the following considerations:

- The cookers may be batch processors, semibatch processors, or continuous cookers, and while they may differ from a functional perspective, Kosher issues relating to them

<sup>34</sup> See “The Story of Colors,” in Chapter 17, for a full discussion of the *Halachic* issues related to carmine and other red colors derived from insects.

<sup>35</sup> Where caramel color is spray-dried into a powder, Kosher certification is required to ensure the Kosher status of the drying equipment.

<sup>36</sup> See “The Story of Honey and Royal Jelly,” in Chapter 17, for a full discussion of the *Halachic* status of this material.

are virtually identical. In general, these units are restricted to boiling sugars and starch hydrolysates, with flavors and other ingredients added at later stages of the candy manufacture. Since these sugars are generally considered inherently Kosher for year-round use, these cookers typically pose no Kosher concerns.<sup>37</sup> (The *Chometz* and *Kitniyos* status of many of these sugars, however, may necessitate a Kosherization for Passover production.)

- The concentrated sugar mass is typically placed onto tables, where flavors and colorings are kneaded into it. These tables may be either heated or cooled (utilizing recirculating water pipes under the table surface). Since the sugar mass is hot, these tables may require Kosherization from non-Kosher or dairy productions. (Butter is often used in the production of butterscotch candies.)
- To prevent sticking, these tables are typically coated with a nonstick agent. This material may be powdered talc or mineral oil, neither of which poses *Kashrus* concerns for year-round or Passover production. However, grease-based nonstick agents may contain other oils and fats that pose a *Kashrus* concern.
- The flavored sugar mass is then typically formed into a rope and cut into the finished product. To maintain its pliability, the equipment used to form the sugar mass may be heated,<sup>38</sup> raising concerns as to the appropriate method of Kosherization. Each situation must be evaluated by the Kosher certification supervising the production.

### ***Starch-Molded Candies***

These candies are so named because of the method by which they are cast into desired shapes, and include jelly beans, gummy bears, and fruit snacks. Raw materials are blended and heated to create candy slurry, which is then injected into a starch mold, formed by pressing a series of dies of the desired shape into a smooth tray of starch. The trays are typically stored in a heated area for a period of time, allowing for some of the moisture to be drawn from the candy into the starch. At the end of the drying period the candies are separated from the starch (which is recycled) and the candy polished. In the case of jelly beans, the candy is typically produced as an unflavored item, with color and flavored in a process known as panning. Panning involves tumbling the candy while flavors, colors, and glazes are sequentially sprayed onto the candy. *Kashrus* issues involve the following considerations:

- Since all flavors and colors are added in the initial cookers and fed through the depositors, these pieces of equipment may require Kosherization prior to Kosher production. This is especially true where gummy bears containing non-Kosher gelatin are produced.
- Starch used for non-Kosher production may not be used for Kosher production. This often creates a significant logistical concern, given the large amount of starch in the production system that must be removed and discarded.<sup>39</sup> Typically, such a changeover is practical only where a permanent change from non-Kosher to Kosher is undertaken.
- Unflavored jelly bean centers are panned with flavors and colors. Typically, this process takes place at cool temperatures, and the pans should require a thorough cleaning only for Kosher production.

<sup>37</sup> This assumption may be subject to challenge where sugars are recovered and reworked from non-Kosher productions, as noted earlier.

<sup>38</sup> Often, electric heaters or even open flames are used to maintain heat in some pieces of equipment.

<sup>39</sup> In addition, the starch may be passed through a heated drying system, which may require Kosherization.

- Jelly beans typically require glazing, the materials used subject to the concerns noted above. Gummy bears and similar products may also be coated with a glaze or a lubricating agent.

## Chocolate<sup>40</sup>

Chocolate is produced in several stages, each posing unique *Kashrus* concerns. After harvesting and an initial fermentation and drying in the field, the cocoa beans are roasted in hot air in the cocoa-processing facility. The meat of the roasted cocoa bean is then cracked in nibs, which are ground into a viscous material known as chocolate liquor. Chocolate liquor is composed of cocoa butter and cocoa solids, and may be used as the base for chocolate production or separated into these discrete components. The key to basic chocolate production is the dilution of the intensely flavored chocolate liquor with additional fat and sugar; milk chocolate also incorporates powdered milk. (Lecithin and other emulsifiers may also be added.) The chocolate mass must then be ground into exceedingly tiny particles to create finished eating chocolate.

*Kashrus* issues related to chocolate production revolve about the following considerations:

- The Passover status of chocolate liquor and the cocoa butter and cocoa derived from it
- The Kosher status of fats and emulsifiers added to augment or replace cocoa butter
- The Kosher status of dairy ingredients, including powdered milk, whey, and butter oil
- The method by which pieces of equipment unique to chocolate production must be Kosherized from either non-Kosher to Kosher, Dairy to Pareve, or non-*Cholov Yisroel* to *Cholov Yisroel*. Such equipment includes refiners, conches, and tempering units
- Recirculating hot-water system used to heat mixers, conches, and transfer lines

### Chocolate Liquor, Cocoa Butter, and Cocoa

The production of chocolate liquor, as well as its separation into cocoa butter<sup>41</sup> and cocoa, typically poses few inherent *Kashrus* concerns.<sup>42</sup> Passover approval of all three ingredients, however, may be compromised where cocoa beans are soaked in a non-Passover reducing sugar (such as starch-derived glucose) prior to roasting.

### Other Fats and Emulsifiers

The fat in traditional chocolate is cocoa butter,<sup>43</sup> which poses little *Kashrus* concerns. *Compound* chocolate,<sup>44</sup> however, may contain a variety of fats from various derivations that require a reliable Kosher certification.

<sup>40</sup> See “The Story of Chocolate,” in Chapter 17, for a full discussion of issues relating to this confection.

<sup>41</sup> Deodorized cocoa butter may be processed in equipment used for other potentially non-Kosher fats. As such, deodorized cocoa butter requires a reliable Kosher certification.

<sup>42</sup> Where chocolate liquor is processed into tablets using equipment also used for dairy chocolate packaging, such chocolate liquor may be considered dairy.

<sup>43</sup> The use of animal fat in chocolate production is generally considered an anachronism.

<sup>44</sup> Standards of Identity differ from country to country. In the United States, “chocolate” may only contain cocoa butter, while some countries allow the use of other fats in product so labeled.

Although not part of the original chocolate formula, lecithin has been routinely added to chocolate since the 1930s. It serves to improve the wetting and dispersing properties of cocoa powder, allowing a reduction in the amount of (expensive) cocoa butter required to prevent chocolate bloom. It poses little Kosher concern for year-round use, but is generally considered to be *Kitniyos*.<sup>45</sup> Although unsuitable for Passover, its use will typically not compromise the Passover status of equipment on which it were produced. It should also be noted that the quality of Passover-grade chocolate may be enhanced by the additional cocoa butter required for its production.

Additional emulsifiers have been used in Europe for a number of years, but had not been approved for use in the United States until recently. Emulsifiers such as polyglycerol polyricinoleate (PGPR) and ammonium phosphatide (Palsgaard®) require reliable Kosher certification.

### Dairy Ingredients

Dark chocolate had traditionally been dairy free, although the equipment on which it was produced may have compromised its Pareve status (see below). Recently, however, manufacturers have begun adding anhydrous milk fat (butter oil) to dark chocolate,<sup>46</sup> thereby creating a truly dairy dark chocolate. Butter oil is subject to a number of *Kashrus* concerns,<sup>47</sup> and requires a reliable Kosher certification.

The production of milk chocolate requires the use of a form of milk with virtually no water.<sup>48</sup> These materials may be milk crumb, spray-dried powdered milk, and roller-dried milk. Milk crumb is typically produced as part of the chocolate-manufacturing system, utilizing fluid milk and chocolate liquor, and poses no significant *Kashrus* concerns. Dried milk powder (of either source) is subject to potential *Kashrus* concerns, and requires reliable Kosher certification.

Standards of Identity for “chocolate” differ from country to country, and in the United States only “milk” may be used. Other jurisdictions may allow the use of alternative dairy products, such as whey, which require reliable Kosher certification.<sup>49</sup>

### Equipment and Kosherization

The production of chocolate involves the use of a number of specialized pieces of equipment, entailing significant challenges in their Kosherization due to the unique nature of both the chocolate itself and the equipment needed to produce it. Kosherization of chocolate-processing systems may be required in the following situations:

- The use of non-Kosher ingredients
- The need to produce Pareve chocolate on equipment previously used to produce dairy products

<sup>45</sup> See “The Story of *Kitniyos*,” in Chapter 17, for a full discussion of this status.

<sup>46</sup> Butter oil forms a eutectic mixture with cocoa butter, ensuring a more even melting pattern and preventing the formation of certain objectionable fat crystals.

<sup>47</sup> See “The Story of Butter,” in Chapter 17, as well as Chapter 9, “The Dairy Industry.”

<sup>48</sup> Even a small amount of water will immediately cause chocolate to become a grainy fudgelike material. The successful production of milk chocolate was due to the development of a process to utilize milk from which its moisture had been removed.

<sup>49</sup> See “The Story of Whey,” in Chapter 17, as well as Chapter 9, “The Dairy Industry.”

- The need to produce *Cholov Yisroel* product on equipment used to produce non-*Cholov Yisroel* dairy product

Given the nature of chocolate production, the need to *Kasher* a chocolate system from non-Kosher production is not common. Non-dairy production in a dairy system, however, is a major concern and is often simply addressed by electing to forego a Pareve designation due to the difficulties in Kosherizing such a system. The primary obstacle in Kosherizing a chocolate production system is the aversion to introducing water into the system. Even minute amounts of residual water left behind after Kosherization will cause chocolate to form grainy crystals. Water in chocolate also creates significant microbial hazards, for the inherent inability of microbes to grow in sugar-laden chocolate stems from the complete absence of water. Any carryover of water into the chocolate would remove that impediment and allow for the potential of microbial contamination.

Historically, many *Kashrus* agencies had relied on *Halachic* opinions that permitted the Kosherization of chocolate systems by passing inherently Pareve chocolate through the system.<sup>50</sup> Although some organizations may continue to rely on this approach, most *Kashrus* agencies decline to rely on it.

There are other ways to address these concerns, and an analysis of the equipment used and the technical issues involved should illustrate the difficulties and possible solutions:

- **Initial mixer:** Chocolate liquor, powdered sugar, and lecithin are blended in a ribbon blender. The blender is typically heated by recirculating hot water, and requires Kosherization. This can typically be accomplished with a *Libun Kal*<sup>51</sup> utilizing a torch.
- **Refiners:** The particle size of the cocoa and sugar particles in the mixture is reduced by milling between stainless-steel rolling drums. This milling creates heat, necessitating the Kosherization of the rollers. Again, this may be accomplished with *Libun Kal*.
- **Conches:** Modern conches are large mixers designed to ensure the proper blending of fat and solids. Friction created during conching raises the temperature of the chocolate to temperatures above *Yad Soledes Bo*, thereby requiring a Kosherization. Due to their size, however, conches are *not* amenable to *Kashering* with *Libun Kal*, with the only remaining option being *Hag'olah* with hot water. Some companies have developed methods of allowing the introduction of water into these systems, relying on a thorough flushing of the system with cocoa butter to flush out all water residues.
- **Transfer lines:** In the final stages of conching, the chocolate is cooled to below *Yad Soledes Bo*. As such, transfer lines used to transport the chocolate need only be flushed with Kosher chocolate or cocoa butter to prepare them for Kosher use. The hot-water jacket used to maintain the temperature of the chocolate in the pipes is generally below *Yad Soledes Bo*.
- **Storage tanks:** After conching, the finished liquid chocolate must be stored in tanks. Although the chocolate is stored at temperatures below *Yad Soledes Bo*, the material typically remains in the tanks for over twenty-four hours, creating a concern of *Kavush*.<sup>52</sup> As such, such equipment must be *Kashered* with *Hag'olah*.

<sup>50</sup> See "The Story of Chocolate," in Chapter 17, for a full discussion of this issue.

<sup>51</sup> See Chapter 2, "Basic *Halachic* Concepts in *Kashrus*."

<sup>52</sup> See *Ibid*.

- **Tempering units:** To control the crystallization properties of chocolate, the material must be heated and cooled in a controlled manner prior to final packaging. Traditional tempering took place in a pot in which the chocolate was warmed and cooled, while modern units temper chocolate in a continuous fashion. While tempering takes place at temperatures below *Yad Soledes Bo*, care must be taken to ensure that chocolate does not remain in the unit undisturbed for twenty-four hours, which would create a concern of *Kavush*.
- **Molding and tableting systems:** Typically, the temperature of the chocolate in these systems is below *Yad Soledes Bo*, and no specific Kosherization, other than routine cleaning and/or flushing with chocolate or cocoa butter, would be required.

It is also significant to note that Kosherization from *Cholov Yisroel* to Pareve productions may allow for certain leniencies not available for Kosherization from non-Kosher or non-*Cholov Yisroel* productions.

### Recirculating Hot-Water Systems

Hot water of various temperatures is used throughout a chocolate-processing system to heat conches, warm transfer pipes, and maintain temperature in storage tanks. The easiest way to resolve potential issues relating to such systems is to ensure that the water is *Pagum*.

In addition to bars, chocolate is also processed into filled chocolates, as well as used as coatings. The production of Kosher-filled chocolates must address the ingredients used in fillings, as well as the Kosher status of the equipment used to prepare them.

Chocolate coatings may be applied by either panning or enrobing. Panning involves spraying liquid chocolate into a rotating pan containing items to be coated. Since the temperature of both the chocolate and the pan remain below *Yad Soledes Bo*, only a thorough cleaning of equipment is required for Kosher production.

An enrober allows for the continuous coating of products as they pass on a perforated conveyor through a spray of chocolate (or other coatings). The coating collects under the conveyor, and is recycled through a tempering unit to allow for a continuous supply to be sprayed on product. Both the chocolate and the equipment are typically below *Yad Soledes Bo*, in which case only a thorough cleaning would be required.<sup>53</sup> (Potential issues of *Kavush*, however, must be addressed.)

### **Marshmallows**

Traditional marshmallows are composed of an aerated blend of sugars and gelatin and coated with sugar. The availability of generally accepted Kosher gelatin<sup>54</sup> has historically been limited by both availability and price, and attempts to substitute pectin and other gelling agents have been less than successful. Recently, however, less expensive fish gelatin

<sup>53</sup> Despite the low temperature of the chocolate, the use of the same chocolate to coat Kosher and non-Kosher products is generally now accepted. Where non-Kosher products (such as marshmallows) are coated, all remaining chocolate should be drained from the system and the system refilled with fresh material for Kosher productions.

<sup>54</sup> See “The Story of Gelatin,” in Chapter 17, for a full discussion of *Halachic* approaches to gelatin derived from various non-Kosher sources. For practical purposes, however, the vast majority of reliable Kosher certifications accept only gelatin sources from Kosher fish or Kosher-processed beef hides.

has become more readily available, and Kosher marshmallow products are not relatively common, albeit as specialty items.

Virtually all Kosher marshmallows are produced in facilities normally used for non-Kosher production, necessitating the *Kashering* of the production system. Equipment may consist of mixers, cookers, and aerators, all of which must be *Kashered* with *Hag'olah*. Where a dextrose-molding system is employed (similar to starch molding), recycled dextrose must be replaced with fresh dextrose.

### ***Licorice and Sour Sticks***

Licorice-type products are produced by cooking dough composed of flour, starch, shortening, emulsifiers, sugar, and flavors. While the term licorice technically refers to candies flavored with the root of *Glycyrrhiza glabra*, chewy “licorice” of various flavors is now common. The process involves cooking the ingredients (typically in a steam-jacketed tank) and extruding the resulting mass into the desired shape. The finished pieces of candy are then dried, glazed, and packaged. A recent modification of licorice production has been the development of “sour sticks,” which are produced in the same fashion as traditional licorice, but with fruit flavoring and with the addition of a sour crystal coating to the finished product.

*Kashrus* concerns with these include the Kosher status of shortenings, emulsifiers, and flavors, as well as the potential need to Kosherize the cookers and the extruder. The extruder poses a particular Kosherization concern in that the licorice dough passes through it while quite hot, and there may be differing approaches as to the appropriate method of Kosherization. The use of wheat flour in licorice production may raise potential *Yoshon* concerns.

### ***Gum*<sup>55</sup>**

Both chewing and bubble gum contain ingredients that may pose significant Kosher concerns, including fats, emulsifiers, and flavorings. In addition, the gum base (typically handled as a separate production) may pose rather unique *Kashrus* concerns, which must be addressed for a Kosher gum production.

Gum base is composed of various types of rubber (both natural and synthetic), which is heated and blended with fats and emulsifiers. While natural rubber may be inherently Kosher, synthetic food-grade rubber is typically produced in facilities and on equipment common to industrial-grade material. The production of butadiene-styrene rubber involves the use of saponified fats, and industrial rubber generally utilizes the lowest grade (non-Kosher) fats for this purpose. As such, even where Kosher vegetable oil is used for a Kosher production, it may be necessary to *Kasher* the production system. Given the physical properties of rubber, however, this task may be daunting. Generally, Kosher synthetic rubber is approved only where the production system is dedicated to Kosher materials.

Gum base has many of the physical properties of rubber, making the requisite Kosherization of its production system difficult. Great care must be taken to clean the equipment for a Kosher production, and appropriate Kosherization techniques must be employed. All ingredients must also be reviewed and approved. The production of the finished gum involves

<sup>55</sup> See “The Story of Chewing Gum,” in Chapter 17, for a full discussion of this confection.



mixing gum base, sugar, flavorings, and glycerin and extruding it into the desired form. Equipment preparation involves the same cleaning and Kosherization steps as gum base, as well as ensures that all ingredients comply with Kosher requirements. Candy-coated gum is produced in a panning process, and does not involve heat. As such, panning equipment generally only requires a thorough cleaning.

### ***Powdered and Compressed Candies***

Powdered candies are dry blends of sugars, flavors, and colors, and the Kosher status of these products is a function of the Kosher status of those ingredients. Compressed candies are composed of similar powders compressed to form a tablet, and typically contain a type of stearate that acts as a binder and release agent, which must bear a reliable Kosher certification. The tableting process itself involves no significant heat, and Kosherization is generally not required.

# 16 The Snack Food Industry

## General Issues

While it may be easy to dismiss this industry as a mere footnote in the grand food-supply chain, some of the largest food companies—as well as some of the foremost Kosher products—are based on this segment of the food industry. It is important therefore, to analyze the various products involved and the methods utilized in their production to ensure a proper understanding of the Kosher requirements of this industry.

For the purpose of the analysis of Kosher production,<sup>1</sup> the snack food industry may be said to cover the following types of products:<sup>2</sup>

- Potato chips (natural and extruded)
- Puffed, extruded products
- Popcorn
- Pretzels
- Ground corn products
- Pita and bagel chips
- Granola and granola bars
- Nuts
- Fruit snacks (dried and extruded)

These productions may be divided into three categories, each requiring its own approach to Kosher certification. In many cases, such products can be produced as Kosher with minimal disruption, while, in others, significant accommodations must be made to ensure a reliably Kosher product. It would, therefore, be instructive to give an overview of each of these categories before delving into the details of various types of production.

- The first involves mainstream snacks, such as potato chips and pretzels, whose production can be adapted to Kosher requirements with minimal disruption in terms of both production and ingredients. Indeed, it is often possible for the same factory—and even the same production line—to be used interchangeably for both Kosher and non-Kosher production with minimal concern. For this reason, many major brand-name potato chip

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<sup>1</sup> Baked products and candies are discussed in their respective sections.

<sup>2</sup> Meat snacks, although popular in the non-Kosher market, are not yet a significant factor in the Kosher market. Mitigating against their becoming significant is the fact that they would be subject to all of the complications attendant to Kosher meat production (see Chapter 12, “The Meat and Poultry Industries”) and thus could never be produced as a conventional product for the broad market.

and pretzel companies in North America are able to maintain a Kosher status for many of their products.

- The second involves products, such as cheese snacks,<sup>3</sup> which may not be amenable to ongoing Kosher certification because the cost of Kosher ingredients required is not competitive. Such products may be produced on special production basis with ongoing supervision.
- The third involves special productions that qualify as *M'hadrin*<sup>4</sup>—hewing to special stringencies for a specific market. In most cases, distributing companies that cater to this market contract for special productions at companies that are not Kosher certified or that are certified under normative standards. Very few such companies actually produce the products sold under their label, nor are items they distribute produced in facilities that are dedicated to *M'hadrin* production.

Kosher production of snack foods must comply with all conventional *Kashrus* concerns of ingredients and equipment, and Passover productions are subject to the special requirements attendant that category of products.<sup>5</sup> Nonetheless, various categories of snack foods present specific *Kashrus* issues, and the purpose of this chapter is to review those issues and various approaches of dealing with them. Certain issues, however, are common to many categories of products, and will be dealt with as introduction of the subject.

## Bishul Akum

One basic *Kashrus* concern common to many cooked products is *Bishul Akum*,<sup>6</sup> and its application to snack foods must be dealt with in the course of any Kosher-certification program. Fortunately, most authorities concur that most “snacks” are, by definition, not considered “important” foods and therefore automatically exempt from this concern. Indeed, it is the normative standard to which most *Kashrus* organizations subscribe and a position that allows for the ongoing Kosher certification of much of the snack food industry in North America.

This general approach, however, is subject to two caveats. First, some snacks, such as French fries, are generally considered “foods” as opposed to “snacks” as regards *Bishul Akum* concerns, a factor that must be taken into account when designing a Kosher-certification program.<sup>7</sup> Second, *M'hadrin* certifications are typically more stringent in this matter and require a *Bishul Yisroel* standard for all snack products.<sup>8</sup>

<sup>3</sup> Cheese-flavored snacks, such as corn chips, are sometimes made as Kosher products, despite the increased cost of Kosher cheese. Several large seasoning companies have made special arrangements for Kosher cheese production for their needs, and the limited amount of actual cheese actually used in such seasonings may allow for their economical production.

<sup>4</sup> See Chapter 1, “Kosher Certification: Theory and Application,” for an explanation of this concept.

<sup>5</sup> See below, concerning snack foods containing *Kitniyos* derivatives and practical distinctions based on differing approaches in dealing with this issue.

<sup>6</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” as well as “The Story of *Bishul Akum*,” in Chapter 17, for a full discussion of this concept and its application.

<sup>7</sup> This concern does not extend to frozen French fries that are only partially fried, however (see “The Story of Potatoes” in Chapter 17).

<sup>8</sup> The exact application of *Bishul Yisroel* requirements in snack foods, however, may be more lenient than would be the case of nonsnack items.

## **Dairy versus Pareve**

From the marketing perspective, most manufacturers would prefer that products not inherently dairy (such as cheese snacks)<sup>9</sup> enjoy a Pareve status.<sup>10</sup> In many situations, however, considerations other than the status of ingredients may make it necessary to confer a Dairy (or Dairy Equipment)<sup>11</sup> status to otherwise potentially Pareve products. Examples of such situations may include:

- The equipment used to cook or heat the inherently Pareve items is also used to process dairy products. In such situations, the equipment may require a Kosherization<sup>12</sup> from dairy to Pareve productions, a process which may prove impractical.
- Hot water or steam may be recirculated between dairy and Pareve productions, which may potentially compromise the Pareve status of a product.<sup>13</sup>
- Even where no heat is involved, an acceptable Kosher cleanup may not be practical between dairy and Pareve productions.

## **Cholov Yisroel<sup>14</sup>**

A *Cholov Yisroel* (literally, “supervised milk”) status requires that all dairy ingredients be produced for specially supervised milk. Such a status is generally limited to *M’hadrin* productions, and is not applicable to snacks in the context of ongoing Kosher productions.

## **Yoshon<sup>15</sup>**

Although generally part of a discussion of baked products, the concept of *Yoshon* applies to any product containing a true “grain”—wheat, rye, oats, barley, and spelt. While most *Kashrus* organizations outside of Israel follow opinions that permit non-*Yoshon* products, it may be factor in certain markets, as well as in Israel. As such, pretzels, extruded wheat snacks, licorice, and granola must be produced from *Yoshon* products where there is a desire to meet this standard.

## **Potato Chips<sup>16</sup>**

Conventional potato chips are produced by frying freshly sliced potatoes in oil or shortening<sup>17</sup> in either a batch or continuous fryer. The chips may be cut in various thicknesses

<sup>9</sup> Some companies actually produce Pareve “cheese-flavored” snacks, both for Kosher concerns and to meet the requirements of those who must avoid dairy products.

<sup>10</sup> See Chapter 9, “The Dairy Industry,” for a discussion of a Dairy versus Pareve status.

<sup>11</sup> See Chapter 1, “Kosher Certification: Theory and Application,” for an explanation of the distinction between “Dairy” and “Dairy Equipment,” and the policies of *Kashrus* organization relating to the use of the “Dairy Equipment” designation.

<sup>12</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a full discussion of the requirements for Kosherization of equipment.

<sup>13</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a discussion of *Kashrus* issues relating to hot-water and steam utilities.

<sup>14</sup> See Chapter 9, “The Dairy Industry,” for a full discussion of this concept.

<sup>15</sup> See Chapter 7, “The Baking Industry,” for a description of this concept.

<sup>16</sup> See “The Story of Potatoes,” in Chapter 17, for a full discussion of *Kashrus* issues related to potato chips.

<sup>17</sup> Most potato chips produced in North America are fried in vegetable oil. Some specialty brands still hew to the traditional lard shortening that was commonplace when the product was invented. Indeed, a company

or shapes (rippled, for example), but these distinctions are insignificant from a *Kashrus* perspective.

### **Fryers**

Assuming the use of Kosher vegetable oil<sup>18</sup> and the Kosher status of the fryer, the frying process per se poses no *Kashrus* concerns. Where the fryer must be *Kashered* after being operated with non-Kosher oil, however, the following issues must be addressed:

- Continuous fryers heated by direct flame tend to develop significant amounts of burned material on the surface of the fire tubes that traverse the fryers. This contaminant must be cleaned before a *Hag'olah* can be performed.<sup>19</sup>
- Fryers heated with an external heat exchanger may be heated with either direct flame or high-pressure steam. In either case, care must be taken to ensure that no material remains on the inside surfaces of the heat exchanger, a situation that would preclude an efficacious *Hag'olah*.
- In virtually all fryer installations, the oil is constantly circulated through an external filtering system, which must be cleaned completely prior to Kosherization. Further, all oil-holding tanks—either fresh or partially used—must be Kosherized per the requirements of the supervising Rabbi.
- During the *Hag'olah* of the fryer itself, care must be taken that the boiling water fills the fryer completely, even if the oil level during processing is below the upper edge of the tank.
- Any belts that are used to transport the chips through the fryer must be clean and subjected to the boiling water of *Hag'olah*.
- Other areas that come into contact with hot product as it exits the fryer must be Kosherized as per the requirements of the supervising Rabbi.

### **Seasonings**

In most cases, the *Kashrus* concerns with potato chip production center around the seasonings added to the chips after frying (chips are virtually never seasoned prior to frying.) Most potato chip manufacturers produce a varied line of products from the same basic chip—differing only in the seasonings applied. Indeed, a manufacturer may produce Kosher Pareve, Kosher Dairy, and non-Kosher product on the same production line, provided that the following issues are adequately addressed:

- **Dry seasonings applied to hot chips:** In the case of salted chips, the salt may be sprinkled onto the hot chips immediately after they exit the fryer, which poses no *Kashrus* concern. Seasonings, however, are typically applied to the chips in a continuous tumbler, which

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called Utz Quality Foods produces both Kosher chips fried in vegetable oil and “Grandma Utz” chips fried in lard—in two separate facilities.

<sup>18</sup> See Chapter 13, “The Oils, Fats, and Emulsifier Industries,” for a discussion concerning the *Kashrus* issues related to vegetable oil.

<sup>19</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*,” for a discussion of the requirement for equipment to be clean prior to this Kosherization process.

may be located immediately after the fryer.<sup>20</sup> The *Kashrus* concern in such a case stems from the fact that the tumbler also becomes hot as it absorbs some of the heat from the chip,<sup>21</sup> assumes the same *Halachic* status as the seasonings, and would impart that status to any chips that would subsequently pass through it. For example, the use of a Kosher dairy seasoning under such conditions would cause the tumbler to be considered dairy, and all chips processed on it—even those using Pareve ingredients—would assume a Dairy (or Dairy Equipment) status. Similarly, the use of a non-Kosher seasoning would compromise the Kosher status of the tumbler and would preclude the Kosher certification of all chips produced on such a system.

In either case, the Kosherization of tumbler would resolve these issues. Such a Kosherization must first involve the thorough cleaning of all residues from the offending material, and may require a twenty-four-hour resting period prior to the actual Kosherization.<sup>22</sup> The Kosherization process itself may involve spraying the inside of the tumbler with boiling water and/or steaming it. Since, however, Kosherization would typically require Rabbinic supervision, such a program may prove difficult to implement on an ongoing basis.

- **Dry seasonings applied to cold chips:** In many cases, however, the chips are not seasoned as they leave the fryer, but travel for a period of time along a conveyor, or are stored in a hopper until ready to be seasoned. In such a case, the chips will have cooled to the point where they are considered *Halachically* “cold” and no longer capable to heating the seasoning equipment and compromising its Kosher status. While the tumbler used would therefore not require Kosherization after processing non-Kosher or dairy products, it would need to be thoroughly cleaned between Dairy and Pareve, or Kosher and non-Kosher, productions.

In all cases, the chip-handling system after the seasoning tumbler—belts, buckets, and filling systems—must be cleaned of all residues left from non-Kosher or dairy seasonings. This concern also applied to the hoppers that hold the seasonings and the internal applicator systems.

It is important to note that the names of seasonings may not be indicative of their Kosher status. Products such as “steak-flavored,” “bacon-flavored,” or “crab-flavored” chips may be Kosher, relying on artificial flavorings to mimic that of its non-Kosher moniker. On the other hand, flavors such as “Salt & Vinegar” are often formulated with lactose as diluents and are certified as Dairy.

### **Extruded Chips**

A relatively recent innovation in the potato-chip industry involves the development of chips produced from potato dough that is extruded into a uniform chip. These base potato material for these products (often referred to as Pringles® after the first such product developed) is a powder made from mashed potatoes and emulsifiers, which is then dried into a sheet

<sup>20</sup> Seasonings for hot and cold application are required for differing formulations to ensure proper adherence to the chip.

<sup>21</sup> The critical temperature at which *B'lios* may be transferred is normatively about 100°F (see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*”).

<sup>22</sup> For a detailed discussion of the requirements of Kosherization, see Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

and pulverized. This powder is then mixed with liquids and other ingredients, extruded into the designed shape, and then fried. The resulting chip is then sprinkled with seasoning and packaged. *Kashrus* concerns attendant to these products revolve around the Kosher status of the potato powder, the oil and other ingredients used in the manufacture of the chips, and the Kosher status of the seasoning and the equipment used to apply it.

## **Bishul Akum**

Although potatoes are nominally subject to the rules of *Bishul Akum*, most *Kashrus* organizations follow the opinion that potato chips are not an important food and thus exempt from this restriction.<sup>23</sup> In addition, while the potato flour used in the production of extruded chips is produced from cooked potatoes, it is also generally considered exempt from *Bishul Akum* concerns for other reasons.<sup>24</sup> *M'hadrin* certifications, however, typically do require a *Bishul Yisroel* status for both types of products.<sup>25</sup>

## **Passover**

Potatoes are a staple product for Passover, and potato chips are well positioned for Kosher for Passover production. Passover concerns may be found, however, regarding the following issues:

- **Oils:** The vegetable oil commonly used in the production of potato chips is soy, corn, or canola, all of which are generally considered *Kitniyos* and unsuitable for Passover productions. Most *Kashrus* organizations accept cottonseed oil for Passover use, and this is the most commonly used oil for Passover productions. Generally, Kosherization of a fryer that normally uses *Kitniyos* oils is not required for a Passover production, provided that it is cleaned adequately.

Many *M'hadrin* certifications, however, do not accept cottonseed oil for Passover use<sup>26</sup> and require the use of palm, coconut, or walnut oil. In general, however, they will also not require the Kosherization of the fryer from *Kitniyos* oils.

- **Seasonings:** Although pure spices may be inherently Kosher for Passover, potato-chip seasonings often contain yeast extracts and other ingredients that may be *Chometz* and corn derivatives (dextrose and maltodextrose, for example) that are *Kitniyos*. As such, seasonings for these productions must be specially formulated for Passover and all seasoning and product-handling equipment carefully cleaned and *Kashered*, if necessary.

## **French Fries as a Snack Food**

French fries are a staple in fast-food eateries, and may be considered a snack in that regard. Any *Kashrus* concerns regarding products served in such a venue are subsumed into the

<sup>23</sup> See Chapter 2, “Basic *Halachic* Concepts in *Kashrus*.”

<sup>24</sup> See “The Story of Potatoes” in Chapter 17.

<sup>25</sup> Although *Bishul Akum* would normatively require Kosherization of the equipment prior to Kosher production, virtually all certifications, even when requiring *Bishul Yisroel* for the product, do not require Kosherization of the equipment in this case.

<sup>26</sup> See “The Story of *Kitniyos*” in Chapter 17.

general Kosher program of the restaurant. An increasingly popular variation of this theme, however, is the sale of French fries as a stand-alone snack, and several *Kashrus* issues should be noted in this regard. First, concerns of *Bishul Akum* do apply to such products (although the partial frying used to prepare frozen French fries may be of no *Halachic* significance). Second, some manufacturers of French fries use “tallow-flavored” vegetable oil, which may contain non-Kosher beef tallow.<sup>27</sup>

## Pretzels

Hard pretzels are typically produced from flour,<sup>28</sup> leavening (yeast and chemical leavens), sugar, flavorings, and shortening, which are then subject to an alkaline bath and then salted and baked. The following *Kashrus* issues should be noted:

- The Kosher status of all ingredients, including flavors, must be verified. This is of particular concern with “butter-flavored” pretzels in that their production could compromise the inherently Pareve status of unflavored pretzels produced on the same line.
- Passover certification is not feasible for pretzels in that they are quintessentially *Chometz*. In addition, Jewish production or ownership of *Chometz* is not allowed during Passover.<sup>29</sup>
- In the case of a Jewish-owned manufacturer, provisions for the separation of *Challah* must be implemented.<sup>30</sup>

Pretzels may also be flavored after they have been baked, typically by passing them through a flavoring tumbler. Due to the inherent dryness of the pretzels, seasonings are applied in an oil emulsion to ensure adhesion to the product. This process raises the following concerns where products of differing Kosher statuses (Pareve, Dairy, or non-Kosher) are handled:

- Should the oil be heated to over 110°F, it would nominally require a Kosherization when changing from non-Kosher to Kosher or Dairy to Pareve production.
- The tumbler must be thoroughly cleaned when changing between these productions. In situations where the temperature of the tumbler itself is above 110°F, it would also require a Kosherization.

## Extruded Puffed Products

Puffed snacks, such as “cheese curls” or “onion rings,” are produced from an unflavored corn or potato dough subjected to high-pressure extrusion, which puffs as it leaves the extruder and then air-dried. Since the base material contains no flavorings, the extruder and

<sup>27</sup> As a case in point, the McDonald’s Corporation had historically used a blend of vegetable oil and tallow to achieve a special flavor in its signature fries. When it decided to change to pure vegetable oil, it was able to maintain this flavor with the addition of a tallow-based non-Kosher flavor. It failed, however, to give appropriate notice that its “vegetable” oil was not animal free, which occasioned legal action against the company by aggrieved consumers who eschewed the use of beef products for religious reasons.

<sup>28</sup> Since pretzels are generally made from wheat flour and baked, they qualify as “bread” and thus subject to the rules of *Pas Palter* as opposed to *Bishul Akum*.

<sup>29</sup> See Chapter 5, “Kosher for Passover.”

<sup>30</sup> See Chapter 7, “The Baking Industry.”



drying equipment typically pose few *Kashrus* concerns. Similar to pretzels, however, the dryness of the product requires that flavorings are added to the product in a flavoring tumbler together with oil,<sup>31</sup> entailing *Kashrus* issues similar to those involving flavored pretzels. While puffed corn products are considered *Kitniyos* and unsuitable for Passover use, puffed potato products may be produced for Passover, provided that the potato flour is so certified. *M'hadrin* productions of puffed potato products typically require the use of potato flour produced as *Bishul Yisroel*.

## Rice Cakes

Rice cakes are produced by heating rice, sometimes mixed with other grains, in a mold, causing them to puff and expand. Salt or other powdered flavorings may be sprinkled onto the cake after puffing, relying on the residual moisture of the cake to create sufficient adhesion. Alternatively, a flavored oil emulsion may be sprayed on it. In either case, the rice cakes must pass through an air dryer to reduce their moisture content. Since the dryer operates at elevated temperatures, their Kosher status would be affected with any non-Kosher or dairy flavors added to the cakes prior to drying.

## Popcorn

Oil-popped popcorn requires verification of the Kosher status of the oil used, which may also contain non-Kosher flavorings. Air-dried popcorn poses no *Kashrus* concerns per se. However, the absence of oil on its surface makes it difficult for salt or other spices to adhere to the product. As such, it is often sprayed with a flavoring and coloring emulsion that may contain butter, cheese, and other flavors, all of which require reliable Kosher certification. In situations where these flavors are applied in a hot tumbler, the Kosher status of the tumbler will be affected by the status of these flavors.

Microwavable popcorn is produced by packaging popcorn kernels, hardened oil, and flavorings in a pouch designed to be heated in a microwave. Typically, a warmed oil slurry is prepared, containing the various flavorings (salt, butter flavor, and cheese powder), which is injected into the pouch. *Kashrus* concerns with this product involve the Kosher status of the butter flavor<sup>32</sup> and the cheese powder. In addition, the equipment used to heat the oil slurry assumes the status of the ingredients heated, such that the use of the non-Kosher cheese powder would render the equipment unsuitable for Kosher production (and dairy butter flavor would render it unsuitable for Pareve production) without appropriate Kosherization.

Caramel corn is produced by coating popped corn kernels with a sugary syrup. Often, this syrup contains butter or other dairy ingredients, which would occasion a Dairy designation.

## Corn and Tortilla Chips

Both of these products are produced from corn dough (*masa*) that is extruded into various shapes and fried, either in batches or on a continuous frying system. The *masa* itself is invariably unflavored and is composed of ground corn<sup>33</sup> and water. However, *Kashrus*

<sup>31</sup> Unflavored oil may be sprayed onto the product, after which it is dusted with powder flavor, or a flavored emulsion is created and sprayed onto the product.

<sup>32</sup> Often, the “butter” flavor is Dairy, and such “buttery popcorn” may, indeed, be certified as Pareve.

<sup>33</sup> The corn is first steeped in a lye solution, a process called nixamalization, which allows the grain to be ground effectively and also releases tryptophan, a niacin precursor.

concerns may be manifest with the seasoning system, since corn chips are often seasoned immediately as they exit the fryer while still hot (see above, concerning hot tumblers used for potato chips). This is of particular concern due to popularity of corn nachos that include non-Kosher cheese and would tend to compromise the Kosher status of the tumbler in such circumstances. Generally, it is only possible to certify corn chips produced on a line dedicated to Kosher production.

### Pita and Bagel Chips

Both of these products are produced by cutting the base material (pita bread or bagels)<sup>34</sup> into small pieces and coating them with oil and flavorings. Although traditionally made by frying the baked slices and then seasoning them, most commercial manufacturing involves passing them through a tumbler similar to that used to flavor pretzels (discussed above). *Kashrus* issues are essentially the same as those related to seasoned pretzel.<sup>35</sup>

### Granola and Granola Bars

Granola is a mixture of rolled oats, whole grains, seeds, spices, sugar syrup and/or honey, and nuts and is often extruded into a bar. Production of most granola bars involves no heat, other than heating the syrup. Basic granola poses few *Kashrus* concerns.<sup>36</sup> However, the use of dairy components (such as dairy chocolate chips) or non-Kosher marshmallows would compromise the otherwise Pareve or Kosher status of the product.

An additional concern involves the heated syrup that is mixed into the grain mixture. This syrup is typically quite hot, and the resulting mixture may be above *Yad Soledes Bo*. As such, the status of blending and extruding systems may be compromised by processing dairy or non-Kosher product. As long as the temperature of the extrusion equipment does not exceed 110°F, however, Pareve, Dairy and non-Kosher products may be produced on the same equipment, subject to a thorough cleaning after non-Kosher production.

Some versions of granola bars are dipped in a coating after extrusion. Typically, this takes place as the bars pass through an enrober, where liquid coating—chocolate, yogurt, carob, and so on—is poured over them. Often, the temperature of the enrobing material is below 110°F, which may allow the same enrober to be used for both Kosher and non-Kosher productions, provided the enrober is emptied of residual coating and cleaned after non-Kosher productions.

### Nuts<sup>37</sup>

“Nuts” eaten as snacks comprise two categories—tree nuts and ground nuts. Although ground nuts (peanuts and soy nuts) are technically legumes, they are traditionally considered nuts from a marketing perspective. Most tree nuts (hazelnuts, walnuts, pecans, and so on)

<sup>34</sup> Although the default *B'rachah* of slices of bread (including pita and bagels) is *ha'Motzei*, when baked for the specific purpose of being dried and flavored, the appropriate *B'rachah* is *M'zonos*.

<sup>35</sup> The appropriate *B'rachah*, however, may depend on the shape of the bagels and purpose for which they were baked, the size of the pieces, and whether they are fried or merely seasoned with flavored oil.

<sup>36</sup> The appropriate *B'rachah*, however, may depend on whether the grains are mixed into dough and baked or are merely compressed whole grains.

<sup>37</sup> Enrobed and candied nuts are dealt with in Chapter 15, “The Candy and Confection Industries.”

may be eaten raw, while soy nuts must be heated to enable proper human digestion.<sup>38</sup> Both categories, however, are traditionally processed with heat to improve flavor and stability. The method by which nuts are heated is traditionally referred to as “roasting,” although the term “frying” may be a more accurate description where the nuts are “oil roasted.” “Dry roasting” refers to the process by which nuts are heated with hot air.

Nut processing involves the following *Kashrus* concerns:

- **Oil-roasted nuts:** Standard vegetable oils are generally used to roast nuts (not “nut oil,” such as walnut oil). Oil roasting enhances certain flavors in the nuts, as well as provides a medium for the adhesion of salt and other powdered flavors. The Kosher status of the oil, as well as any seasonings added, must be verified for Kosher production.
- **Honey-roasted nuts:** The sweetness of “honey-roasted” nuts derives from the sugary coating applied to them prior to roasting in oil. Where lactose is used as binder of these sweeteners, the resulting product must be classified as Dairy. Furthermore, the use of lactose affects both the oil and the roasting equipment, and any inherently Pareve nuts roasted in this equipment would also be considered Dairy. Many Kosher manufacturers use a maltodextrin-based sugar coating to ensure the Pareve status of both the honey-roasted product and other items produced on the same equipment.
- **Buttered pecans:** While butter is generally not added to the frying oil itself, its use may nevertheless compromise the erstwhile Pareve status of the pecans. Often, melted butter is poured onto the nuts immediately on their removal from the roaster. Such a procedure may compromise the Pareve status of the baskets holding the hot nuts, which may then not be reused in a Pareve fryer. In addition, the melted butter may drip back into the fryer itself. Care must therefore be exercised to ensure that melted butter does not compromise any Pareve equipment.
- **Dry roasting:** Roasting nutmeats with hot air, as opposed to oil, reduces their caloric content, as well as allows for different flavors and physical properties. The absence of an oil coating, however, makes it more difficult for salt and spices to adhere to the surface of the nut. To address this issue, some companies use gelatin as a binder, which allows the salt and spices to bond to the nut as it is roasted. Since gelatin is generally considered a non-Kosher product,<sup>39</sup> products containing this ingredient are generally not considered Kosher. In addition, the use of gelatin in the dry roaster precludes certification of other dry-roasted items that do not contain gelatin.<sup>40</sup>
- **Roasted in the shell:** Some nuts, such as pistachios, are dry-roasted in the shell, and generally pose no *Kashrus* concern. (The red coloring is invariably synthetic and Kosher.<sup>41</sup>) Peanuts may also be dry-roasted in the shell, either plain or salted (by soaking those pods

<sup>38</sup> It is generally assumed that neither category poses a concern of *Bishul Akum*. Most tree nuts are often sold as raw products, and even cashews (which are always roasted) are edible in an uncooked state. Although peanuts are virtually always sold in a roasted state, they are edible as a raw product. Soy nuts, although inedible without cooking, are not considered an important food (see “The Story of *Bishul Akum*,” in Chapter 17, for an explanation of the criteria for *Bishul Akum*).

<sup>39</sup> See “The Story of Gelatin,” in Chapter 17, for a full discussion of this issue.

<sup>40</sup> Some major nut manufacturers bear a generally accepted major Kosher certification on most of their products, while only a “K” on their dry-roasted items. This dichotomy is based on the fact that their oil-roasted products do not contain gelatin, whereas their dry-roasted products either contain gelatin or are produced on equipment used for gelatin-based production.

<sup>41</sup> See “The Story of Nuts,” in Chapter 17, for a further information regarding pistachios.

in brine before roasting). These products, too, are generally considered free of Kosher concerns.

- **Passover:** Historically, tree nuts<sup>42</sup> have been a staple of the Passover diet. Nuts in the shell, as well as *untreated*<sup>43</sup> raw nuts, are acceptable for Passover use. Roasted nuts require special Passover certification to ensure that the oils in which they are roasted, as well as any seasoning applied, are acceptable for Passover.

## Dried Fruit

A staple, if not staid, snack since Biblical times, dried fruit has enjoyed resurgence in popularity as a natural and nutritious snack. Much fruit-snack “production” is actually the blending of various dried fruits, often times together with nuts, candies, and other snack items. *Kashrus* issues relating to the *equipment* used for such purposes are generally limited to ensuring the cleanliness of equipment vis-à-vis non-Kosher and/or Dairy productions. The Kosher status of the fruit itself, however, is subject to the following considerations:

- **Banana chips:** Virtually unique in the dried-fruit industry, banana chips are traditionally dried through *frying* in oil. As such, a reliable Kosher certification is required. Many organic banana chips, however, are air-dried and pose no significant *Kashrus* concerns.
- **Apple chips:** Although air-dried, release agents may be applied to the surface of the drying system and a reliable Kosher certification is therefore required. In addition, the use of flavorings would require Kosher verification.
- **Mango, pineapple, and papaya:** These fruits are often infused with flavorings, necessitating a Kosher certification.
- **Apricots, peaches, and pears:** Although generally free of insect infestation or added flavors (flavored product would be declared as such), they may be coated with rice flour (or similar material) to prevent pieces from sticking together. This process is of concern only for product to be certified for Passover use.<sup>44</sup>
- **Dates and figs:** These fruits may be subject to insect infestation, and should be checked prior to use. In addition, chopped dates are commonly coated with oat flour, which would prelude their use for Passover. Dates and figs may also be imported from Israel, which would raise *Kashrus* concerns specific to Israeli produce.<sup>45</sup>
- **Raisins:** Oil is sometimes added to raisins to prevent sticking. However, virtually all U.S. domestic raisin producers use Kosher oil, and nonoiled raisins from other parts of world pose no *Kashrus* concern.
- **Prunes:** These dried plums pose no *Kashrus* concerns, unless flavored.
- **Cherries, blueberries, and cranberries:** Flavorings, sweeteners, and oils may be added to these otherwise tart fruits, and a Kosher certification is required.

<sup>42</sup> The acceptability of peanuts for Passover use is the subject of much discussion as to whether they are included in the *Ashkenazic* custom of abstaining from *Kitniyos*. *S'phardic* Jews, however, who do not subscribe to this custom, accept peanuts for Passover use (see “The Story of *Kitniyos*,” in Chapter 17, for a full discussion of this issue).

<sup>43</sup> Antioxidants (such as BHA and BHT) may be added to fresh nutmeats as a preservative, and these chemicals may be suspended in non-Passover oils, such as corn oil.

<sup>44</sup> Indeed, *Rav Moshe Iserles (Rema, O.C.467:8)* notes the custom to refrain from using any dried fruit due to this concern. Today, most authorities have concluded that modern supervisory systems can adequately guard against such contamination.

<sup>45</sup> See Chapter 6, “Fruit and Vegetables,” for a full discussion of these concerns.

- **Blackberries and raspberries:** In addition to the possible use of oils and sweeteners, these fruits are subject to a serious concern of insect infestation and therefore require a reliable Kosher certification.

Fruit leather is produced by grinding fruit into a paste, adding flavorings and/or other fruit juices, and then extruding and drying the resulting mass. Fruit snacks are produced in a similar manner, but the fruit slurry is injected into starch molds, similar to the process used in the manufacture of starch-molded candy.<sup>46</sup> These products raise significant *Kashrus* concerns based on the Kosher status of the raw materials, since all flavors, colors, and fruit juice concentrates must bear a Kosher certification. Of greatest concern, however, is grape juice, commonly used to sweeten and flavor these products and which is subject to special Kosher requirements.<sup>47</sup> Given the cost and limited availability of Kosher grape juice, many producers of fruit leather have elected to decline Kosher certification for these products.

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<sup>46</sup> See Chapter 15, “The Candy and Confections Industries,” for a discussion of issues relating to starch-molding systems.

<sup>47</sup> See Chapter 6, “Fruit and Vegetables,” in the section “Wine and Grape Juice—*S'tam yaynam*” for a full discussion of *Kashrus* issues related to grape juice.

# 17 Essays in *Kashrus* and Food Science

## Introduction

From the time of creation, humankind has endeavored to modify the foods it eats. Such improvements had multiple purposes. They were geared toward making potential food-stuffs edible, preserving perishable foods, and enhancing their taste. Often, these purposes complemented one another. In addition, foods available in differing areas of the world required processing techniques appropriate to their respective produce. Altogether, these factors have contributed to the multiplicity of foods that make up our diet. Wherever the Jewish people lived, the rules of *Kashrus* governed the types of foods and the methods of preparation permitted to them. Kosher law was therefore intimately intertwined with the processing of local foods, and the Rabbis whose responsibility it was to ensure the Kosher status of the food consumed in their communities were required to be knowledgeable of the foods and their methods of processing. The local Rabbi was, perforce, a local food technologist in addition to being an expert in Kosher law. Modern advances in food-processing technology have created vast changes in the types of foods available in the Kosher market, as well as the methods of their processing. National and regional boundaries relating to foods have all but disappeared,

and some traditional methods of preparation have been superseded by technology not even contemplated fifty years ago. To ensure the ongoing Kosher status of the cornucopia of foods with which we are blessed, *Kashrus* authorities must therefore keep abreast of these changes in the food industry.

The following articles, originally written as a resource for those involved in Kosher certification, seek to delve into the nature of specific food industries and the *Kashrus* challenges they pose. They follow the historical development of the industry from both a practical and *Halachic* perspective, providing information of interest to both the food technologist and the *Kashrus* professional. The subject matter is often introduced based on a Jewish allegorical commentary and then proceeds to weave a mosaic of Jewish law, thought, and practical Kosher applications in the context of modern food technology. Some of the topics covered, such as those relating to the appropriate *B'rachah* (blessing) that must be recited before eating a particular food, may be of only passing interest to a food technologist. However, the totality of the information contained offers the reader a unique opportunity to view the food industry “through the eyes of the Rabbi” and provides a broad understanding of the concerns with which Kosher certification must deal.

## The Story of *Bishul Akum*

וכשר הדבר לפני המלך  
אסתר ח' ה'

### And It Is *Kosher* Before the King

*Esther* 8:5

Some of the *Kashrus* terms we use in everyday parlance have evolved far from their original meanings. Everyone knows that when we say something is “*Treif*” we mean that it is “not Kosher”—or do we? The Hebrew word “*T'reifah*” actually means “torn” and refers to animals that suffer from certain types of physical trauma. Animals that are *Treif* are indeed not Kosher, but using the word *Treif* as a universal sobriquet for “non-Kosher” is not terribly appropriate, say, when referring to non-Kosher wine. Such anomalous terminology similarly extends to the other end of the spectrum, where we typically use the word “*Glatt*” to signify that the *Kashrus* of a food is beyond reproach. Technically, however, “*Glatt*” refers to the smoothness of an animal’s lung, which is a confirmation that the animal is not a *T'reifah*. Indeed, we would be hard pressed to apply the literal meaning of “*Glatt*” to other Kosher products. Nonetheless, in both cases we use the terms as paradigms for the general Kosher status of food.

What we may not realize, however, is that this literary license extends to the word “*Kosher*” itself. Although the *Torah* is replete with *Mitzvos* prescribing which foods are permitted and which are forbidden, it *never* uses the word “*Kosher*” for this purpose! Rather, words such as *Assur*, *Tamey*, and *To'ayva* indicate a prohibited status, and *Ta'hor* indicates that a food is permitted. The sole occurrence of the “*Kasher*” in *TaNach* is in the Book of *Esther*, where

it refers to the appropriateness of *Esther*’s plea before the king—not to “*Kosher*” food. Nevertheless, the meaning of *Kasher*—“fit” or “appropriate”—was accepted by *Chaza"l* to indicate a “valid situation” in virtually all aspects of *Halacha*, such as a “*Kosher*” *Get*, a “*Kosher*” *Cohen*, or a “*Kosher*” *Korban*. In that sense, “*Kosher*” food means “valid” food, in that it meets *Halachic* requirements to permit its consumption.

In one *Halachic* application, however, the word “*Kosher*” may actually hearken back somewhat to its Biblical source, albeit with a strange twist. The *Mishnah* in *Avodah Zarah* (II:6) lists several *G'zeiros* (edicts) that were instituted by the *Chachomim* to limit the social interaction between the Jews and the pagans. Among them was *Bishul Akum*, a rule that prohibited the consumption of certain types of foods that were cooked by non-Jews. As we shall see, *Bishul Akum* applies *only* to foods that are “*Kosher* before the king”—although, ironically, that may well mean that they are *Treif* and not Kosher!

The basic concept behind the rule of *Bishul Akum* is that any “significant” cooking done by a non-Jew renders food non-Kosher—even if all of the ingredients are otherwise acceptable. (*Halachic* authorities differ as to the *Bishul Akum* status of foods cooked by nonreligious Jews. Although many are stringent in the matter, leniencies may be appropriate in certain situations, and a reliable *Posek* should be consulted in any given situation.) In determining what constitutes “significant cooking,” many factors are

taken into account, such as the type of food, the cooking process used, and the manner in which it is prepared.

### **Foods That Require Cooking**

As regards the types of foods subject to *Bishul Akum*, the *Shulchan Aruch* (Y.D. 113:1), based on the *Talmud* (ibid., 38a), lays down two requirements: (1) the food is not edible unless cooked—*Aino Ne'echal K'mo She'hu Chai*, and (2) it must be “*Oleh al Shulchan M'lachim*”—“fit for a king’s table.” Unless a food meets *both* of these requirements, it may be cooked by a non-Jew without compromising its Kosher status.

The first rule can be illustrated with applesauce, which is not subject to the rule of *Bishul Akum* because apples are *readily* eaten raw. Foods such as meat and eggs, on the other hand, must generally be cooked before they can be eaten. Some people, of course, may like to eat “steak tartare”—raw hamburger—while others may enjoy raw eggs. However, since most people in our country do not eat such uncooked foods, they are considered inedible unless cooked and are thus subject to the rules of *Bishul Akum*. The determination of what is and what is not edible in its raw state, however, depends on the country where it is eaten and its culinary habits. In Japan, for instance, *sashimi*—raw fish—is considered a delicacy, and someone living in Japan might therefore justifiably conclude that fish is not subject to *Bishul Akum* concerns. In most Western countries, however, gastronomic norms have historically dictated that fish be processed through cooking, salting, or smoking before eating, and fish has therefore traditionally been considered subject to the rules of *Bishul Akum*.

Tastes and customs change, however, and the culinary global village may indeed have *Halachic* ramifications. Any wedding or Bar Mitzvah smorgasbord worth its salt (or *shokuen*, in Japanese) features *sushi* and *sashimi*—*sushi* being the rice and *sashimi*

being the raw fish. Clearly, the avid consumption of raw fish is no longer limited to far away islands, and the eating of raw fish may become sufficiently commonplace in Western countries for *Halacha* to consider fish exempt from *Bishul Akum* concerns.

Another interesting application of the concept of *Ne'echal K'mo She'hu Chai* involves coffee and tea. Such beverages obviously require cooking and are quintessentially *Oleh al Shulchan M'lachim*, so they would seemingly be subject to *Bishul Akum* concerns. Nonetheless, most authorities cite the opinion of *Tosefos* (*Avodah Zarah* 31b “*V'tarvayu*”), who note that although beer is produced by boiling barley, it is nonetheless primarily water—regarding both the appropriate *B'rachah* (*she'Hakol*) and *Bishul Akum* concerns. Since water is clearly something that does not require cooking, beverages based on it, such as beer (and coffee and tea), are exempt from *Bishul Akum* concerns.

### **Reheating and Partially Cooked Foods**

Foods that have been previously cooked by a Jew may also be reheated by a non-Jew without creating a *Bishul Akum* concern, since they were already edible when they were reheated. This is also true even where it had only been partially cooked by a Jew, provided that it was considered edible at that point (about one-third cooked—*k'Ma'achal ben D'rusai*). For this reason, there is no concern with prepared meals that are heated up on an airline or in a hospital, since the food had been thoroughly cooked by the Kosher manufacturer.

If a food becomes forbidden because it was cooked by a non-Jew, however, it may not be rendered Kosher by having a Jew reheat it. According to the *Shulchan Aruch*, this rule applies once it had been cooked by the non-Jew to the point where it is edible (*k'Ma'achal ben D'rusai*). The *Rama*,



however, rules that as long as the food had not been *completely* cooked by the non-Jew—even if this was mostly cooked—the final cooking by a Jew would allow the food to be considered Kosher. Even the *Rama*, however, agrees that merely heating up a completely cooked cold food would not be considered “finishing” the cooking.

### **Oleh al Shulchan M'lachim—Fit for a Royal Table**

The second major requirement for cooking to be considered significant is that the food itself must be *important*, the criteria being that it is “*Oleh al Shulchan M'lachim*”—literally, fit for a king’s table. In practice, this has been taken to mean any food that would be served at an important banquet, such as a state dinner or a wedding. In determining which foods fit into this category, one must take into account the culinary mores of the locale—and time—in question. For example, when potatoes were first introduced to Europe, they were considered “peasant food” and woefully inappropriate to be served to the upper crust. As such, the *Aruch ha'Shulchan* (113:18) ruled that they were not subject to the rules of *Bishul Akum*, even though they were not edible raw. The *Chochmas Adam* (66:4), on the other hand, felt that potatoes were quite a fine food, and did not allow for this exception. Today, potatoes figure prominently in virtually every opulent meal, and most certainly would be considered “*Oleh al Shulchan M'lachim*.”

Another consideration in determining the importance of a food for purposes of *Bishul Akum* is the *manner* in which it is produced. The same food may be prepared as an important dish or as a snack. For example, *roasted* potatoes may be served as part of a main course, but potato *chips* would hardly be appropriate. Some authorities have ruled that this distinction is not significant as regards *Bishul Akum*, and as long as a particular *type* of food is important, the manner

in which it is prepared is irrelevant. Others, however, look to both the type of food *and* the manner in which it is prepared. Indeed, most Kosher potato chips are certified without concerns of *Bishul Akum*, since chips are not considered *Oleh al Shulchan M'lachim*. Similarly, breakfast cereals—although composed of ingredients that may otherwise be part of an important dish—are nevertheless not considered important in this context.

### **Smoking, Salting, and Pickling**

When establishing the rule of *Bishul Akum*, *Chaza"l* limited it to standard “cooking.” Other means of food preparation, such as smoking, salting, and pickling, were not considered significant enough to be included. As such, herring and other pickled fish pose no *Bishul Akum* concerns. Although “smoked” foods should be similarly exempt, not all “smoking” processes are created equal. Traditional smoking involved suspending a food, such as meat or fish, in a smokehouse, in which a smoky fire was lit. The low heat from the fire combines with the chemicals in the smoke to both preserve and flavor the food—and it was this traditional smoking process that is exempt from *Bishul Akum* concerns. In many modern “smoking” processes, however, the food is actually baked in an oven and only a small amount of smoke is added (often at the end of the baking processes) for flavor. Smoked products processed in this manner are considered subject to the rules of *Bishul Akum*.

### **Steaming and Microwaving**

An interesting extension of the rule of smoking involves “steaming.” Although steaming clearly involves a significant amount of heat, some *Poskim* nevertheless have ruled that live steam can be *Halachically* equivalent to smoking as regards *Bishul Akum*. This approach has important *Halachic* implications in the processing of many types of

food, including tuna fish and mashed potatoes, where many *Hashgachos* rely on this approach to obviate *Bishul Akum* concerns.

Technology, of course, is always changing, and the most modern method of cooking—microwaving—has been the subject of some discussion regarding *Bishul Akum*. In *Halacha*, we generally associate cooking with fire, which includes any form of combustion or *radiant* electric heat. There have, of course, historically been other means of cooking, such as heating foods in the sun or with *Cha'mei T'verya* (hot-water springs). Such alternative heat sources, however, are not considered “cooking” in *Halacha*—either in regards to *Hilchos Shabbos* or in regards to *Bishul Akum* (although there is some question as to whether they would be considered *Bishul* as regards the prohibition of *Ba'sar b'Cholov*). The *Halachic* status of microwaving, however, is less clear. Although Rav Moshe Feinstein *z"l* (*Igros Moshe O.C.* III:52) considers microwaving to be *Bishul* (cooking) for purposes of *Hilchos Shabbos*, some contemporary authorities have ruled that microwaving does not create a problem for *Bishul Akum*. A competent *Halachic* authority should therefore be consulted in situations where non-Jews use a microwave to prepare *raw* Kosher food. Everyone agrees, however, that merely reheating cooked food in a microwave—or foods that are not *Oleh al Shulchan M'lachim* (for example, microwave popcorn)—poses no *Halachic* concern.

### **Jewish Participation in Cooking**

In many situations, such as restaurants, factories, and hospitals, cooking by non-Jewish chefs and cooks is virtually indispensable. The requirements of *Bishul Akum*, however, do not necessarily preclude such culinary contributions. As noted earlier, food that had been only partially cooked by a non-Jew would nonetheless be Kosher if a Jew finished the cooking (the level of the initial

cooking permitted in such a situation being dependent on the differing opinions of the *Shulchan Aruch* and the *Rama*). A Jew could therefore stir a pot of food that had previously been placed on the fire by a non-Jew, or he could raise the temperature of an oven containing such food. Alternatively, the Jew could *begin* the cooking process by placing the food on the flame or in the oven, after which the non-Jew could adjust the flame or otherwise assist in the cooking of the food. In either case, the food would remain Kosher. According to the *Rav Yosef Karo*, only these solutions resolve *Bishul Akum* concerns and *S'phardim*, who follow his rulings, and require such rigorous involvement of the *Mashgiach* in Kosher restaurants and other Kosher cooking venues and factories.

*Ashkenazim*, however, follow the ruling of the *Rama*, who extends the concept of allowing a Jew to *begin* the cooking to merely *lighting the flame* (or turning on the electric burner), even if no actual cooking takes place at that time. According to the *Rama*, a Jew could turn on the flames of a stove or oven in the beginning of the day, after which non-Jews could cook with such heat sources without impediment. Indeed, this approach considers the flame lit by a Jew to be free of *Bishul Akum* concerns for a number of days as long as the flame continues to burn. This is true even if a non-Jew adjusts the flame—making it either higher or lower—provided it is not extinguished. Applying this approach of the *Rama*, *Bishul Akum* concerns in a restaurant can be resolved by having the *Mashgiach* turn on the ovens, stoves, and other cooking equipment in the kitchen at the beginning of the day and monitor that the equipment is not turned off.

Some authorities extend this ruling of the *Rama* to permit a non-Jew to light a cooking fire from a small fire that had previously been lit by a Jew. As such, if the pilot light on a gas stove or oven were lit by a Jew, a non-Jew would be permitted to extinguish and relight the cooking flame without creating a *Bishul*

*Akum* concern, since the ultimate source of the flame was *Aisho shel Yisroel*—the fire of a Jew. This leniency would obviously not apply to electric stoves or to gas stoves that utilize electronic sparking systems to light the flame. In addition, one must ensure that the pilot itself remains lit at all times and that only a Jew is able to relight it. (Some authorities also question continued reliance on a pilot light that had been lit by a Jew many days earlier.)

The *Rama* further extends this ruling to allowing a Jew merely to *contribute* to an existing flame that had been previously lit by a non-Jew. As such, a Jew may raise the level of an existing flame in a stove or boiler, even for a short period, after which the fire will also be considered *Aisho shel Yisroel*. Based on this approach, factories are able to produce Kosher products without *Bishul Akum* concerns, provided the *Mashgiach* adjusts the heat in the production system and ensures that it is not subsequently extinguished. Furthermore, an oven that had been heated with such Jewish involvement remains free of *Bishul Akum* concerns even if the flame had been turned off for a period of time, provided the oven remains hot. (Some contemporary authorities have extended this approach to allow for any small heating element lit by a Jew—even a lightbulb—to be considered *Aisho shel Yisroel*. As such, an oven light that is turned on by a Jew would resolve *Bishul Akum* concerns, despite the fact that the amount of heat it generates is inconsequential. Most authorities, however, reject this approach, since the lightbulb is extraneous to the cooking fire itself.)

From a practical perspective, virtually all restaurant and factory *Hashgachos* in North America follow the *Ashkenazic* customs noted above. *S'phardim* should consult with their *Halachic* authorities regarding relying on such *Hashgachos*. Some *Hashgachos*, however, have instituted “*Bishul Bait Yosef*” programs that ensure that cooked foods meet the requirements of the *Shulchan Aruch*.

### **Domestic Servants and Pots and Pans**

Concerns of *Bishul Akum* are not limited to commercial Kosher food certification, however. Foods subject to *Bishul Akum* that are cooked by non-Jewish workers or caregivers in one's own home are prohibited, unless a Jew was involved in the cooking as indicated above. While old-fashioned gas stoves with pilots may have posed less of a concern when originally lit by a Jew (see above), most modern gas ranges use an electronic sparking system for ignition, requiring a Jew to light the burner each time a food subject to *Bishul Akum* is cooked. The same is true with electric stoves, slow cookers, and other cooking appliances. It is also important to note that food that becomes prohibited because of *Bishul Akum* is considered *non-Kosher*, and will compromise the otherwise Kosher status of any pots in which it was cooked—as well as dishes and silverware used to eat it. A *Halachic* authority should be consulted when addressing issues relating to maids working in one's kitchen. (Additional concerns involve the possible use of non-Kosher ingredients or the mixing of Kosher meat and milk ingredients where such workers are not being supervised.)

### **Mass Production and Remote Control**

With the advent of large-scale food production facilities, Kosher food production has spread across the proverbial *Me'hodu v'ad Kush*—the 127 *Medinos* (royal satrapies) that comprise the entire world. Some authorities have therefore argued that, given the total anonymity of the non-Jews who may be cooking food under such conditions, the concerns of social interaction that were the impetus behind the *G'zeirah* of *Bishul Akum* may not be relevant. Most authorities, however, have ruled that *Chaza"l* did not allow for this distinction and that factories are subject to the same restrictions of *Bishul Akum* as local food establishments.

To address *Bishul Akum* concerns in a factory setting, *Kashrus*-certification agencies have devised a number of strategies that meet *Halachic* requirements while allowing for production without the need for a full-time *Mashgiach*. In situations where an oven has a permanently lit pilot, many authorities allow the *Mashgiach* to relight the pilot periodically, following the lenient opinions discussed above. (Such a solution is not feasible, of course, where an electronic ignition system creates a new fire each time the oven is turned on or where electricity is used for heating.) Another approach involves having the *Mashgiach* light the boiler that supplies the steam used for cooking and monitoring it to ensure that it is never turned off. Another involves installing an independent heating element in the cooking equipment that is turned on by the *Mashgiach* and that is allowed to remain lit even when the equipment is turned off.

The most novel approach to resolving *Bishul Akum* concerns involves the direct participation of the *Mashgiach* in the cooking process without actually being in the factory at all! Modern technology allows the *Mashgiach* to control the cooking equipment remotely, using either a telephone or an Internet connection. Typically, the oven or cooker is configured so that the heating element is turned on by an electronic command issued by the *Mashgiach*, in which case the flame is considered a true *Aisho shel Yisroel*.

While the foods on our table may come from China, Vietnam, India, or even Timbuktu (located in eastern Africa), all aspects of their *Kashrus*—even the “royal” manner in which they are cooked—must be guaranteed.

### **The Bottom Line**

- The rule of *Bishul Akum* requires that a Jewish person be involved in the cooking of certain types of foods.
- There is disagreement among authorities as to whether the involvement in the cooking by a nonreligious satisfies this requirement.
- Foods subject to concerns of *Bishul Akum* must be inedible raw and be considered “important” foods. Any food that does not satisfy both requirements is exempt.
- Both an inedible raw status and the status of an important food in any given area are subjective in that they depend on the gastronomic customs of the country in question.
- Water-based beverages, such as coffee, tea, and beer, are not subject to concerns of *Bishul Akum*.
- Foods that have been cooked in a manner that satisfies *Bishul Akum* concerns may subsequently be reheated without any restriction.
- According to *S’phardic* custom, foods that have been cooked to a minimal edible level by a non-Jew are prohibited, even if the final cooking involved a Jew. *Ashkenazic* custom, however, allows for subsequent involvement of a Jew to render the food Kosher, provided the subsequent action results in actual cooking, not just reheating.
- Although potatoes may have originally been considered peasants’ food, they are now considered an important food and subject to the rules of *Bishul Akum*.
- According to many authorities, however, potato chips—as well as other snack foods—are not considered important foods and thus exempt from the rules of *Bishul Akum*.
- The rule of *Bishul Akum* applies only to conventional cooking. It does not apply to foods that are pickled, smoked, or salted.
- Some authorities consider steaming to have the same status as smoking.
- Most authorities consider microwave cooking to have the same *Halachic* status as cooking with radiant heat.
- According to *S’phardic* custom, a Jew must be an active participant in each act of cooking. According to *Ashkenazic* tradition, it is sufficient for a Jew to light

the fire and allow a non-Jew to cook the food.

- Under certain circumstances, the lighting of a pilot light by a Jew is considered sufficient according to *Ashkenazic* tradition. Electronic ignition systems found in modern cooking equipment create a major concern of *Bishul Akum* unless a Jew turns the cooking equipment on for each use.
- Rules of *Bishul Akum* extend to domestic servants working in a Kosher home.
- Foods that become prohibited due to *Bishul Akum* concerns are considered non-Kosher, and will compromise the Kosher status of equipment in which they were cooked.
- Remote control systems controlled by a Jew will obviate *Bishul Akum* concerns.

# The Story of Bread

## בזעת אפיך תאכל לחם

בראשית ג' י"ט

By the Sweat of Thy Brow Shalt Thou Eat Bread

Genesis 3:19

Modern methods of preservation, transportation, and distribution have allowed foods to be manufactured in one region of a country and enjoyed in another. Indeed, many foods are routinely produced in one part of the world and enjoyed on the other side of the globe. Certain products, however, have retained their local production venue, owing either to their perishable nature or to the consumer's desire to purchase product that has been manufactured on-site. Bread, long considered the staple food in many cultures, is still produced in local bakeries for precisely these reasons. Indeed, even when manufacturing exigencies have forced the mass production of bread, an interesting "compromise" has been forged: the bread may be kneaded, formed, and frozen in a factory but will be baked in the local shop, giving consumers the "fresh-baked" product they demand. ("Fresh-baked" breads may even be *par baked* in the factory, leaving just the final touch of baking in the hands of the local bread smith.) Just as the baking of bread has particular sensitivities for the consumer, it also presents several unique *Kashrus* concerns.

### Bread

Bread has been a mainstay of our diet since the times of Creation. *Adam* was cursed to toil for his daily bread, *Sarah* prepared bread for the visiting angels, and the royal baker was an unwitting agent in the unfolding story of *Yosef*. The importance of bread as a sta-

ple was reinforced by its sobriquet as the staff of life, based on a phrase in *Isaiah* (3:1), "... the staff of bread and the staff of water." *Chaza"l* recognized bread as the central part of a meal and hence regarded all food eaten in a meal with bread as being *To'fel*—secondary—to it and included in the *B'rachah* (blessing) of *ha'Motzee Le'chem Min ha'Aretz*: "(Blessed is He) Who brings forth bread from the earth." Although we may tend to eat less bread than our forefathers, it nonetheless maintains a central place in *Halacha* and its importance as a symbol of civilization was also of great significance to *Chaza"l*.

In its simplest form, bread is made by mixing flour and water into a dough, which is then baked. When yeasts ferment in the dough, they produce carbon dioxide (and alcohol) that causes the bread to *leaven*—giving rise to *Chometz*. When the dough is baked before fermentation can take place, we have unleavened bread—*Matzah*. While such simple bread may seem to pose few *Kashrus* issues, baking methods—both ancient and modern—often conspire to compromise its erstwhile Kosher status.

Even where all ingredients in bread may be Kosher, certain "noningredients" may create major *Kashrus* concerns. Bakers have long been aware of the propensity of bread (as well as other baked goods) to stick to baking pan. While some breads are baked directly on the floor of the oven (the hearth) and typically do not suffer from this concern, breads that must be uniformly shaped—such

as sandwich bread—must be baked in bread pans. To prevent such bread from sticking to the pan, bakers have historically sprayed the baking surfaces with some type of lubricant, which may consist of non-Kosher animal fat that renders the bread non-Kosher. A reliable Kosher certification therefore insists that only Kosher vegetable fats or mineral oil is used. Modern bakeries also use oil when handling raw dough. When large amounts of dough are set aside to rise, the “trough” in which they are placed is typically coated with “trough grease” to allow the dough to be removed easily. When the dough is cut by machine into small loaf-sized pieces, a baker may add “divider oil” to the dough to prevent it from sticking to equipment. In all cases, the *Kashrus* of such “noningredients”—otherwise known as “processing aids”—must be insured to guarantee a Kosher product.

Oils and fats—and their *Kashrus* concerns—have also insinuated themselves into another fundamental component of bread baking—yeast. Although yeasts are microorganisms that are inherently Kosher, they are living organisms and hence inherently fragile. Fresh yeast, for example, must be kept refrigerated lest the organisms die and prove useless to the baker. (*Fresh yeast* is therefore sold in the refrigerated section of the supermarket.) To increase the stability and shelf life of yeast, however, food technologists have learned to put yeast into a dormant state through drying, allowing such yeast to be stored at room temperature for extended periods. (Such yeast, known as *instant dried yeast*, is therefore sold in supermarkets without refrigeration.) The problem with the drying process is that it tends to kill the yeast through heat and desiccation. Mixing fat and emulsifiers with the yeast, however, allows the yeast to survive the drying process and reactivate when mixed with water. Dried yeast therefore requires a reliable *Hashgacha* to ensure that all oils and emulsifiers used are indeed Kosher. Further, the yeast itself requires a

*Hashgacha* to ensure that the nutrients on which the yeast is grown contain only Kosher ingredients.

### ***Bread Additives***

Although original recipes for bread may have been limited to a few ingredients, bakers have long added additional ingredients that may also compromise its inherently Kosher nature. Early bread recipes often included shortening, eggs, and milk, and modern formulas often include emulsifiers, enzymes, and other chemicals to improve the bread and make it easier to produce—each of which may pose unique Kosher concerns.

Shortening is often added to bread to help it stay fresh longer. For example, traditional French bread tends to become hard and stale within hours after baking, primarily because it contains no oil or shortening. Bread becomes stale due to the recrystallization of starch. Fats and oils, however, bind to the starch while it is still a soft gel, thereby slowing its recrystallization and keeping it soft. Kosher bread, of course, must contain only Kosher vegetable fat.

Fats and oils, however, interfere with *gluten*, the sticky protein amalgam in flour that allows for the spongy consistency of bread. The addition of too much oil to the dough would therefore inhibit the bread’s rising and reduce the volume of the loaf. Emulsifiers allow fat to blend with water, thereby reducing the amount of fat necessary to prevent staling and thus allowing the bread to rise properly. Historically, eggs were added to bread, since the yolks contained a significant amount of *lecithin*, a natural emulsifier, as well as fat. Today, emulsifiers such as *sodium stearyl lactylate*, *glycerol monostearate*, and *monoglycerides* are often added for the same effect. All of these emulsifiers are produced from fats, which may be of non-Kosher animal origin, and the *Hashgacha* on bread therefore ensures that only Kosher emulsifiers are used.

Other ingredients, known as *dough conditioners*, are often added to dough to make it easier to handle in modern production systems, and pose some interesting *Kashrus* concerns. Some, for example, may be a modern manifestation of the *B'rachah* conferred on *B'nei Yisroel*, where the *Torah* assures us that we will be so blessed with grain that we will only eat *aged* grain—*v'Achaltem Yoshon Noshon*—“and you shall eat very aged (grain)” (*Vayikrah* 26:10). *Chaza"l* tell us (*Baba Basra* 91b) that this verse teaches us that aged foods have superior qualities and, indeed, the baking properties of flour improve when it is stored for some time after grinding. The characteristic elasticity of bread dough is attributable to two sulfur-rich proteins (*gliadin* and *glutenin*) present in wheat. As the dough is kneaded, the bonds between these two proteins are developed, forming *gluten* and creating a dough structure that allows the carbon dioxide produced by the yeast to be entrapped and the bread to rise. The strength of gluten must be controlled so that it is not too strong, and aging flour served this purpose by allowing for the *oxidation* of the protein by exposing it to the oxygen in the air. Since today's bakers use flour that is routinely ground within the week, it does not have enough time to ripen and benefit from the *B'rachah* of *Yoshon Noshon*. To address this issue, food chemists have found *chemical* forms of *B'rachah* that have the ability to effect “instant” aging that reacts with the wheat proteins to weaken their sulfur bonds, thus allowing for more efficient dough formation. Bromates and iodates have been used for this purpose, but have fallen out of favor due to potential carcinogenic issues. L-Cystein, on the other hand, is a natural amino acid, and poses no safety issues. It may, however, pose a number of potential *Kashrus* concerns in that it is derived from human hair (posing issues similar to those raised recently with human hair *Sheitels*) and from feathers (which are processed from non-Kosher poultry). Fortunately, most authorities have

concluded that none of these concerns is *Halachically* significant. Various types of enzymes are also used to condition dough, all of which require reliable Kosher certification.

### **Dairy Bread**

Other ingredients commonly added to bread are milk and whey. Milk serves to create a softer texture in bread, while whey allows for an even “browning” due to the reaction of the lactose (milk sugar) with the whey protein. The use of dairy ingredients in bread, however, raises an interesting *Halachic* problem. *Chaza"l* recognized the ubiquity of bread as a staple in virtually every meal—whether *fleishig* or *milchig*—and therefore required that bread always be baked as a Pareve item. For this reason, “regular” bread (as opposed to “special” bread and cake, as we will discuss shortly) *must* be certified as Pareve (*Y.D.* 97). For this reason, many commercial bread products and rolls cannot be certified as Kosher, even though all of the ingredients may indeed be Kosher.

In establishing the Pareve requirement for bread, however, *Chaza"l* made two significant exceptions. The first is that bread that is baked in a peculiar shape may include dairy (or meat) ingredients, since its unusual appearance will make a person pause to inquire as to its status and not eat it with a conflicting meal. The second exception is that one is permitted to bake small amounts of dairy (or meat) bread, since it may be safely assumed that such small rolls would be eaten immediately and not left over for the next meal. In practice, some *Hashgachos* have ruled that small, uniquely shaped bread products, such as English muffins, are clearly not regarded as regular bread, and may indeed be certified as Kosher even though they contain dairy ingredients. (They are certified as Dairy, of course.) (Some *Hashgachos* had taken this approach even further, allowing for the certification of dairy breads where the *label* clearly indicated that



it was a dairy product. The consensus of most authorities, however, was that the Dairy status must be in the bread itself and not in an extraneous label, and virtually no reliable *Hashgachos* depend on this approach today.)

It is also important to note that no *Kashrus* concerns exist if the dairy ingredients are added *after* the bread is baked. For example, French toast is perfectly acceptable even though the bread may be prepared with an egg/milk mixture. Indeed, one major *Kashrus* organization found itself in the ironic position of requiring that the bread being used to make frozen French toast be Pareve—even though the final product was certified as Dairy!

The requirement for Pareve bread is important not only in the commercial bakery, but in the home as well. Bread mixes, such as those designed for bread machines, often contain dairy ingredients, and most *Kashrus* organizations will refuse to certify them, even though all of the ingredients may be Kosher.

Concerns over dairy bread are not limited to major ingredients, such as milk, butter, and whey. Some types of preservatives—such as *natural* propionic acid—may also be dairy and thus not suitable for use in Kosher bread. Propionic acid (or its various salts, sodium propionate and calcium propionate) serves as a mold inhibitor, which allows bread to remain fresh and serviceable for longer periods. Most propionates are derived from petroleum, and pose no *Kashrus* concern. *Natural* propionates, however, may be fermented from whey that is, at best, dairy and may pose other significant *Kashrus* concerns.

## Pas Yisroel

Another important concept affecting the baking industry is that of *Pas Yisroel*. *Chaza"l* placed a number of restrictions on foods prepared by non-Jews to limit our

social interaction with them. These restrictions included *Bishul Akum* (certain foods cooked by a non-Jew) and *S'tam Yaynam* (wine handled by a non-Jew). When it came to bread, however, *Chaza"l* recognized that it would be impossible to live without access to bread baked by non-Jews and thus permitted bread baked by *commercial* non-Jewish bakers—known as *Pas Palter* (literally, the bread of a baker). *Pas Akum* (literally, bread of a non-Jew) was defined as bread baked by non-Jews for personal consumption and was indeed prohibited for general use. The leniency of *Pas Palter* notwithstanding, *Chaza"l* nevertheless expressed a strong preference for using *Pas Yisroel*—bread baked by a Jew—which should be used whenever possible. For this reason, many people insist on using only *Pas Yisroel* and look for such an indication on the baked products they purchase. It should be noted, however, that many of the major *Kashrus* organizations provide certification to products that are *Pas Palter* as a matter of course. As such, the existence of a generally accepted *Hashgacha* does *not* guarantee that product is *Pas Yisroel*.

It is also important to note that the leniency of *Pas Palter* also applies to cake, cookies, crackers, pretzels, and other types of pastry (collectively known as *Pas ha'Ba b'Kisnin*—see below). As such, those who insist on *Pas Yisroel* for their bread similarly require it for other types of baked goods. On the other hand, just as many major *Hashgachos* certify bread that is *Pas Palter*, the same leniency is used in their certification of cookies, Danish pastry, cakes, crackers, and pretzels.

The concept of *Pas Yisroel* takes an added importance during the *Aseres Y'mei T'shuvah*—the Ten Days of Repentance between *Rosh ha'Shanah* and *Yom Kippur*. The *Shulchan Aruch* (O.C. 603) rules that even one who is lenient all year round and eats *Pas Palter* should nevertheless be more stringent during this period and try to eat

only *Pas Yisroel*. Since many popular cookies and pastries, as indicated before, are *not Pas Yisroel*, many avoid such snacks during the *Aseres Y'mei T'shuvah*.

This *Minhag*, however, may not be limited to *Aseres Y'mei T'shuvah*, and an extension of this special custom may apply to every *Shabbos* and *Yom Tov*. In the Book of Daniel (1:8), the *Anshei K'neses ha'G'dolah* note that, for ten days, Daniel refused to defile himself with the “*Pas Bag*” of the king. Rav Saadia Gaon explains that these ten days were the *Aseres Y'mei T'shuvah*, and the *Ra'avad* and the *Ramban* are of the opinion that Daniel's shunning of “*Pas Bag*” was precisely because it was *Pas Akum*. (The *Rashbam* [*Tosefos Avodah Zarah* 36a] disagrees with this reasoning, however, and explains that *Pas Bag* posed a conventional *Kashrus* concern.) It would, therefore, seem that Daniel's avoidance of *Pas Bag* was only during the *Aseres Y'mei T'shuvah*.

The *Yerushalmi* (*Shabbos* 1:3), however, notes that *Rav Chiyya* instructed *Rav* to be careful at least to eat *Pas Yisroel* during the “seven days,” which the *Ran* (end of the *Rosh ha'Shanah*) identifies as the *Aseres Y'mei T'shuvah*. The *M'forshim* explain that it was not necessary to specify the other three days, because they were *Yom Tov* and *Shabbos*, for which it was understood that one would eat only *Pas Yisroel*. On this basis, many authorities learn that the custom of eating *Pas Yisroel* extends to both the *Aseres Y'mei T'shuvah* and *Shabbos* and *Yom Tov* (see *Mishnah B'rurah* 242 s.k. 6).

In order to effect *Pas Yisroel*, however, it is not necessary for a Jew to actually do the baking—it is sufficient for a Jew to light the fire in the oven, after which the non-Jew can bake the product. Bakeries may therefore produce *Pas Yisroel* products without having a Jew on the premises at all, provided that a Jew turns on the fire and that the fire does not turn off (or the oven does not cool off) during the subsequent baking.

*Pas Yisroel* may also be made available through “par-baked” products. When producing such “partially baked” products, the bakery will prepare bread, rolls, or bagels and then slightly underbake them, allowing the consumer or restaurant to pop the slightly underbaked product into the oven and obtain a “freshly baked” item. The *Shulchan Aruch* (*Y.D.* 112:12) rules that even the *final* baking by a Jew is sufficient to confer on the product a *Pas Yisroel* status, provided that the last step actually improves and finishes the product and not merely warms it up.

## Challah

Another important consideration in the Kosher certification of baked products is the requirement of *Hafrashas Challah*. By way of introduction, we should note that the *Torah* mandated a system of providing for the sustenance of the *Kohanim* (priests), since they were not given any land in *Eretz Yisroel* from which to derive a livelihood. These twenty-four *Matnos K'hunah*—Priestly Offerings—were given by every Jew during the course of the daily activities, and included *T'rumah* (a portion of all produce), *Reishis ha'Gez* (a portion of every shearing from one's sheep), and the *Z'roah L'cha'yayim v'Keivah* (the arm, cheek, and breast) of every animal slaughtered. In addition, a portion was to be provided to a *Kohen* from every batch of dough that was baked, a gift to which we refer as *Challah*. Although *Kohanim* today are *Tameh* and may not eat the *Challah*, a Jew must still separate it from every batch of dough he mixes. Failure to separate *Challah* renders the baked goods *Te'vel*, and they may not be eaten.

The requirement to separate *Challah* applies only to dough that is owned by Jews. A non-Jewish baker—even if he produces *Pas Yisroel* products in an oven lit by a Jew—is not subject to this requirement. Indeed, once the dough has been mixed, its subsequent ownership and baking by a Jew

does not create a requirement to separate *Challah*. Ironically, many of the frozen raw “*Challahs*” that are sold with very reliable *Hechsherim* are made by non-Jewish-owned companies—from which no *Challah* had or needs to be separated.

Kosher bakeries that are owned by Jews, however, must be careful to separate *Challah* from each individual dough mixture, whether it be bread or pastries. Although small bakeries run by *frum* bakers may be able to separate *Challah* on a routine basis, this requirement creates a significant challenge for large operations with many non-Jewish workers. Many *Kashrus* organizations have therefore created systems whereby a loaf of *Te'vel* (bread from which *Challah* had not been separated) is maintained adjacent to the mixing area, with the owner agreeing that a small amount of this loaf automatically becomes *Challah* for each batch of dough that is produced adjacent to it.

### Cake—*Pas ha'Ba b'Kisnin*

Not all baked products are *Halachically* the same, however. Recognizing the importance of bread made from the five major grains (wheat, rye, oats, barley, and spelt) as the mainstay of a person's diet, *Chaza"l* instituted a special *B'rachah* for it—*ha'Motzee Le'chem min ha'Aretz*. When eating such bread, we are required to wash our hands (*N'tilas Ya'dayim*), and say the *ha'Motzee* and a full *Birkas ha'Mazon*. However, *Chaza"l* also recognized that other types of baked goods are merely “snacks”—called *Pas ha'Ba b'Kisnin*—and not considered the mainstay of a meal. *Chaza"l* therefore did not accord them the *B'rachah* of *ha'Motzee*, although they did merit the special *B'rachah* of *M'zonos* due to the importance of the five grains from which they were made. However, if one made a meal out of such products, they would indeed be considered like conventional bread. The distinction between

“bread” and “snacks” is most fascinating, and around it revolves one of the most interesting questions in the baking trade today.

Although all opinions agree that the theory behind the distinction between bread and *Pas ha'Ba b'Kisnin* is that *Pas ha'Ba b'Kisnin* is not the type of food eaten as part of a meal, the *Bais Yosef* (*O.C.* 168) quotes three differing opinions among the *Rishonim* as to its definition:

- *Rabbeinu Chananel*, the *Aruch*, and the *Rashba* all define the word “*kisnin*” as a “pocket”—“pie.” *Pas ha'Ba b'Kisnin* is therefore a type of pastry filled with fruit, nuts, or similar fare, such as a fruit pie—or a *Hamantasch*. According to this approach, the dough may itself be “bread” dough, but since it is filled with sweets, it is not considered “bread.”
- *Rashi* and the *Rambam* define *Pas ha'Ba b'Kisnin* as products made from sweetened or flavored dough—“cake.” Again, such sweet pastries are generally not eaten as part of a meal and are not considered “bread.” (The derivation of the term “*kisnin*” in this context, however, is a bit ambiguous. *Rashi* [*B'rachos* 51b] explains that the word *kisnin* means puffed wheat and indirectly refers to only those sweet pastries that are the *Halachic* subject of the term. He explains that at the end of the meal, it was customary to bring puffed wheat to the table as a snack—along with sweet pastries. The term *Pas ha'Ba b'Kisnin* should therefore be translated as “[sweet] bread that comes with puffed wheat.” Others have suggested a more straightforward correlation between the terms, noting that the Persian word for “sugarcane” is *kisnin*, thereby directly associating the sweetness of the pastry with the term *kisnin*.)
- *Rav Hai Gaon* defines *kisnin* as a dry, crumbly bread, such as a cracker, hard pretzel, or a flat bread. Again, he reasons that such brittle bread—although made

from the same ingredients as conventional bread—is not eaten as the mainstay of a meal. The *Aruch* cites a *Pasuk* in *Yehoshua* (9:5) as the source of this interpretation, where the *Givonim* tricked *Yehoshua* by bringing “dry bread . . . *nikudim*”—which the *Targum Yonasan* translates as “*kisnin*.” The *Radak* also says that this is indeed the source of the term “*Pas ha’Ba b’Kisnin*.”

The *Shulchan Aruch* rules that we follow all three opinions, and that a baked product that complies with any of them is considered *Pas ha’Ba b’Kisnin*. The criteria for determining exactly which products fall into each category, however, are somewhat subjective and subject to a number of considerations. Indeed, some authorities have also posited that these three criteria are only exemplary and not dispositive. For example, *soft* pretzels do not meet into any of the above criteria—they are not sweet, contain no filling, and are crumbly—yet they do meet the *conceptual* standard of *Pas ha’Ba b’Kisnin*, as they are not eaten as part of a meal.

Additional concerns include the following: According to many opinions, fillings such as meat and cheese do not generally create *Pas ha’Ba b’Kisnin*, since such products are designed to be an integral part of a meal. Since this is a matter of some dispute, however, it is best to avoid the question and eat such products only as part of a meal with bread. In some countries, foods such as empanadas are generally considered a meal, and the *minhag* is therefore to consider them bread. In other countries, pizza is considered a snack and considered *Pas ha’Ba b’Kisnin*. “Pigs in a blanket” and other items that are generally considered snacks, however, are clearly *Pas ha’Ba b’Kisnin*.

*Matzah*, at least the hard and crumbly type that we eat today, pose another interesting question. Most *S’phardim* consider *Matzah* to be like any other hard cracker and recite a *M’zonos* for it—except on *Pesach*.

*Ashkenazim*, however, consider it bread, since it is commonly eaten as part of a meal, and thus recite *ha’Motzee* for it all year long. *Matzah crackers*, however, are clearly eaten only as a snack and are subject to a *M’zonos*.

In dealing with cake, the *Shulchan Aruch* (*O.C.* 168:7) rules that any sugar, honey, fruit juice, eggs, or spices that are noticeable in the dough are sufficient to accord the baked product the status of cake. The *Rama*, however, rules that the flavor must be the *dominant* taste of the product. As such, *S’phardim* may consider some types of bread as “cake,” while *Ashkenazim* consider them as “bread.” Indeed, the *minhag* of using “water *Challah*” on *Shabbos* stems from the desire to avoid this question, and use bread that has no taste of eggs or sugar that might compromise its status as bread. Similarly, although many people have the custom of using raisin *Challah* on *Rosh ha’Shanah*, some specifically avoid it for the same reason.

## M’zonos Bread

Today, this issue has burgeoned into a major dispute as to the status of “*M’zonos Bread*.” Bakers have developed rolls and bread that look and taste like regular bread—yet use fruit juice in place of most or all of the water. Such products are commonly referred to as “*M’zonos Bread*,” and some authorities have ruled that such products are veritable “cakes” and not bread, thereby allowing the consumer to avoid washing and *bentching* when eating them. Many other authorities, however, strongly reject this approach for the following reasons:

- According to the *Rema*, the amount of fruit juice required must be sufficient to be the *predominate* taste in the product. Although many authorities state that such a status is *generally* achieved where the majority of the liquid used is only fruit juice, this would seem insufficient in our

case since the taste of these products does not differ significantly from their “*ha’Motzee*” counterparts.

- The “fruit juice” often used for this is from concentrate. It is actually mostly water and so the amount of actual juice is less than half of the liquid used.
- Even where the bread may technically be considered “cake,” the amount and the context in which it is eaten may be sufficient to consider it a true meal *ipso facto*.

The Kosher consumer should therefore be cautious when dealing with *M’zonos* bread and should inquire as to the criteria by which the “*M’zonos*” claim is made. If *all* of the liquid used is indeed fruit juice, then some of the above concerns may not be applicable. Other concerns, however, may still be valid, and one should make sure to ask his *Rav* for *Halachic* guidance.

We might also note that the issue of what is—and is not—“cake” may indeed have been a longstanding matter of dispute. Marie Antoinette is reputed to have inured herself to her people with the epigram “Let them eat cake”—but was it really “cake?” The French actual quote is “*Qu’ils mangent de la brioche*”—which literally means “Let them eat ‘*M’zonos Bread*!’” (“*Brioche*” is soft bread made with milk, eggs, and butter. The French word for “cake” is “*gateau*.”) It seems that although *Mdme. Antoinette* may have told the people to eat only better bread, the rabble obviously considered it cake. Perhaps the entire French revolution was nothing more than a dispute over *M’zonos Bread*! *Vive la revolution!*

### **The Bottom Line**

- Bread is defined as a baked loaf made from the flour of any of the five major types of grains: wheat, rye, oats, barley, and spelt.

- Bread is a type of baked food that is considered a mainstay of a meal. The distinction between *bread* and *cake* is complicated and somewhat subjective. However, sweet, baked goods that are eaten as a snack are generally considered cake, as are flat breads. “Bread” that is made with fruit juice is the subject of a disagreement as to whether it is classified as bread or cake.
- The rule of *Yoshon* refers to grain of the new crop prior to the advent of the second day of Passover. Many authorities believe that this is a concern only with grain grown in Israel and thus does not affect the Kosher status of grain-based products in other countries. Others, however, maintain that the rule of *Yoshon* applies in all locations; these authorities insist that all grain comply with this requirement.
- Although yeast is an inherently Kosher microorganism, it may be grown on ingredients that pose a Kosher concern. In addition, dried yeast is often treated with oils and emulsifiers that require reliable Kosher certification.
- Although some traditional bread contains nothing but flour, water, and yeast, many modern types of bread contain oils, shortenings, and other ingredients that require reliable Kosher certification. In addition, the fats used to coat baking pans, as well as the ingredients used in paper pan liners, must be verified to ensure that they are of Kosher vegetable origin.
- *Pas Yisroel* refers to the requirement that someone Jewish is involved in the baking of the bread. This involvement can be accomplished by having the *Mashgiach* turn on the oven or lighting the pilot. This action remains valid as long as the oven does not cool down. The concept of *Pas Yisroel* is a custom that many people follow, but many Kosher-certification agencies follow opinions that do not mandate it.

# The Story of Butter

## ויקח חמאה

בראשית י"ח ח'

### And He Took Butter

Genesis 18:8

To quote a familiar adage, things are not always what they seem. We know that Abraham fed “*Chem’ah*” to the visiting angels—but was it really “butter?” *Rashi* (*Genesis* 18:8) explains “*Chem’ah*” as “the fat which one collects from the surface of milk,” which implies that it is *cream* and not butter. The *Targum* seems to concur by translating “*Chem’ah*” as “*u’Sh’man*” (fat), perhaps the cream that floats on the top of milk. Rav Aryeh Kaplan *z”l* feels that the verse is referring to “cottage cheese”; he leaves it to the Septuagint to translate it as conventional *butter* (*The Living Torah*, loc. cit.). Interestingly, some editions of *Rashi* translate it as *buerre*—the French word for butter! Rav Dovid T’zvi Hoffman *z”l* argues that “*Chem’ah*” originally referred to a fermented milk product (*leben?*), derived from the word *Cham’ah*. Clearly, things are not always as they seem.

Biblical exegesis notwithstanding, the term “*Chem’ah*” used in *Halacha* clearly refers to *butter* as we normally use the word today. “Classic” butter was considered an inherently Kosher product, even to the point of many authorities considering it exempt from the restrictions of *Cholov Yisroel*. Modern food-processing technology, however, may have foiled this erstwhile pristine heritage, and today’s butter may no longer enjoy such a status in either respect.

Butter is classically made by churning fresh dairy cream so that the butterfat *floculates* (clumps together) and forms butter, leaving buttermilk behind (more on but-

termilk later). Butter contains about 80–85 percent butterfat, the balance being water and other milk components. (A new process for the production of butter involves separating butterfat from cream using high-speed centrifuges, after which the butterfat is cooled in a surface-swept heat exchanger [“*Votator*®”] in a process similar to the production of margarine.)

### Whey Cream

Although *fresh* dairy cream may be inherently Kosher (and poses a concern only of *Cholov Yisroel*), the Kosher status of other sources of cream is far from secure. Whey, the byproduct of cheese making, contains a significant amount of butterfat that is collected and sold as *whey cream*. *Mozzarella* cheese processed in the classic *pasta filata* manner is cooked in a hot-water bath, and the fat that leaches from the cheese into this water is also recovered and sold as whey cream (although this terminology is not wholly accurate). Cream from both these sources is used to manufacture butter, and each has its own *Halachic* issues.

Although several *Halachic* opinions exist concerning the status of whey from *G’vinas Akum*, many authorities believe that such whey must come from cheese productions that use Kosher rennet and do not allow the whey to be heated above 120°F (*Yad Soledes Bo*) together with the curd. Cream that is recovered from the cook water of non-Kosher mozzarella cheese—for which

the cheese is cooked to temperatures well in excess of *Yad Soledes Bo*—is not acceptable. Because both these types of cream are used to make butter, appropriate safeguards must be put into place to ensure that butter approved for Kosher use is not subject to these concerns.

### **USDA Grading System**

The USDA has established a grading system for butter. Grade AA is considered the highest quality, followed by Grade A, Grade B, and lower qualities. The basis for this grading is *organoleptic* (one of taste); the milder the taste, the higher the grade regardless of the type of cream used. (Ironically, the butter with the more “buttery” flavor is graded lower than its blander cousins.) Although fresh dairy cream has the freshest taste and is best suited for the manufacture of Grade AA butter, it is also the most expensive. Whey cream suffers some degradation during the cheese-making process and typically has a stronger flavor, but it is also less expensive. Butter makers are adept in blending various grades of whey cream to obtain a Grade A, or even a Grade AA, butter from less-than-pure, fresh dairy cream. Research has confirmed that we can no longer rely on the assumption that Grade AA butter is free of questionable cream. Consequently, butter is no longer considered an inherently Kosher item and its Kosher status must therefore be verified.

### **Butter Oil and Anhydrous Milk Fat**

Please also note that “butter oil” and “anhydrous milk fat” are made from butter, which is heated and filtered to remove the milk curd and moisture. Kosher concerns for this type of product are complicated by the fact that the typical butter used for this purpose are the lower-grade materials, the type most often made from whey cream.

### **Additives**

Other issues relating to “pure” butter involve the use of various ingredients added to the product. Historically, butter was preserved in two ways, which account for the two basic types of butter sold today. One method of preservation involved the addition of salt and people therefore developed a taste for *salted* butter. The other type of butter, commonly known as *sweet* butter, is actually a misnomer. To preserve butter without the addition of salt, the cream from which it was produced was *clabbered* (fermented), which allowed for the development of lactic acid in the cream. The lactic acid not only acted as a preservative but also gave the butter a particular tang. Today, this flavor can be introduced into the butter by adding lactic acid-producing cultures, starter distillate, diacetyl, or commercial lactic acid. Although these ingredients may be Kosher, they may compromise the exemption that, according to many opinions, butter enjoys from requirements of *Cholov Yisroel. Chaza"l* had established that milk from non-Kosher species of animals could not be turned into butter; hence, there was no need to supervise milk used to make butter (the rationale for *Cholov Yisroel*—“supervised milk”). Dairy *flavorings*, however, could just as easily be produced from non-Kosher milk and would indeed be therefore subject to the rules of *Cholov Yisroel*.

### **Buttermilk and Whipping Cream**

As extra food for thought, note that “cream” may not be pure cream and “buttermilk” may have nothing to do with butter. “Whipping” cream often contains emulsifiers, gelatin, and other ingredients—clearly not the fresh cream your (grand) parents may remember skimming from the tops of milk bottles. Unless one can verify that a cream is pure, assume that it requires a reliable *Hashgacha*.

Buttermilk also comes in two categories. True buttermilk is the fluid left over after

churning cream into butter. This is generally the “powdered buttermilk” used in industrial applications such as ice cream and baked goods. Such buttermilk is subject to the same *Kashrus* considerations as the butter discussed previously. The “buttermilk” sold in the refrigerated section of the supermarket, however, is usually completely unrelated to butter manufacture. It is actually called “cultured buttermilk” and is made by adding a culture to skim milk, along with emulsifiers and stabilizers that may include non-Kosher glycerides and gelatin. Clearly, such a product requires a reliable *Hashgacha*.

Food chemists are quite resourceful in the dairy industry as in all areas affecting the food supply. “Pure and wholesome” staples are not necessarily as simple as they may seem, and the *Kashrus* professional must be ever vigilant in ascertaining their *Kashrus*.

### **The Bottom Line**

- Butter churned from fresh cream is inherently Kosher. Many authorities are also of the opinion that it is exempt from the rules of *Cholov Yisroel*. However, the addition of certain dairy ingredients for flavor, such as starter distillate and cultures, may compromise this leniency.
- Whey cream is subject to the Kosher requirements for whey. Generally, these allow for the Kosher acceptability of whey derived from non-Kosher cheese productions, provided that all ingredients and rennet are Kosher and whey is not cooked together with the curd at temperatures above 120°F.
- Cream recovered from non-Kosher *pasta filata mozzarella* cheese-processing water is not Kosher and may not be used in the production of Kosher butter. (“American” mozzarella cheese is not cooked and stretched, and would not be the source of non-Kosher cream.)
- Contrary to a common misconception, government regulations do not stipulate that Grade A or AA butter must be made from fresh cream. They may contain whey cream and, if so, require Kosher certification, as do any whey products.
- Butter oil and anhydrous butterfat must be produced from Kosher butter.
- Buttermilk sold as a beverage is typically cultured skim milk and not the liquid that remains after the churning of butter. Because of possible additives to the product, it requires a reliable *Hashgacha*. Commercial buttermilk, both condensed and powder is, however, typically the byproduct of butter making and subject to the same Kosher concerns as butter.
- Whipping cream may contain additives, such as gelatin, and requires a Kosher certification. Although such ingredients would typically be listed on the ingredient panel, a reliable Kosher certification is recommended.



# The Story of Candy

## כחו ממתקים וכלו מחמדים

שיר השרים ה' ט"ז

### Sweet and Completely Delightful

*Song of Songs 5:16*

When Jewish people prepare to embark upon the holiday of *Rosh ha'Shanah* (the Jewish New Year), they pray that the year be both good and sweet. Of the four basic senses of taste—sweet, sour, salt, and bitter—sweetness is universally used to connote happiness and well-being. Adults as well as children crave foods that exhibit this quality, and to satisfy that desire, sweet confections—candies—have been created in innumerable permutations to cater to the sweet tooth. Candies come in all flavors, colors, and forms, and the *Kashrus* issues relating to each type pose interesting questions indeed. The original candies were sweets based on naturally occurring foods. Dates, honey, and nuts formed the basis of these confections, and *Kashrus* issues relating to them were limited. With the advent of refined sugar in the seventeenth century, confectioners learned to expand the product line. The purpose of this essay is to explain the way in which many of these products are made and explore their *Kashrus* implications.

### **Hard Candy**

Hard candy, the type used to make sucking candy and lollipops, is basically sugar, color, and flavor. The original hard candy was made by mixing sugar into warm water and then allowing it to cool. The supersaturated solution of sugar would then form crystals, yielding “rock candy.” The process used commercially, however, involves heating different types of sugar in a vacuum. The

vacuum cooker removes most of the moisture in the syrup, leaving a candy base that resembles thick plastic dough. The dough is then placed on tables, where flavorings and colors are kneaded into it. The dough is quite hot, and the workers must wear insulating gloves when handling the candy mass. After the candy has been appropriately colored and flavored, it is placed in a machine that rolls the block of dough into a thin rope, which is then cut into small pieces that are the finished candy bits. Filled hard candy relies on a “coextrusion” process, in which the filling is continuously injected into the candy rope before it is cut. Lollipops are produced in the same manner except that the stick is inserted into the still-soft candy as it is cut and shaped. The candies are then allowed to finish cooling, at which point they assume their classic hard consistency.

In most cases, the vacuum cookers handle only sugar syrups, with flavors and colors added later. However, these syrups may be composed of sugar *alcohols*, which may pose *Kashrus* concerns. Although glucose and maltose (a disaccharide composed of two molecules of glucose) are the classic sugars used in hard candy and pose little *Kashrus* concern, manufacturers also produce *sugar-free* candies based on sugar alcohols. When an OH (oxygen/hydrogen) hydroxyl radical is added to the sugar molecule (a process called *hydrogenation*), it is categorized as an *alcohol* and exhibits properties that differ from the original sugar. For example, hydrogenated glucose is called

sorbitol. (The *-ol* suffix indicates an alcohol.) Diabetics, who have difficulty metabolizing glucose, can handle sorbitol much more readily. In addition, sorbitol does not promote tooth decay; the bacteria that cause caries (tooth decay) do not grow on sorbitol. Sorbitol-based candies are not calorie free, however, and its use must be tailored carefully to take into account its other peculiar properties. Although sorbitol, as well as related sugar alcohols such as maltitol, poses no inherent *Kashrus* concerns, it is often produced on equipment used to produce *lactitol*—hydrogenated lactose (milk sugar). As such, Kosher certification of this raw material is required.

Additional Kosher concerns involve the flavorings used in all candies, which require reliable Kosher certification just as they do in other foods. In addition, some colors pose significant Kosher concerns. A popular bright-red color derived from an insect is of particular interest. The color carmine is derived from the cochineal insect and is both natural and stable. Its popularity has increased with recent restrictions on the use of certain synthetic red dyes and can be used to color many candies. Most *Kashrus* authorities, however, do not accept this material as a Kosher product.

Another potential concern with hard candies is the lubricant used in the handling of the molten candy as it is kneaded and formed. Typically, some type of grease is used to lubricate the tables and rollers that handle the dough. The grease may be of animal origin, and although it is used in very tiny amounts, care must be taken that only a Kosher lubricant is used. Interestingly, talcum powder is often used for the same purpose, which poses no *Kashrus* concerns.

One significant ingredient issue with regard to hard candies relates to the specialty flavor called butterscotch. Real butterscotch uses real butter, and although this ingredient is typically not added in the vacuum cooker, its use in subsequent equipment would cause

the equipment—and all other candies produced on it—to be considered dairy. If the butter is *Batul*, however, the equipment may not be so compromised.

### ***Starch-Molded Candies***

Another classic type of candy is produced in an entirely different manner. Jelly beans, gummy bears, and many other types of molded chewable candies are called “starch-molded” confections. In this process, a solid metal or plastic die in the exact form of the desired candy, such as a bear or a round ball, is pressed into a smooth bed of cornstarch, forming the mold for the candy. (The equipment used to create these indentations in the bed of starch is called a “mogul,” from the skiing term for a bump in a run of snow!) Flavored sugar syrup is then poured into the mold to solidify into the finished candy. To create the millions of such candies necessary to meet the demand, the process is implemented on a continuous basis, with dozens of molds created in frames of cornstarch that are immediately filled. The candy-filled frames of molds are then allowed to dry for a number of hours, often by being placed in hot rooms. After the candy has finished curing, the entire tray is dumped over a sieve, catching the candy and allowing the cornstarch to be recovered, cleaned, and reused.

Aside from conventional *Kashrus* concerns relating to flavorings, the production of this kind of candy raises three interesting issues. First, some forms of this type of candy, such as traditional “gummy bears,” use gelatin in their formulation. Gelatin is a protein generally derived from the hide, cartilage, or bones of animals. Except for special Kosher productions using hides from Kosher-slaughtered animals or Kosher fish, gelatin is derived from swine or non-Kosher cattle. There are those who argue that because the processing of the non-Kosher material renders the gelatin completely inedible during the intermediate stages of processing,

it may be considered a Kosher material. Although reviewing the *Halachic* basis or cogency of this approach is well beyond the scope of this essay, the consensus of most leading *Kashrus* authorities is to reject this material (see “The Story of Gelatin,” in this chapter, for an in-depth discussion of this issue). It does, however, continue to retain its promoters, and periodically one can find special “Kosher” marshmallows in stores boldly proclaiming the use of “Kosher” gelatin. Unless these products bear a known, reliable Kosher certification, in which case the gelatin would indeed be of acceptable beef or fish derivation, its cost generally precludes its use for regular candy production, and one can safely assume that the claims of “Kosher” gelatin are based on the approach that has been rejected by most authorities.

Second, the production of Kosher product in a mogul that was used to produce a non-Kosher product (for example, one containing non-Kosher gelatin) may not be feasible. Because the non-Kosher material was hot, actually touched the starch, and the starch absorbed the moisture from the non-Kosher material, such starch may not be used for Kosher productions. Even replacing the starch for Kosher productions is generally not practical because the amount of starch in a large mogul involves many tons of material. Further, the starch in the mogul works best when it has been “conditioned” by constant use; using fresh starch for each Kosher production does not yield a good product. In addition, the moisture the starch absorbed from the product must be removed before the starch can be reused and moguls therefore typically have a drying cycle that would require a *Kashering* after non-Kosher production.

A third issue concerns the process for obtaining the bright, colorful shine we associate with products such as jelly beans. Interestingly, jelly beans are usually produced without any flavor or color! They come out of the starch molds as a chewy, pale drop. A

flavored and colored syrup is then applied to the drops as they tumble in a device called a pan, slowly building up a “shell” of flavoring around it. This coating is also absorbed into the drop, causing both the color and the flavor to be partially infused throughout the candy. This production arrangement accounts for the fact that the flavor and color of the jelly bean is much more intense around the shell and diminishes toward the center. (Gummy bears and fruit-flavored bits include their flavor and color in the molded candy itself and are not flavored in this manner.) The jelly beans now have flavor and color but lack their characteristic sparkle. At this point, a polish is panned onto the confection, which may consist of carnauba wax, beeswax, mineral oil, vegetable gums, alcohol, and possibly *resinous glaze*. This last ingredient is the one with *Halachic* interest.

Resinous, or “confectioner’s,” glaze is based on *shellac*, a resin exuded by the lac insect, and again raises the question of derivatives of non-Kosher insects used in food. The issue is discussed at length by Rav Moshe Feinstein *zt”l*, who allows this insect’s resin based on a number of considerations. Other authorities are, however, less sanguine concerning its use.

### **Rework**

One more important consideration should be noted. During production, a significant amount of candy is not suitable for sale, either because it is misshapen or because of other errors in production. The product itself, however, is still food grade, and candy companies commonly recover such material and include it in other candy production. Such material is called “rework” and poses an important *Kashrus* concern when both Kosher and non-Kosher, or Pareve and Dairy, products are manufactured in the same facility. In such situations, great care must be exercised to ensure that non-Kosher material is not reworked into Kosher

products, or Dairy into Pareve. Compounding this concern has been the development of new filtering technologies, whereby off-spec candy is dissolved in water and filtered through charcoal and other media until all the flavors, colors, and gelatin are completely filtered out of the material. The resulting syrup looks and tastes like sugar and can be used in fresh candy products without fear of compromising their taste. According to *Halacha*, however, such filtration is insufficient to render a non-Kosher product Kosher or a Dairy product Pareve.

Even in the preparations for the New Year, sweets are not limited to *Rosh ha'Shanah*. Although Jews fast on *Yom Kippur*, there is a *Mitzvah* to eat on *Yom Kippur* eve. This *Mitzvah* is fulfilled with every bite taken on that day, and for that reason some have a custom of keeping a piece of candy in their mouth all day so as to be constantly fulfilling this *Mitzvah*.

With the understanding of some of the *Kashrus* issues relating to such candies, one can now fulfill both the *Mitzvah* of eating on *Yom Kippur* eve and the adherence to Kosher law.

### **The Bottom Line**

- Hard candies are composed of sugar syrup, color, and flavor. Sugar syrups generally pose few *Kashrus* concerns, although hydrogenated sugar syrups (such as sorbitol) may be produced on equipment that also processes dairy products. Flavors and colors also require reliable Kosher certification.
- Processing aids, such as lubricants, are often used in the production of candy, even though they need not be listed as “ingredients.” Such components, however, may pose significant *Kashrus* concerns.
- The use of butter (when not *Batul*) in the production of butterscotch candies renders the entire production line Dairy.
- Starch-molded candies are produced in starch that is reused from product to product. The production of non-Kosher candies, such as those containing non-Kosher gelatin, in this starch will compromise the Kosher status of the starch for use in all other products.
- Many candies are polished with “confectioner’s glaze,” otherwise known as “resinous glaze.” The base of this material is *shellac*, which is derived from the *lac* insect. Although most *Kashrus* organizations accept this material, some do not.
- According to most authorities, the type of gelatin in general use is not acceptable as Kosher, even though it may be labeled as “Kosher.” Gelatin marked with reliable Kosher certification, however, would be acceptable.

## The Story of Canning

### למען יעמדו ימים רבים

ירמיה' ל"ב י"ד

#### So That It May Endure for Many Years

*Jeremiah 32:14*

When it comes to food, we generally consider *fresh* food to be best. We relish fresh fruit and vegetables to the extent that *Chaza"l* decreed a special blessing of thanksgiving (“*she’Hechiyanu*”) when we first partake of the new crop each season. However, fruit and many vegetables are usually harvested only once a year, and our preference for freshness must also give way to the need to preserve such foods for consumption during the rest of the year. (Interestingly, modern research is suggesting that canned fruit and vegetables may actually have a higher amount of *available* antioxidants. Canned foods may actually be healthier!) Fruit, vegetables, milk, and meat are very perishable, all the more so in the days before modern refrigeration. History is replete with innovations that allow food to be stored for long periods without spoiling. Some hearken back to the times of the Bible, when they often played a pivotal role in the vicissitudes of history. Noah fermented grape juice into wine, allowing his sons to demonstrate the characteristics that would mark them for eternity. Joseph succeeded in dominating the entire world by developing a system of preserving grain during the seven years of famine (see *Rashi, Genesis 41:48*). *Yishai* (Jesse) sent preserved milk in the form of rounds of cheese with David to provision the army against the Philistines (the first military “C rations”—or “MREs”!), allowing David to be in the right place at the right time to slay Goliath. In modern times, NASA was able to put a man on the moon

only after it developed “space food” for its astronauts. The means used to preserve food can result in entirely new foods (as in pickling, smoking, or sausage making) or in the maintenance of the original state of the food for a long period (such as in canning, freezing, and drying). Each process raises its own unique *Kashrus* concerns.

Our story begins about two hundred years ago with Napoleon Bonaparte’s famous dictum, “An army marches on its stomach.” Napoleon’s armies were in the process of conquering Europe, which entailed a lot of marching, and he needed a means of providing his French army with wholesome and palatable provisions. To this end, he offered a 12,000-franc prize to anyone who could develop a means of preserving food for the army and navy. A French chef named Nicholas Appert won this prize in 1809. Mssr. Appert spent fourteen years developing his new process, which he published under the title *L’Art de conserver, pendant plusieurs années, toutes les substances animales et végétales* (*The Art of Preserving All Kinds of Animal and Vegetable Substances for Several Years*). The process consisted of enclosing the food in hermetically sealed glass containers and heating it for a period of time. Although he did not understand how the process worked (this would wait until Louis Pasteur explained that the heat sterilized the product by killing the bacteria in the jar and thus preventing spoilage), Appert was nevertheless able to provision Napoleon’s army and begin the

canning industry. In 1810, Peter Durand of England patented the use of tin-coated iron cans instead of bottles, forming the basis of the modern tin-coated steel cans used today. (The term “tin can” is a bit of misnomer because only an extremely thin layer of tin covers the steel to prevent rust.) It took more than a hundred years, however, for canning technology to provide a reliable and safe means of preserving food. Failure to adequately sterilize the contents of a can may allow microorganisms to grow and the food to spoil. Of even greater concern is the possibility of creating conditions that favor the growth of *Clostridium botulinum* or other microorganisms that can produce toxic, or even lethal, chemicals.

Indeed, more American soldiers died from consuming American “embalmed beef” during the Spanish-American War than from Spanish bullets! Today, the government carefully regulates all aspects of the canning industry to ensure that the proper procedures are followed to ensure a safe product. The history of the process may be of only passing interest, but the *Kashrus* issues relating to it are extremely topical.

### **The Modern Canning Process**

In the last few years, you may have noticed that many vegetable products have begun displaying Kosher certification. The need for *Hashgacha* is based on the following concerns: Although vegetables grown outside Israel (where special rules of tithes apply) are considered inherently Kosher to begin with, they are often processed in equipment that is also used for non-Kosher items. Fresh vegetables are generally harvested at a specific—and for a short—period of time. For example, peas, corn, and string beans are available for canning for only several weeks, during which time the entire crop must be processed. The processing involves preparing the vegetables for canning (cleaning, sorting, and *blanching* in hot water to

deactivate the enzymes found in the vegetables) and then preparing a *brine*, the liquid added to the vegetable to fill the can. The sealed cans are then sterilized in large pressure cookers (called *retorts*). Years ago, production facilities were designed for certain vegetables, and when the canning season for these vegetables ended, the plant was shut down. Nowadays, more and more companies find such a system to be economically inefficient and have devised uses for the plant during the “off-season.” Some plants process non-Kosher soups and sauces. Beans and chickpeas are also processed in the off-season because these are produced from dried beans and often include pork and beans, chili, and similar meat products. Tomatoes and tomato sauces are often processed in the same equipment used to make meat and cheese-flavored pizza sauces. Clearly, products coming from such canneries pose serious *Kashrus* concerns.

### **Kashrus Concerns**

Canneries that process such non-Kosher products can compromise the Kosher status of otherwise Kosher items in the following ways: The brine used for vegetables can be cooked in the same kettles used for non-Kosher items. Even if the brine is Kosher, it may be used for non-Kosher production, come in contact with the non-Kosher product, and then recirculate through the brine system. The retorts used to sterilize non-Kosher products become non-Kosher, and the subsequent processing of otherwise Kosher vegetables would compromise their Kosher status.

This is true despite the fact that the non-Kosher product is *sealed* in the can. The use of *Pagum* (foul-tasting) water in the retort, however, may allow for the interchangeable—or even concurrent—use of a retort for Kosher and non-Kosher products. Indeed, a chemical called Bitrex™ (*denatonium benzoate*—the bitterest substance

known) has been used successfully at very low levels to resolve this concern. Even if the facility maintains separate processing systems for Kosher and non-Kosher production, the condensate from steam used to heat the non-Kosher products is often returned to a common boiler and then used to cook the otherwise Kosher items. Depending on the system, hot water used to cook non-Kosher products can also be recycled and used to cook the otherwise Kosher items. Ensuring that cans of seemingly harmless vegetables are processed in the plant with a reliable *Hashgacha* is therefore imperative.

### **Bishul Akum**

Administering a *Hashgacha* for a cannery raises concerns beyond the actual Kosher status of the equipment used. Some vegetables are subject to the rules of *Bishul Akum*, the requirement that they be cooked with the assistance of a Jewish person. For a food to be subject to concerns of *Bishul Akum*, it must exhibit two characteristics: (1) it is inedible raw; (2) it is an “important” food, generally defined as a food that would be served at an important banquet. Many vegetables, such as peas, green beans, and corn, are commonly eaten raw and are thus immune to this concern. Potatoes, on the other hand, are certainly inedible in their raw state and are generally considered an “important” food (traditionally defined as “fit for a king”). Asparagus poses an interesting question. Although it is clearly inedible in its raw state, *canned* asparagus—as opposed to its freshly cooked sibling—is far less appetizing and generally not considered an important food. The status of canned asparagus would, therefore, seem to be dependent on the question of whether the *importance* of the food depends on its *type* or the *manner* in which it is prepared.

When *Bishul Akum* is a factor, the *Mashgiach* must light the boiler or otherwise participate in cooking the product for it to be

considered Kosher. *S'phardim* have additional concerns regarding *Bishul Akum*, and a *Rav* should be consulted to determine which products are acceptable for their community. (Of interest is a recent discussion among contemporary *Halachic* authorities as to whether steam is considered *M'ushan* [smoking] as regards *Bishul Akum* in canned foods. Although some foods that are *cooked* without involvement of a Jewish person are prohibited, *smoking* is not considered *cooking* for this purpose, and smoked foods are not subject to this rule. Some authorities extend this exception to cooking with live steam because it was not the standard method of cooking envisaged by *Chaza"l* when they issued the rule. The issue concerning canning is that the steam merely heats the *outside* of the can and not the food itself. It can therefore be argued that it does not enjoy the dispensation associated with steaming, which is based on the concept of smoking the food itself [see *M'sorah* I:95].)

### **Insect Infestation**

A further concern, common to both fresh and processed vegetables, stems from insect infestation. Insects are not Kosher, and vegetables that are prone to significant infestation may not be eaten unless inspected. Vegetables prone to this problem, such as Brussels sprouts, spinach, and cabbage (or sauerkraut), are not exempt by dint of the canning process, and productions of such products must typically be specially supervised.

### **Bright Stock**

An additional level of concern peculiar to canned foods involves the concept of “bright stock,” that is, leaving cans unlabeled. As noted before, many vegetables are canned in a very short period of time. Manufacturers put a code on the lid of the can at the time of the canning, but the actual *labeling* of the

product may take place much later. Major supermarket chains purchase their canned goods from many suppliers and use the same paper labels for all of them. If a supermarket wishes to maintain a Kosher certification for its products, the supervising agency bears the responsibility of ensuring that *all* suppliers of a product with their symbol on the label are actually under its supervision. Even brand-name manufacturers sometimes purchase bright stock from their competitors when they run out of product. As a result, even if one knows that a brand-name manufacturer has only inherently Kosher plants, products bearing its label may have been processed in a non-Kosher facility. (Any canning companies that are Kosher certified are subject to Kosher audits to verify the sources of all cans that bear the Kosher label.)

### **Shelf-Stable Foods**

New processes for food preservation, however, are constantly being devised, often following the historic imperative of the need to feed an army. “Shelf-stable” foods, tasty meals packaged in plastic pouches and trays, are retorted in much the same manner as cans and similarly require no refrigeration. They are known in the armed services as “MRE”—meals ready to eat—and became famous during the Gulf War, where they fed the allied soldiers. What is also interesting is that Kosher MREs were made available to Jewish soldiers for the first time, and updated versions of these new Kosher meals are currently being sold to make traveling easier and tastier for the Kosher public. Tin cans may have evolved into MREs, but the concerns relating to preserving food and keeping it Kosher always pose fresh problems that need to be resolved.

### **The Bottom Line**

- Modern vegetable canneries often process a variety of products, including non-

Kosher items. These products commonly include pork and beans and tomato products containing meat and cheese.

- Although virtually all vegetables are inherently Kosher, their otherwise Kosher status could be compromised if canned in a factory that also processes non-Kosher products.
- The canning process involves sealing food in an airtight container, such as metal or glass, and heating it to kill microorganisms that would otherwise cause the food to spoil. Failure to sterilize the contents of the can properly allow for the production of potentially lethal toxins such as *botulism*.
- To achieve the temperatures necessary to sterilize the product, cans are heated in steam-pressurized vessels known as retorts (or autoclaves).
- The processing of non-Kosher products in a retort renders that retort non-Kosher and it may not be used for the production of Kosher products unless it has been Kosherized. The fact that the non-Kosher product is sealed in the can is not significant in Kosher law. (The use of *Pagum* [foul-tasting] water in the retort, however, may allow for the interchangeable, or even concurrent, use of a retort for Kosher and non-Kosher products.)
- Additional Kosher concerns in such facilities include the recirculation of steam condensate from non-Kosher productions, as well as the common use of sauce kettles for both Kosher and non-Kosher products. Steam may also be contaminated when recirculated from non-Kosher productions.
- Many vegetables, such as spinach and cabbage, are subject to significant insect infestation. Such vegetables usually require special supervision to ensure that the product being canned is insect free.
- Certain vegetables are inedible in their raw state and may therefore be subject to the rules of *Bishul Akum*. Potatoes are



generally assumed to be subject to such concerns, although canned asparagus may be exempt because the canned version may not be considered an “important” food.

- Canned goods are often packaged and stored without labels, allowing for companies to purchase and affix their own labels at a subsequent time. Even brand-name manufacturers that operate their own factories may purchase some mate-

rial from outside vendors. Consequently, one cannot assume that a brand-name vegetable is produced by that company. Supervision agencies must pay particular attention to these issues when certifying canned goods.

- Shelf-stable products, such as MREs, are processed in much the same manner as canned products and share similar *Kashrus* concerns.

# The Story of Cheese and Casein

## ואת עשרת חריצי החלב

שמואל א' י"ז י"ח

### “And the Ten Rounds of Cheese”—A Casein-in Point

*Samuel I 17:18*

In most cases, the Kosher status of a food is a function of the ingredients it contains. Kosher ingredients make for a Kosher product regardless of the manner in which it is prepared, provided that it was processed on Kosher equipment. Significant exceptions to this rule exist, however, which require the involvement of someone who is Jewish and adheres to Kosher law. These laws include *Bishul Akum* (certain types of cooking), *S'tam Yaynam* (the production of grape wine and juice), and *G'vinas Akum* (the production of cheese). The purpose of this essay is to explain the unique *Halachos* pertaining to *G'vinas Akum*.

### Cheese

Milk is both exceptionally nutritious and highly perishable, and one of the challenges faced by humankind from the beginning of history is finding ways to preserve foods for later consumption. The classic means of preserving milk is by converting it into cheese. Cheese is highly nutritious and can be stored without refrigeration—the perfect “C ration” for the Israelite army fighting the Philistines! The production of cheese relies on some interesting technology, which was mastered, perhaps unwittingly, thousands of years ago. Understanding the technical aspects of cheesemaking is key to understanding its *Halachic* implications.

The stability of cheese is based on a combination of several factors, depending on the type of cheese produced. These include

removal of moisture, fermentation, and salting. Each of these processes raises interesting *Kashrus* issues, some unique to the production of cheese.

Many foods are preserved by the removal of water because most types of bacteria that cause food spoilage thrive in the presence of moisture. Milk is composed of water in which two basic categories of protein (casein and whey), fat, lactose, vitamins, minerals, and other trace proteins (for example, enzymes) are maintained in solution and, in its most basic form, cheese is milk with most of its moisture removed. Most types of cheeses are produced by causing the casein protein in the fluid milk to become denatured, at which point it precipitates out of solution (coagulation or curdling) and forms a coagulum (or curd). The curd is then separated from the free whey by using a sieve (cheesecloth being the classic medium) and the curd is then pressed together to form cheese.

### Coagulation

The coagulation of casein can be accomplished by two methods. The casein micellar protein can be denatured enzymatically. This process involves the use of an enzyme that splits the kappa-casein molecule (one of the four types of casein in milk) in a very specific way, causing the casein complex to become insoluble and coagulate. The resulting gel becomes the cheese curd and includes the casein fractions of the milk,

plus some of the other milk components (fat, whey, and moisture) that are entrapped in the curd structure. (The only part of the casein that does not become part of the cheese is the glycomacropeptide that separates from the kappa-casein molecule, which remains in the whey.) The enzyme preparation typically used for this purpose is called rennet, which is a mixture of proteases (enzymes that degrade proteins) found in the fourth stomach of a calf.

The second method used to precipitate casein is *acidification*. Because of the electrical properties of casein ions, casein remains in solution only when the pH of the milk is above 4.6 (known as the isoelectric point for casein). If the milk is acidified to a pH of less than 4.6, the casein precipitates out of solution, forming a cheese curd.

Although these processes may seem a matter of interest solely to the cheesemaker, these two distinct processes figure significantly in the *Halachic* status of the cheese produced.

### **G'vinas Yisroel**

Kosher cheese can contain only Kosher ingredients, so the Kosher status of the rennet used for coagulation must be assured. Historically, rennet could be obtained only from animal tissue—the fourth stomach of a suckling calf, to be precise; and rennet from an animal that had not been slaughtered and processed in a Kosher manner is considered non-Kosher. Even though the production of cheese involves the use of very tiny amounts of rennet (far less than 1–1,000), non-Kosher rennet would not be considered *Batul* because it is a *Da'var ha'Ma'mid*—an ingredient that causes a physical change in the product. To ensure the Kosher status of cheese, *Chaza"l* mandated that someone who personally adheres to Kosher law actually participates in the production of the cheese. The prohibition of nonsupervised

cheese is known as *G'vinas Akum*. For this reason, all Kosher cheese is produced with a *Mashgiach* present and actually seeing the addition of the rennet into each vat of cheese (*Y.D.* 115:2, *Rama*). Indeed, some authorities (*Sha"Ch*, *ibid.*, *s.k.* 20) rule that the *Mashgiach* must actually *make* the cheese (defined as adding the coagulant), which is the policy of most *Kashrus* organizations. (Some *Kashrus* organizations also require that the *Mashgiach* add the culture to the milk because the culture has the theoretical ability to curdle the milk through acidification, if given sufficient time to ferment. Most authorities, however, consider the use of culture in the production of rennet-set cheese as merely a flavor enhancer and not a coagulant because, indeed, the culture does not cause the coagulation in this type of cheese.) Although the rule of *G'vinas Akum* was precipitated by the use of animal rennet, it applies to *all* types of proteases used to curdle cheese, even those derived from vegetable sources (*Y.D.* 115:2). (The status of acid-set cheese may differ; see later discussion of cottage cheese.) The only exception is cheese that is actually *owned* by someone who is Jewish and for which no requirement mandates that a *Mashgiach* participate in its production (*Sha"Ch*, *ibid.*).

### **Cholov Yisroel**

Interestingly, *Chaza"l* tell us (*Avodah Zarah* 35b) that milk from non-Kosher species of animals cannot be made into regular cheese (see *M'Lamed l'Ho'il* II:36 for an interesting explanation of this phenomenon). Therefore, even though *Halacha* stipulates that Kosher *milk* must be supervised to ensure that it has not been adulterated with milk from non-Kosher species of animals—a concept known as *Cholov Yisroel* (*Y.D.* 115:1)—many authorities rule that such a requirement does not extend to cheese (see *Rama*, *Y.D.* 115:2, and *Igros Moshe Y.D.* III:16).

According to these opinions, Kosher cheese may be made with unsupervised milk. Other authorities, however, rule that this exception is valid only post facto and should not be relied on in the first instance. They therefore require the use of *Cholov Yis-roel* for the production of Kosher cheese.

### Rennet

Cheese that relies on rennet to effect the coagulation of casein is called “rennet-set” cheese. Virtually all the “hard” cheeses, such as cheddar, Münster, Emmentaler, blue cheese, and Gouda are of this type and are subject to the rule of *G'vinas Akum*. Many different types of Kosher rennet have been used, each with interesting *Halachic* implications.

Historically, cheese was produced by filling the fourth stomach of a slaughtered calf with milk, allowing the enzymes naturally present in the lining of the stomach—primarily rennin and pepsin—to curdle the milk. This process was later refined by taking slices of the stomach and adding them to vats of milk and, ultimately, to extracting the enzymes and concentrating them as a liquid known as rennet. As noted previously, rennet from non-Kosher animal tissue may not be used in the production of Kosher cheese. Kosher rennet could therefore be obtained only from the stomachs of calves that had been slaughtered as Kosher and subsequently processed according to *Halacha* (for example, removing forbidden fats [*Cheylev*] and soaking and salting the tissue to remove blood). A significant question was raised by early commentators, however, as to the permissibility of using such rennet to make cheese; a mixture of milk with rennet derived from meat would seem to violate the prohibition of mixing milk and meat together (*Ba'sar b'Cholov*). Indeed, some authorities prohibit the use of *any* type of animal rennet (see *Sha"Ch Y.D. 87 s.k. 30*) for precisely this reason. Most authorities,

however, rule that such rennet is permitted where it is derived from dried or chemically-treated tissue, based on the fact that the prohibition of *Ba'sar b'Cholov* assumes a mixture of milk and meat *flavors*. Even though the *action* of the tiny amount of rennet used may be noticeable, its flavor would be imperceptible (see *Ta"Z, ibid., s.k. 9* and *Sha"Ch Y.D. 87 s.k. 35*). Non-Kosher animal rennet, however, would not enjoy such a leniency, because it is inherently non-Kosher and cannot be considered *Batul*. Although authorities hold various opinions regarding rennet extracted from *dried* non-Kosher animal stomachs (see *Rama, Y.D. 87:10*), such material is generally not considered Kosher.

Because of the limited amount of animal rennet available, other proteases have been sought to make cheese. The *Talmud (Avodah Zarah 35b)* relates that ficin (an enzyme derived from figs) was used, and the *Tosafos (ibid., 35a)* relate that the cheese made in Narvonne (in the Provence) used some type of flower for this purpose. Indeed, certain cheeses made in Portugal (for example, Évora, Azeitao, and Serena) still use an extract of the thistle flower to curdle the milk. Today, virtually all-Kosher cheese, as well as the vast majority of *all* cheeses made throughout the world, is made with microbial rennet. (As noted previously, although microbial rennets are not derived from animal sources, the rules of *G'vinas Akum* nevertheless apply.)

Microbial rennets are proteases that are derived through either bacterial or fungal fermentation. Several strains of microorganisms have been identified that, when grown under appropriate conditions, produce proteases that coagulate milk into a cheese that is very similar (but not identical) to rennin cheese. Such “conventional” microbial rennets are known in the industry by the trade names Fromase<sup>®</sup>, Emporase<sup>®</sup>, and SureCurd<sup>®</sup>. The problem with these products is that they are not chemically identical to rennin and they function slightly

differently. In addition, these microorganisms produce other enzymes that can impart undesirable flavor characteristics to the cheese during production. Several companies have now developed genetically altered microorganisms that have been coded to produce true rennin; these products are sold under the trade names of *Chymax*<sup>®</sup> and *Maxiren*<sup>®</sup>. Because conventional microbial rennets function well for cheesemaking and are easier and less expensive to produce, the advantage of rennets produced through genetic engineering is a matter of debate. All, however, require reliable Kosher certification.

### **Fermentation**

The second feature of most cheese is the souring, or fermentation, process. Fermentation is a classic method of food preservation used in the production of wine (preservation of fruit juice), pickles (preservation of vegetables), sausages (preservation of meat), and various types of fish.

Preserving food through fermentation relies on the growth of desired types of microorganisms that serve to retard the growth of other types of microorganisms that cause food to spoil. This protection can take place in two ways: First, the beneficial bacteria can produce various types of organic acids, such as lactic acid and propionic acid. These acids tend to retard the growth of other microorganisms that cause food to spoil. Second, only a certain amount of bacteria can grow in a given environment. When beneficial bacteria enjoy an advantage in their competition for available nutrients, they can crowd out the undesirable bacteria that cause spoilage and inhibit the undesirable bacteria's growth.

In the production of many types of cheeses, lactic acid-producing bacteria grow in the lactose-rich milk and, in so doing, produce lactic acid and other chemicals and enzymes. Fermentation in these

types of cheeses is not sufficient to acidify the milk to the point of coagulation (as in the case of the acid-set cheese; see later in this essay concerning cottage cheese); rennet is necessary to develop the curd. However, the chemicals that are produced by the fermentation do contribute to both the preservation and the flavor of the cheese. Historically, these bacteria were part of the microflora that existed in the less-than-sterile environment of the udders of the cow, the hands of the milkmaid, and the vessels used to store the milk. As these bacteria grew, especially in the absence of modern refrigeration, the milk began to sour and develop a particular flavor. Different strains of bacteria tend to produce different flavors, and bacteria that were prevalent in one locale tended to produce a flavor in cheeses distinctive to that area. For example, Gouda cheese takes its name from the town of Gouda (Holland), Münster cheese from Münster (Germany), cheddar from Cheddar (England), brie from the Brie region of France, and Emmentaler from the Emme River Valley in Switzerland—based primarily on the fortuitous existence of a particular type of bacteria in that area. (Other factors, such as the type of milk used, the manner in which the cheese is cooked, and enzymes that are added, influence the characteristics of different types of cheeses.) Today, these strains of bacteria have been isolated and can be stored for long periods of time, allowing for them to be grown and be prepared commercially as pure bacterial strains, known as cultures. Cultures based on bacterial strains originally found in specific regions can be used in the production of “local” types of cheeses anywhere in the world. Certain varieties, however, have retained their local heritage by international agreement and have been granted recognition as *Fromages d'Appellation d'Origine*. For example, Roquefort cheese may be produced only in the Roquefort region of France and only from sheep's milk according to the classic

process. Most other types of cheeses, however, do not enjoy such legal protection.

In addition to lactic acid-producing bacteria, certain types of cheeses include other types of cultures. Blue cheese relies on a strain of penicillium mold to create the characteristic blue veins within the cheese. Brie and Camembert rely on strains of *Penicillium candidum* to form their characteristic downy-white crust. In all cases, cultures are collections of living organisms, and their growth and viability are dependent on providing them with appropriate nutrition. Many of the nutrients typically used to propagate these cultures, such as hydrolyzed proteins, may pose significant Kosher concerns. Because bacterial cultures assume the Kosher status of the nutrients on which they grow, they therefore require reliable Kosher certification.

### **Flavoring Enzymes**

In addition to cultures, other ingredients may be added to effect the flavor characteristics of certain types of cheeses. Provolone, Romano, and Parmesan cheeses rely on certain additional enzymes for this purpose. Historically, a product called *rennet paste* was used to make these cheeses. Instead of using just the fourth stomach of the calf to make pure rennet, producers of these cheeses took much of the alimentary canal of the animal, including the gullet, and ground it into a paste, which they then used to curdle the milk. The gullet is rich in an enzyme called lipase, as well as other types of proteases. Lipases react with fats in the milk to produce pungent flavors, and the other proteases react with milk proteins to create other flavors. The reaction of these enzymes in the milk yielded cheese with the unique flavors that are recognized today. Modern cheese production relies on purified enzymes to accomplish the same purpose, and the traditional sources of lipase/protease preparations have been calf, kid, and lamb oral gastric tis-

sues (meat from the gullet). Unfortunately, the typical method of preparation of these materials involved using tissue from non-Kosher animals and could not be permitted for use in the production of Kosher cheese. One solution to this problem was the development of microbial lipase preparations, using processes similar to those used to produce microbial rennet. More recently, production of Kosher, animal-derived lipase preparations has been approved by certain organizations. These preparations are produced from Kosher animal tissue that has been soaked and salted and then processed to remove all meat flavors, and are regarded in *Halacha* in much the same manner as is Kosher animal rennet—both of which require reliable Kosher certification.

### **Aging**

Cheese also develops much of its flavor through a process called *aging*. The microbial action of the cultures and the proteolytic and lipase activity of the enzymes used in the manufacture of the cheese do not stop abruptly after the cheese has been produced. As the cheese ages, these activities continue affecting the protein and fat in the cheese to produce the pronounced flavors of a fine, aged cheese. Indeed, milk naturally contains a significant amount of lipase, and the activity of this lipase has historically been part of the flavor development of certain types of cheeses. Heating the milk, as takes place during pasteurization, tends to deactivate these lipases, and many cheesemakers have insisted on using unpasteurized milk for this reason. Much to the dismay of such cheesemakers, modern health regulations have mandated the pasteurization of much of the milk used to produce cheese. However, regulations often permit the use of unpasteurized milk to make cheese that will be aged for a significant period of time (more than sixty days) because such aging allows for the *natural* pasteurization of the cheese.

### **Enzyme-Modified Cheese**

Aging, however, is costly and time consuming, and cheesemakers have devised ways of speeding up the process. When additional lipase and protease enzymes are added to the cheese, this process can be hastened, especially when a very pungent cheese is needed for use as a flavoring. Such a product, called “enzyme-modified cheese,” may be Kosher if both the original cheese and the enzymes used in its processing are Kosher.

### **Salt**

A third feature of most cheese production involves adding salt, which serves to add flavor and act as a preservative. Salt can be introduced in several ways. For cheddar cheese, the curd is sprinkled with salt before being pressed in a block, a process called direct salting. For Münster, mozzarella, and many other types of cheeses, however, the unsalted curd is pressed into a block, which is then soaked in a salt brine solution to allow the salt to be absorbed into the cheese. Brine in which non-Kosher cheese had been soaked may not be used for Kosher cheese production because brine is considered *Ro'sei'ch* (“hot”) and flavors transfer between the brine and the product as though they were cooked (*B'lios*). Cheese factories that produce both Kosher and non-Kosher cheese must therefore maintain separate brines for Kosher use. In addition, the non-Kosher brine tank may itself not be used for fresh Kosher brine unless it has been properly Kosherized. (Blocks of cheese *can* be coated with dry salt instead of soaking in brine. However, brining is a much more efficient and uniform process.)

### **Cooking**

Another *Kashrus* issue in cheese factories involves equipment used for both Kosher and non-Kosher cheese productions. Most types of cheeses are produced at temper-

atures below *Yad Soledes Bo* (about 115–120°F), and equipment used at that temperature need not be Kosherized for a Kosher production, although it must be cleaned between the non-Kosher and Kosher productions. This is true even though the walls of the cheese vat are heated. (Even though the *walls of the vat* may reach a temperature above *Yad Soledes Bo*, most authorities have ruled that the Kosher status of the tank is not compromised because the *cheese* does not reach this temperature.) Swiss cheese, however, is cooked to about 126°F in the cheese vat; such vats must therefore be Kosherized prior to a Kosher production. (Interestingly, some companies have succeeded in reducing the cook temperature of Swiss cheese to below 120°F to avoid *Kashrus* concerns relating to the whey derived from these cheese productions; see “The Story of Whey,” in this chapter, for a full explanation of this issue. In such situations, the cheese vat does not require Cauterization.) *Pasta filata*–type cheese, such as mozzarella, however, is heated in a special cooker/stretcher to over 160°F to develop the protein’s stringy structure characteristic of this type of cheese. Kosher production in such equipment entails a Kosherization of the cooker as well as of the molds into which the hot cheese curd is filled.

### **“American” Cheese**

The production of “American” cheese poses a similar equipment concern. More properly known as “American process cheese,” this product is actually *not* a cheese, but rather a blend of various types of cheeses along with other dairy solids, flavors, colors, and emulsifiers.

This blend is melted to form a homogeneous mixture, and its Kosher status is a function of the cheeses and other ingredients used in its production. In addition, the equipment in which the cheese is cooked must be Kosherized for Kosher productions.

### **“Hard” and “Soft” Cheeses**

Although all rennet-set cheese is subject to the rules of *G'vinas Akum*, a distinction is made in *Halacha* between “hard” and “soft” cheeses. After eating meat, *Halacha* requires that one wait a certain period of time, generally accepted as six hours by most communities, before eating dairy foods (see *Y.D.* 89:1). This rule is based on the requirement to maintain a separation between milk and meat and an assumption that meat residue may remain in one’s mouth or between one’s teeth for that period of time. However, one may eat meat immediately (or, according to some customs, one hour) after dairy products (*ibid.*, 89:2), based on the assumption that dairy foods are lighter and tend to be washed out of the mouth more quickly, in which case merely eating and drinking something after the dairy products suffices to remove any residue. The *Rama* (*ibid.*) notes, however, that this is not the case with “hard” cheese; therefore, one must wait the full six hours. The distinction between “hard” and “soft” cheese is the subject of much discussion. However, all agree that cheese aged less than six months can be considered a soft cheese. Others, such as Parmesan and Romano, are certainly considered “hard” cheese for this purpose because they are typically aged for more than six months. According to some opinions, Swiss cheese is also considered a “hard” cheese because the “holes” in the cheese may be considered indicative of a significant aging process (see *Ta”Z*, *ibid.*, *s.k.4*). (Some have argued that the *storage* of a finished cheese should also be counted toward the “six-month” aging period, making it more difficult to determine which cheese is actually *aged*. Indeed, some *Kashrus* organizations have therefore taken to putting a “six-month date” on the cheese, after which it might be considered a “hard” cheese and subject to the six-hour waiting period. Most opinions, however, do not regard such refrigerated storage as tanta-

mount to aging and do not require an “aging” date.) Also interesting to note is that the *Yad Yehudah* (*Y.D.* 89:30) rules that hard cheese loses its status when it is included in cooked foods. Some disagreement exists, however, as to whether this applies to “cooked” cheese or is valid only if the cheese is blended into a cooked item.

### **Acid-Set Cheese**

Cheese that relies on acidification to cause casein coagulation is called “acid-set” cheese, and the *Halachos* regarding this type of product may differ markedly from that of its rennet-set sibling. Such acidification can take place in two ways. It can be caused by bacterial fermentation, in which the bacteria produce sufficient lactic acid for the milk to reach its isoelectric point of pH 4.6. Another means of accomplishing this is by adding acid directly to the milk.

Classic cottage cheese was produced by allowing unpasteurized, bacteria-laden milk to ferment and curdle. The resulting product was a mixture of “curd and whey,” much to the delight of Miss Muffet. Because fluid milk is about 4 percent butterfat, the fat content of regular cottage cheese is the same. Cottage cheese, cream cheese, and Neufchâtel cheese are all produced using this acidification principle but differ in the type of culture used and the amount of fat in the milk. The method by which modern cottage cheese is produced, however, differs somewhat from the classic method. Today, milk is first skimmed to remove all fat and then inoculated with a culture. (Some companies merely add acid directly to the milk, however, bypassing the fermentation process completely.) The resulting curd is then washed, and a dressing made from milk and cream with about 20 percent butterfat is mixed with the curd to yield regular 4 percent butterfat cottage cheese.

Lower-calorie cottage cheeses are made by varying the amount of butterfat in the



dressing. Of significant *Kashrus* concern with this process are the emulsifiers and stabilizers used in the dressing. Indeed, very low fat or fat-free cottage cheese may use gelatin in the dressing. Farmer's cheese is generally the same curd as cottage cheese without any dressing added.

The curd of acid-set cheese differs markedly from that of rennet-set curd. Rennet curd is sweet, soft, and gel-like, entraps fat and whey, and forms a solid block when pressed together. Acid curd is sour, drier, more rubbery, and tends to crumble when pressed into a block. The distinction between acid-set and rennet-set cheese is also significant from a *Halachic* perspective. Although the rules of *G'vinas Akum* clearly apply to rennet-set cheese—even when microbial rennets are used—many authorities rule that acid-set cheese is exempt from this requirement and is considered to be merely “fermented milk” from a *Halachic* perspective. Rabbi Moshe Feinstein *zt"l* (*Igros Moshe Y.D.* II:48) argues that because cottage cheese would form naturally without the need to add any coagulating agent, it is possible that it is not the type of cheese subject to concerns of non-Kosher rennet. Rennet-set cheese, however, is of a *type* that requires such chemicals and is therefore subject to the requirements of *G'vinas Akum*. Rabbi Feinstein further notes that, according to this approach, the use of a minor amount of rennet in cottage cheese would not affect its exemption from *G'vinas Akum* because the amount of rennet used is trivial and could not itself cause the milk to curdle. Although Rabbi Feinstein does not give an unequivocal approval to such cheese, most *Kashrus* organizations accept this thesis and certify cottage cheese, cream cheese, and other similar types of soft cheeses without continuous on-site supervision by a *Mashgiach*.

One should note that the term “soft” cheese used in this context is unrelated to the issues of the “hard” and “soft” characteristics of rennet-set cheese as relate to waiting six hours before eating meat. In addition,

the industry uses the term “soft” cheese for many rennet-set types of cheeses, such as Brie and Camembert, which are certainly subject to the rules of *G'vinas Akum*. The proper *Halachic* distinction between acid- and rennet-set cheese, however, is the level of rennet used. Typically, rennet-set cheese requires between 60 and 85 milliliters of rennet per 1,000 pounds of milk, whereas acid-set cheese may use a maximum of 0.8 milliliters for the same amount of milk.

Although most cheese is based on the coagulation of casein, some types of ricotta cheese are produced through the curdling of whey protein. Although whey is not susceptible to coagulation with rennet, it can be forced to precipitate out of solution by a combination of heat and acid. *Ricotta* means “recooked” in Italian and is typically produced by cooking whey together with vinegar or citric acid to cause it to curdle. As regards the issue of *G'vinas Akum*, ricotta cheese certainly enjoys the leniencies accorded to cottage cheese. Indeed, the *P'ri Chodosh* (*Y.D.* 11 *s.k.* 21) states specifically that ricotta cheese is *not* subject to the prohibition of *G'vinas Akum*.

### **Casein**

The food ingredient form of casein is produced by clotting fresh skim milk. The milk can be clotted by using a strong acid (acid casein), a culture (lactic casein), or rennet (rennet casein). From a *Halachic* perspective, the first two types of casein (both of which are acid precipitations) can be considered identical to cottage cheese with respect to concerns of *G'vinas Akum* and are typically produced without a *Mashgiach* being constantly present. Rennet casein, however, is generally considered to be a true “cheese” and is subject to the restrictions of *G'vinas Akum*. Productions of Kosher rennet casein therefore require the same full-time supervision and participation of the *Mashgiach* in its production as does cheese. Please note that the equipment on which non-Kosher rennet

casein is produced loses its Kosher status because the coagulation and drying of rennet casein take place at temperatures above *Yad Soledes Bo*. Production of otherwise Kosher acid casein on the same production system requires an appropriate Cautioning of the equipment.

Casein, by definition, is an insoluble precipitate and must be modified into a soluble product for many applications. Acid casein can be treated with alkaline chemicals to return its pH to a more neutral state, at which point it regains its solubility. Sodium carbonate, potassium hydroxide, and calcium hydroxide are often used for this purpose, yielding sodium caseinate, potassium caseinate, and calcium caseinate, respectively. Rennet casein, however, is insoluble because of the chemical changes of the protein itself, and cannot be resolubilized by reacting it with an alkali. Hence, caseinates must be produced from acid casein. The primary use of rennet casein is in the production of imitation cheese.

### **“Non-Dairy” Milk**

One last word about casein: Beware of the statement “Non-Dairy” on many food products—from a *Kashrus* perspective, they are as quintessentially dairy as any other milk product. Because the American dairy industry cannot compete in the production of casein, the U.S. government has decreed that it is not “real” milk and that any products that use it must be labeled “Non-Dairy.” *Halacha* obviously does not take this approach, and products containing casein or caseinate are clearly marked “Dairy.” The technology of the dairy industry is constantly evolving, and the responsibility to ensure the *Kashrus* of these products is an ongoing challenge.

### **The Bottom Line**

- Cheese that relies on a proteolytic precipitation of casein is subject to the rules of *G’vinas Akum*, which creates produc-

tion requirements for Kosher cheese apart from ensuring the Kosher status of all ingredients.

- To satisfy the requirements related to *G’vinas Akum*, a *Mashgiach* must participate in the cheesemaking process. Some authorities require that he actually add the coagulant to the milk, which is the commonly accepted practice. (Some *Kashrus* organizations also require that the *Mashgiach* add any microbial culture to the milk.) Other authorities rule that his actually seeing the rennet being added is sufficient.
- Cheese produced without addressing the requirements of *G’vinas Akum* is considered non-Kosher, regardless of whether only Kosher ingredients were used. In addition, such cheese would compromise the Kosher status of equipment in the same manner as any other non-Kosher product (for example, if it were cooked in the equipment to temperatures above *Yad Soledes Bo*).
- According to some opinions, cheese (both acid- and rennet-set curd) is exempt from the requirements of *Cholov Yisroel*.
- The protease preparation used to produce cheese is called rennet.
- True rennet is derived from the fourth stomach of a calf and must be produced from Kosher-slaughtered and -processed material to be considered Kosher.
- Most “rennet” used today is microbially derived, both from naturally occurring and genetically engineered microorganisms. The Kosher status of these products is dependent on the nutrients on which the microorganisms grow.
- The rules of *G’vinas Akum* apply equally to cheese that is set with any type of “rennet”—animal, microbial, or plant-derived.
- The cultures used to sour the milk before coagulation must bear a reliable Kosher certification. The same is true of any other ingredients added to the cheese, including lipase and other enzyme preparations.

- Enzyme-modified cheese is produced by adding enzymes to the cheese, either as part of the cheese production or in subsequent processing.
- Such enzymes must bear a reliable Kosher certification.
- After eating certain types of cheeses that have been aged for more than six months, an observant Jew may be required to wait six hours before eating meat. (The actual time may vary because of different *Min-hagim* [customs].) Some *Hashgachos* (Kosher certifications) therefore label cheese with the date of manufacture to be able to determine its exact age for this purpose. Aged cheese that has been cooked may not be subject to this restriction.
- Salt brines in which non-Kosher cheese has been soaked may not be used to process Kosher cheese. In addition, the non-Kosher brine tank may itself not be used with fresh Kosher brine unless it has been properly Kosherized.
- The vats in which non-Kosher cheese has been produced may be used for Kosher cheese after normal cleaning, provided that the non-Kosher cheese is not heated above 120°F.
- Cheese vats and *pasta filata* cookers used to heat non-Kosher cheese above 120°F must be Kosherized prior to use for Kosher productions.
- The same holds true for the molds in which hot cheese is poured, as well as the equipment used to heat and mold non-Kosher, American process cheese.
- Cheese that is curdled by acidification (such as cottage cheese and cream cheese) may not be subject to the rules of *G'vinas Akum*. This is true as long as the *primary* coagulation is by acidification, even if a small amount of rennet is also used. The custom of most Kosher-certifying agencies is to follow this approach.
- The cream dressing used in cottage cheese may include gelatin and other emulsifiers that require reliable Kosher certification.
- Acid casein has the same *Halachic* status as cottage cheese and is generally considered exempt from the strictures of *G'vinas Akum*.
- Rennet casein, however, is considered subject to the rules of *G'vinas Akum* and requires the same type of supervision as cheese. Equipment used to process rennet casein must be Kosherized before it may be used to produce Kosher acid casein.
- *Halacha* considers casein to be a dairy product, regardless of regulatory labeling policies (that is, a “Non-Dairy” label).

# The Story of Chewing Gum

גם זו לטובה

תענית כ"א ע"א

**Gum—*Zo l'Tovah***

*Ta'anis 21a*

Of the many uniquely American inventions that we enjoy, chewing gum holds a special place in the world of *Kashrus*. Although it is often maligned—in the Czech Republic, for example, chewing gum is called *zvykacka*, cud chewing—the *Kashrus* issues involved in its production are fascinating. The “crisis” in the 1980s involving this masticated confection has shed new light on these concerns and should provide some interesting food for thought. The purpose of this essay is to illustrate the need for reliable Kosher certification of chewing gum and to explain the question that bedeviled consumers of late. (Editor’s note: A serious question as to the Kosher status of the synthetic rubber used in chewing gum became known in the late 1980s. This essay was written to explain the question and its resolution.)

## **History of Chewing Gum**

To deal with the *Kashrus* issues relating to chewing gum, one must first understand a bit of history and chemistry. Latex is a chemical term referring to a dispersion of extremely small particles of an insoluble liquid or solid material in a liquid. The natives of Central and South America have long known that the latex sap from certain trees has some particularly desirable properties and used it to make volleyballs and waterproof clothing. They also used it for chewing. When the New World was discovered, Europeans adopted this material and adapted it to new

and important applications. John Priestly noticed that the hardened latex could be rubbed over pencil markings to erase them and coined the name “rubber.” Charles Macintosh found that rubber could be dissolved in hexane. He used the resulting solution to waterproof clothing, creating the “Macintosh,” the first truly water-repellent raincoat (not the computer). Charles Goodyear overcame rubber’s propensity to crack in cold weather and melt in heat by treating it with sulfur, a process known as vulcanization. Now that rubber could be used to make durable products, such as tires, it became a critical material for both industrial and military purposes.

However, the story behind rubber’s application in chewing gum is perhaps the most fascinating. The Mexican leader Antonio Lopez de Santa Anna is famous for both conquering the Alamo and then losing Texas to the United States. However, in a strange twist of fate, he may yet have taken his final revenge by getting his Yankee nemeses addicted to chewing gum! Having managed to have himself declared president and then be deposed from office four times in his career, Santa Anna spent some of the time during his last exile in New York City, looking for new ways to finance his return to political power in Mexico. In 1867 he befriended a chemist named Thomas Adams, whom he interested in the latex from the Mexican sapodilla tree as a new source of rubber. Unfortunately for Santa Anna, *chicle* (as this latex was known) was not a suitable substitute for the rubber

derived from other sources, and he was never able to realize a profit from the enterprise. Adams, however, did find another use for the material—as chewing gum—just as the ancient Mayas had discovered one thousand years earlier! Indeed, the Mayas had called the gum *tsicte*, the source of the word *chicle* and of the brand name Chiclets<sup>®</sup>, which was one of the first products of Mr. Adam's new chewing gum company.

The importance of rubber, of course, was not confined to chewing gum. Rubber was one of the first strategic raw materials and, during World War I, Germany was forced to develop the first commercial synthetic rubber production because of the allied blockade of German maritime commerce. During World War II, however, the sneaker was on the other foot. The United States, similarly deprived of its access to Asian rubber, undertook a program, second in scale only to the Manhattan (atomic bomb) project, to develop a synthetic version of this vital raw material. Although perhaps not the “strategic” use originally envisaged, synthetic rubber finds its way into chewing gum with interesting *Halachic* ramifications.

## **Production**

Chewing gum, and its close relative bubble gum, is made in two stages. The first involves the manufacture of the gum base. Gum base is made by mixing and heating some or all of the following ingredients: chicle, natural rubber, synthetic rubber, waxes, plasticizers, and emulsifiers. The gum base, however, is tasteless and too brittle for use as is. The second step involves mixing the gum base (about 25 percent) with powdered sugar and corn syrup (about 70 percent) and adding flavorings, glycerin, and coloring. The mixture is then extruded into the final gum product. Production of gumballs also involves adding a candy shell to the gum. The need for reliable *Hashgacha* for gum stems from many

ingredient concerns. Plasticizers can be pure lard or tallow, and emulsifiers are often made from animal fats. Flavors and glycerin can also be completely non-Kosher. Even if all the ingredients in a Kosher gum were acceptable, the equipment on which the product is made requires *Kashering* from non-Kosher productions. Although the gum itself is not swallowed, these fats and flavors migrate from the gum into the mouth.

## **Kashrus Concerns**

Much to the delight of many consumers, Kosher gum has been around for some time. Great attention is paid to ensure that all fats, emulsifiers, and flavors used for Kosher gum meet the most stringent standards of *Kashrus*. However, what could be a problem with synthetic rubber? Is it not essentially a petrochemical—a product derived from petroleum? It is on this point that the tale turns.

Certain chemicals used in the production of synthetic rubber are often derived from animal fats. Creating artificial rubber involves suspending and reacting very small bits of monomers (butadiene and styrene) in a soapy solution to create a rubber polymer. This soap is often made from fatty acids derived from animal fats.

An inspection of a manufacturer of the synthetic rubber in the 1980s used to make the gum for several (but not all) brands of Kosher gum revealed that this company did indeed use both Kosher and non-Kosher fatty acids in the production of its various types of synthetic rubber. A great deal of concern was expressed as to the Kosher status of gum base containing a synthetic rubber that was made in a factory that uses ingredients of animal origin. Could any non-Kosher ingredients or equipment have compromised the *Kashrus* of the gum base rubber? The questions that were posed and the responses given are instructive with respect to a whole series of *Halachic* concepts.

First, it was noted that any residual, non-Kosher fatty acids are nullified by the ratio of 1/60 when the synthetic rubber is added into the gum base. In addition, the gum base itself constitutes only about 25 percent of the finished gum. A number of authorities suggested that the issue of *Chana'n* (*Cha'ticha Na'asis N'veila*) (the entire item being considered prohibited material) does not come into play because the synthetic rubber is not a food. Further, at the time the fatty acids are used, the rubber is in a liquid state, for which the rules of *Chana'n* are more lenient. Additionally, far from clear was whether non-Kosher material was indeed used in Kosher material, because the company did maintain a stock of Kosher fatty acids for food-grade productions. Some authorities also felt that the synthetic rubber rendered the fatty acid inedible and was thus permissible. Other authorities held that the fatty acid itself is tasteless and may therefore be negated in its own right.

Taking all these factors into consideration, and based on the information available at the time, authorities determined that all the product in question was indeed Kosher as a matter of *Halacha*; no need existed to recall any product from the market. A conclusive decision as to the *Halachic* status of the synthetic rubber, however, awaited further evaluation.

Working with the manufacturer and the certifying agency of the synthetic rubber, we were recently able to resolve this issue. This author visited the plant and found a dedicated system for handling the Kosher oleic acid used to manufacture *all* food-grade rubber in the plant. All oleic acid in the food-grade system was Kosher, and each certified production was supervised by a *Mashgiach*. Although some of the equipment used to produce Kosher product was also used to make non-food-grade rubber that contained non-Kosher fatty acids, the chemicals used in the non-food-grade product were so noxious as to make those prod-

ucts bitter and thus inedible. As a result, none of the equipment on which they were produced could be considered non-Kosher. In addition, fatty acids are never used directly to make synthetic rubber. They are first saponified (turned into soap) with caustic solutions—the quintessential inedible substance. Although the soap is eventually neutralized in the final stages and some of the recovered fatty acids remain in the product, these recovered fatty acids were never intended for food use. After being rendered inedible, they would not compromise equipment; furthermore, they contain other chemicals that render them bitter.

The *Talmud* (*Ta'anis* 21a) relates that, to every event that befell him, Reb Nachum would pronounce “*Gum Zo L'Tovah*”—“This, too, is for the good.” Indeed, his trust in Divine Providence was such that he earned the distinction of being called “*Ish Gum Zo*”—“a man who believed that everything emanated from the Almighty.” The recent “Bubble Gum Crisis” was clearly a case of *Gum Zo L'Tovah*, for it allowed us to delve into many detailed and interesting aspects of *Halacha*. In the final analysis, the gum was clearly permitted without question, but the concern for *Kashrus* demonstrated during the “Bubble Gum Crisis” is eloquent testimony to the concern felt by the Kosher-consuming public. Therefore, the next time you deal with a stick of Kosher gum, remember that both it and the issues involved are really something you can “sink your teeth into.”

### **The Bottom Line**

- Chewing gum (and bubble gum) is based on a mixture of natural and synthetic rubber compounds. Natural rubber is latex derived from certain types of trees and poses no *Kashrus* concerns. Synthetic rubber is produced through the polymerization of certain types of petrochemicals, which pose no inherent Kosher concerns.

However, the fatty acids used in their synthesis require reliable Kosher certification.

- Chewing gum is usually produced in two stages: The first involves the mixture of rubber and softening agents into a gum base. These softening agents, also known as plasticizers, are typically different types of fats and glycerin, all of which require reliable Kosher certification. The second stage involves blending the gum base with flavors, colors, and sweeteners.
- Flavorings require reliable *Hashgacha*, as do some of the sweeteners (such as glycerin).
- The equipment in which both the gum base and the finished gum are produced requires appropriate Kosherization before Kosher production.
- The equipment used to make the synthetic rubber, however, may itself not need Kosherization, even if non-Kosher fatty acids are used to make inedible synthetic rubber.

# The Story of Chocolate

## Cocoa—*Bean Ta'vin*—בין תבין

Proverbs 23:1

משלי כ"ג א'

King Solomon writes, “When sitting down to a meal with a ruler, be exceedingly mindful [*bin tavin* in Hebrew] of what lies before you” (Proverbs 23:1). The *Ralbag* explains the “food” in this verse as alluding to wisdom and the “ruler” to the mind. The admonition of Solomon is for one to take advantage of all the “food” before him to nurture his mind, and in the field of *Kashrus*, we have many opportunities to use an understanding of food to further this purpose. Few foods inflame gastronomic or *Kashrus* emotions as passionately as chocolate, and the *Halachic* issues relating to the cocoa bean are quite worthy of our analysis. Enjoyed by the Aztecs and Incas for thousands of years, chocolate was enjoyed by Cortez in the court of Montezuma, brought to Europe by the Spaniards, and improved upon by the intrepid Dutch. Processes have changed and components have increased over the centuries, affording us new *Halachic* issues and problems with which to contend. The purpose of this chapter is to clarify the terms used relating to chocolate and highlight some interesting *Halachic* considerations. In the world of chocolate, “butter” is not dairy, “liquor” is nonalcoholic, and “chocolate” may contain meat and it should have a temper.

### B'rachah

The various types of cacao trees, from which the cocoa bean is derived, are collectively known by the name *theobroma* (food of the

gods) and grow in tropical areas of the Americas and Africa. After harvesting, the pods of fruit that contain the beans are allowed to ferment naturally. The beans are then removed and roasted, and the “meat” inside the bean is broken into small pieces called nibs. These nibs are then ground to yield viscous liquid called chocolate liquor. The Aztecs mixed this liquor with hot water to create a much prized, if bitter, beverage—hence the term *chocolate* from the Mexican Indian *choco* (foam) and *atl* (water). When Cortez introduced the beverage to Europe, his market surveys indicated that Europeans preferred a sweeter beverage, and by 1580, hot chocolate flavored with sugar and vanilla was commonly consumed in Spain. Interestingly, Jewish traders are claimed to have brought the drink to France, from where its use spread throughout Europe. Although the history of chocolate as a hot beverage may seem pedantic, its *Halachic* implications are quite significant.

The *Sha'arei T'shuvah* (O.C. 202:19) discusses the appropriate *B'rachah* (blessing) that one should say before eating chocolate and quotes several opinions that it should be *she'Hakol* (the blessing for most liquids and derivatives of fruit), as well as notes that this is indeed the commonly accepted practice. *Dayan* Gavriel Kraus, however, in his work *M'kor ha'B'rachah* (21), quotes the opinion of Rabbi Shlomo Zalman Auerbach *zt"l* (*Minchas Shlomo* Vol. I, 91:2) and argues that the appropriate *B'rachah* for the chocolate we eat today



should be *Bo'rei P'ri ha'Etz* (the *B'rachah* designated for the actual fruit itself). Chocolate for *eating* is a relatively recent innovation, first appearing in 1845, and it differs markedly from the chocolate beverage that had been available for the previous two hundred years, known today as “hot chocolate.” Hot chocolate is predominantly water (or milk), and indeed the appropriate *B'rachah* for such liquids is *she'Hakol*. In contrast, eating chocolate is composed of chocolate liquor with sugar and additional fat added—and virtually no water. Because the cocoa beans were grown *for the purpose of making chocolate*, such chocolate should retain its innate status as a fruit and its appropriate *B'rachah* should be *ha'Etz*. Rabbi Kraus argues that the opinions cited by the *Sha'arei T'shuvah* that specify a *she'Hakol* related only to the chocolate beverage available at the time, and the perpetuation of *she'Hakol* for solid chocolate is an inappropriate analogy between the historic chocolate beverage and the modern eating chocolate.

Rabbi Moshe Feinstein (*Igros Moshe O.C. III:31*), however, discusses the appropriate *B'rachah* that one should make on chocolate-covered raisins and clearly assumes that the chocolate itself is subject to a *she'Hakol* (see various other opinions quoted in *Mishnah Halachos VI:38* and *Tif'eres T'zvi 6* from Rabbi Kornmehl).

### **Modern Chocolate Processing**

Chocolate liquor, also known as chocolate mass, is too intense to be eaten by itself and, as discussed previously, historically had been used as a base for hot cocoa drinks. However, in 1825, Conrad Van Houten developed a press that could separate cocoa butter from chocolate liquor, yielding cocoa *butter* and cocoa *powder*, or *cocoa*. Although removing all the cocoa butter from cocoa using this process is impossible, the chocolate flavor is concentrated in the cocoa powder. (Cocoa powder is cate-

gorized by the amount of cocoa butter that remains after pressing, and if a very low fat cocoa powder is desired, the powder can be solvent extracted using a process similar to that used to decaffeinate coffee.) *Dutched* cocoa powder is treated with an alkalizing agent (such as calcium carbonate) to modify the flavor and darken the color. (Note that the *Dutching* process may also involve the use of a small amount of a reducing sugar, such as glucose, which may pose a *Chometz* concern for Passover.) Cocoa butter is an insipid fat; it imparts no flavor to chocolate. Its importance, however, stems from the fact that it melts at and below body temperature, allowing chocolate to have that “melt in your mouth” sensation. If additional cocoa butter, as well as sugar, is added to chocolate liquor, a new confection called *eating chocolate* can be produced. The actual inventor of “chocolate for eating” is unknown but, in 1847, a product called *chocolate delicieux à manger* was sold in England. It is credited by some as being the progenitor of this basic food group.

In the United States, the Food and Drug Administration (FDA) establishes a “Standard of Identity” for many foods. To be called “chocolate,” the product must contain the following ingredients: cocoa, cocoa butter, sugar, lecithin, and vanillin—and nothing else. *Milk* chocolate also contains whole-milk solids. These definitions are ironclad; no deviations are tolerated. If, for example, another type of fat is used in place of, or in addition to, cocoa butter, the product may be called *compound* chocolate, but never plain chocolate. (Many chocolate products, however, use alternative fat blends. Such blends are typically less expensive than cocoa butter and allow the manufacturer to adjust the melting temperature and other characteristics of its product. Pure chocolate does *not* do well in the summer!) The definition of chocolate in various European countries, on the other hand, is quite a bit broader. Fats other than cocoa butter may be used in European chocolates. Indeed, the Belgians are

fond of using animal fat in their chocolate because of the softer texture it imparts. Clearly, one person's chocolate is another person's nightmare.

Nightmares are indeed the stuff of which Kosher certifications are made. Although chocolate can clearly contain *obviously* non-Kosher material, many other *Kashrus* problems can lurk beneath the surface. For example, lecithin (a soy derivative) would seem harmless were it not for the fact that it may contain animal-based fatty acids. Whey, the *Kashrus* of which has been the subject of much discussion in other chapters, is often used in European chocolate as a replacement for nonfat dry milk. Various types of fat-based emulsifiers can be used in chocolate and compound chocolate, and even butter oil can pose a *Kashrus* concern. These ingredient concerns relate to chocolate itself, to say nothing of chocolate-coated products that may contain any number of questionable ingredients. Even if a chocolate contains no questionable ingredients in and of itself, it may still be processed on equipment that is used for non-Kosher products.

(Until recently, a European delicacy known as *white* chocolate [a blend of cocoa butter or other fats, sugar, milk powder, and vanillin] did not meet the Standard of Identity for milk chocolate and could not be sold in the United States under that name because it contained no cocoa. Early in 1997, however, the FDA received a petition to establish a Standard of Identity for white chocolate and in 2002, the petition was granted—the first new food “identity” recognized by the U.S. government in twenty years!) The art of chocolate making involves manipulating the crystal structure of the cocoa, fat, and sugar to provide a smooth melt in the mouth.

During the first step, refining, the fat, cocoa, and sugar are milled to a very fine particle size. The mixture is then subjected to a process called conching, considered by chocolatiers to be the true art of the process of making chocolate. Conching involves

kneading the chocolate mixture with additional cocoa butter for twenty-four to ninety-six hours at over 150°F to give it its final smoothness and creaminess and remove any residual moisture. (The conching process was developed by Rodolphe Lindt in 1879 and it allowed for the creation of chocolate with a velvety smooth, fluid texture that has no trace of bitterness. The term *conche* is derived from the Latin *concha*, meaning “seashell.” The original conche used to process chocolate consisted of a flat granite bed upon which heavy granite rollers attached to steel arms rolled back and forth over the chocolate. These old longitudinal conches looked like shells, hence the name.) Most modern conches vary in construction and use steel rollers, but the essential process of imparting smoothness to the product remains the same.

The final step in the manufacture of chocolate is *tempering*. As liquid chocolate cools and solidifies, the cocoa butter forms crystals. To temper chocolate, it is heated and cooled under controlled conditions so that a fine, even-grained texture is developed. Typically, chocolate at this stage is not heated above 115°F. Careful tempering also reduces the tendency of chocolate to bloom. The bloom is the fuzzy white haze that forms on the surface of chocolate as cocoa butter melts and recrystallizes. Lecithin, a natural emulsifier derived from soybeans, is added to chocolate to reduce this problem, which can appear on chocolate that has been stored or refrigerated for long periods of time.

### **Milk Chocolate**

One of the peculiarities of chocolate is that water interferes with the crystallization of the cocoa butter. During its processing, the fine particles of chocolate are aligned in a tight matrix with fat. If water is incorporated into chocolate, it becomes a hard, brittle mass. Although the taste of chocolate could be improved by mixing it with milk,

fluid milk is more than 90 percent water and incorporating it into chocolate posed a serious challenge. The thrifty Swiss, in particular, were keen on finding a way to incorporate milk into chocolate as a means of using their surplus milk and, in 1875, a Swiss manufacturer named Daniel Peters discovered the key to a successful milk chocolate process. By using milk *powder*, he was able to produce a coarse, dry, milk chocolate bar. By 1897, however, Mr. Peters had perfected a process using *condensed* milk to produce an intermediate product called milk crumb. Milk crumb is produced by cooking chocolate liquor with sweetened condensed milk, drying this mixture into a powder, and subsequently blending it with cocoa butter to produce chocolate. Today, most chocolate candy bars in the United States are made using the milk crumb process, whereas producers of chocolate for further manufacturing generally use powdered milk.

Of *Halachic* interest is that because fluid milk cannot be used to make milk chocolate, those who follow the opinion of Rabbi T'zvi Pesach Frank (*Har T'zvi Y.D.* 103 and 104), who rules that powdered milk need not be *Cholov Yisroel* (supervised milk), may have a significant reason to rejoice. (This joy should be tempered, however, by the realization that caramels and fillings in chocolate often use fluid milk.) Milk chocolate made with powdered milk would be subject to this leniency. Some discussion exists among contemporary authorities, however, as to whether milk chocolate produced with milk crumb is similarly advantaged. The Chief Rabbinate of Israel does not allow the use of non-*Cholov Yisroel fluid* milk. However, it does allow that *powdered* milk is acceptable for use even if not *Cholov Yisroel*, according to the aforementioned ruling of Rabbi Frank. The question of the status of milk crumb was posed to the former Chief Rabbi *ha'Rav* Shapira, who tentatively declined to accept milk crumb based on the leniency of milk powder. He ruled that in all *Halachic* applications, one must look at the

status of the “majority” of product. Because milk crumb contains only a *minority* of milk, it is not considered “milk” as regards the leniency of powdered milk. (However, the question was also asked to Rabbi Shlomo Zalman Auerbach *zt”l*, who felt that milk crumb was indeed equivalent to milk powder in this regard.)

## **Kashering**

The inability of chocolate production to tolerate water has another *Halachic* implication. Many chocolate production systems are used for both milk chocolate and dark (non-dairy) products. Because water is inimical to the manufacture of chocolate, *Kashering* equipment from dairy to Pareve (or from non-*Cholov Yisroel* to *Cholov Yisroel*) productions poses a formidable challenge. In general, chocolate manufacturers never allow *Kashering* with water. If heating the equipment to temperatures of *Libun Kal* (approximately 450°F) is not practical, the only other solution would be to perform a *Hag'olah* with hot chocolate or cocoa butter. Such a *Kashering* is, again, the subject of discussion among contemporary authorities. Aside from general concerns with the *Halachic* implication of Kosherization with liquids other than water, an additional concern stems from the fact that cocoa butter is not a liquid at room temperature and may therefore not even be considered a liquid at all (see *Igros Moshe Y.D.* I:60). (The latter concern could be addressed by using other vegetable oils that are liquid at room temperature.) Many authorities do not allow *Kashering* with chocolate, cocoa butter, or other oils, but unless a proper *Kashering* with water can be accomplished, dark chocolate made on equipment used for milk chocolate must be marked as either “Dairy” or “Dairy Equipment.”

## **Dairy Contamination**

Interestingly, dark chocolate may be marked “Dairy” for another reason. Factories that

produce dark chocolate typically also produce milk chocolate in the same production area. In such cases, the dust from milk powder may be carried through the air and settle into the non-dairy product. Although such “contamination” may not be *Halachically* significant because it is extremely minor and incidental, people who suffer from extreme allergic sensitivity to milk protein may react violently to even such small amounts of milk. Some companies therefore routinely label their products as “Dairy” or “May contain dairy ingredients” to alert its customers to this possibility and thus avoid any potential liability.

Modern research has suggested a host of benefits to chocolate, ranging from an ability to calm the nerves to preventing tooth decay. In *Kashrus*, it is also a vehicle for us to delve into important *Halachic* analysis, affording us the opportunity, as Daniel states (*Daniel* 10:1) *Bean es ha’Davar*—to “truly understand the matter.”

### **The Bottom Line**

- Pure chocolate usually contains ingredients only from the cocoa bean (chocolate liquor, cocoa, and cocoa butter), as well as sugar, lecithin, and vanillin. Certain countries permit the use of other types of fats in chocolate, as well as other types of emulsifiers. Kosher certification is therefore required.
- Milk chocolate may be made with either fluid or powdered milk, which may be significant in addressing issues of *Cholov Yisroel*.
- Introducing water into chocolate-processing systems is difficult. The method by which such equipment would be Kosherized from dairy to Pareve productions poses significant challenges. Many companies have opted to either dedicate equipment to Pareve chocolate or declare all chocolate—whether containing milk or not—to be dairy.

# The Story of Coffee

## חמין במוצאי שבת מלוגמא

שבת קי"ט ע"ב

### Hot Beverages on *Motzoei Shabbos* Are a Tonic

*Shabbos* 119b

As we enter the coldest months of the year, many of us appreciate the support of the hot beverages that have almost become ritual in our daily lives. It is interesting to note that although the drinking of hot beverages in Western societies first became popular after the discovery of the New World, both coffee and tea were products of the Old. Coffee is thought to have originated in Kefa, Ethiopia, and subsequently transplanted to Arabia for commercial production (hence the term “arabica” beans). Tea has been enjoyed in China for over four thousand years. (The name “China” originated from “*Chai*”—or “tea”—and not from the porcelain in which it is brewed, for which also China is famous.) (The other hot beverage that became popular in Europe, namely hot cocoa, was indeed a product of the New World.) It was the explosion of international trade at the time of exploration that heralded the introduction of these libations into Western culture. The popularity of these drinks was fraught with broad social and historical implications, as well as raising a number of interesting *Halachic* issues that will be the subject of this essay.

### Bishul Akum

The first *Halachic* question relating to tea and coffee concerned the rule of *Bishul Akum*, the prohibition against eating certain foods that had been cooked by a non-Jew. Since coffee is prepared by cooking, some had argued that it should be subject to the

restrictions of *Bishul Akum*. This was an especially cogent argument since, when first introduced, coffee was considered emolument of the rich, and the status of an “important food” is a criteria for invoking the rule of *Bishul Akum*. The *P’ri Chadash*, however, resolves this matter by pointing out that coffee is merely flavored water, and has the *Halachic* status of water as regards *Bishul Akum*. He bases this approach on the *Tosefos* (*Avodah Zarah* 31b), who rule that beer is not subject to concerns of *Bishul Akum* for that very reason, as demonstrated by the fact that we make a *B’rachah* of *she’Hakol* on it. Indeed, the term “brew” means to “boil,” and is thus used to refer to the preparation of both coffee and beer. (Beer is prepared by first *brewing* the grain to extract the sugar, which is then fermented.) Water is considered exempt from *Bishul Akum* concerns because it may be consumed without cooking. The *Talmud* notes, however, that an *Adam Cha’shuv*—an important person—should avoid drinking water that had been cooked by a non-Jew (*Mo’ed Ka’tan* 12b) and some therefore avoid drinking coffee cooked by a non-Jew for this reason.

The *He’ter* of the *P’ri Cha’dash* did not end the question of drinking coffee in *coffee houses*, however. When coffee was first introduced, coffee houses served as the social centers of the rich and famous, venues of social ferment and frivolity. Even if coffee were not subject to the *technical* disability of *Bishul Akum*, *Halachic* authorities of the time nevertheless regarded a coffee

house as a *Mo'shav Lay'tzim*—a center of scoffers and idleness—posing the same concern of improper social interaction that was the basis of the rule of *Bishul Akum*. As such, many authorities strongly discouraged drinking coffee in such places (see *Chochmas Adam* 66:14). Today, however, popular coffee houses are designed for the serious coffee drinker, who generally looks askance at frivolity or anything else that may detract from that ultimate coffee experience.

### Processing

Today, the *Halachic* issues related to coffee are a function of its *Kashrus* and not its social status. All coffee is made by roasting green coffee beans of several varieties of tropical evergreen called *Coffea*. After roasting, the bean is ground and steeped in boiling water, allowing the flavor (and caffeine) to be infused into the water. *Instant* coffee is produced by taking this coffee-infused water, concentrating it, and drying it into a powder. This powder, produced through spray drying or freeze drying, is a highly concentrated form of the coffee infusion, and can be reconstituted and diluted to make regular-strength coffee. (In some cases, the concentrated coffee is left in liquid form to be then added to hot water, similar to our use of *tea (es)sence* on *Shabbos*.) *Kashrus* issues relating to such coffee revolve around the equipment and chemicals used in their production, as well as additional flavors that may be added.

### Flavored Coffee

Generally, equipment used to roast coffee beans is not used for anything but coffee (or other products that pose a general *Kashrus* concern—see below). As such, *unflavored* roasted beans may be purchased without a special *Hashgacha*. The flavor in *flavored* coffee beans (for example, hazelnut, vanilla, chocolate, cream, and so on) is added to the

beans after they are roasted. (Roasting flavored beans would cause the flavor to evaporate from the beans.) The flavors used in such products are extracts of flavor source that are absorbed into the coffee bean, not pieces of hazelnut, vanilla bean, chocolate, or milk itself. As such, many dairy-type flavors, such as “Irish cream,” may indeed be *Pareve*. (These should not be confused with “coffee-flavored products” that may indeed contain dairy ingredients; see below.) All flavored coffees, however, require a reliable *Hashgacha*.

### Decaffeinated Coffee

*Decaffeinated* coffee is produced by soaking the green beans in a solvent that removes virtually all of the caffeine, after which the beans are dried and subsequently roasted. Chemicals used for this process include methylene chloride, ethyl acetate, supercritical carbon dioxide, and carbonated water. The key to these processes is the use of a solvent that removes the caffeine from the bean—but not the flavor! (A new process, called the Swiss water process, uses pure water to extract the caffeine in a manner that allows the flavor to remain in the bean.) While the decaffeination process poses no significant concerns for year-round *Kashrus*, one of these chemicals—ethyl acetate—may be *Chometz*. As such, some authorities insist on a *Hashgacha* for all roasted coffee for *Pesach*, since both regular and decaffeinated beans are typically roasted on the same equipment. Others, however, are less concerned about this matter and note that most ethyl acetate poses no such concerns, and is also an inedible chemical.

### Coffee Extenders

A more significant *Pesach* concern, however, stems from the use of coffee *extenders*. Historically, when coffee became very expensive, manufacturers started adding less

flavorful, but more economical, vegetation to their product, including chicory and grain that, when roasted with coffee, produced an acceptable product. While chicory poses no *Kashrus* concern for *Pesach*, roasted grains would be considered *Chometz* and, although the use of such additives would be indicated on the product label, they are also roasted in the same equipment as regular coffee. While grain extenders are not commonly used, it is important to ensure that coffee used on *Pesach* is not produced in facilities that make such products.

### **Instant Coffee**

Instant coffee may pose other concerns for both year-round *Kashrus* and *Pesach* use. Although not common in North America, some Mexican and overseas manufacturers produce milk and dairy coffee blends on spray drying and agglomeration equipment that is used for plain unflavored coffee. (Equipment used to produce freeze-dried coffee does not seem to be the subject of such a concern.) As such, it may be wise to avoid any instant coffee without verifying its *Kosher* status. Regarding *Pesach*, the issue is even murkier. Although it may be illegal to add maltodextrin to instant coffee without declaring it, it seems that many manufacturers are engaged in this practice. Maltodextrin, which may be either *Chometz* or *Kitniyos*, is used in the processing of instant coffee to aid in its agglomeration (the formation of clumps of powder that dissolve more easily than do the fine powders produced by spray drying), and also serves to “round out” some of the bitter flavors in the product. As such, the use of *any* spray-dried instant coffee should be subject to a reliable Passover certification.

### **Coffee-Based Beverages**

Coffee products, such as powdered coffee blends and bottled liquid coffee beverages, contain many noncoffee ingredients

that require a *Hashgacha* (such as monoglycerides and flavors). “Non-dairy” coffee products typically contain sodium caseinate, which is milk protein, and all such products—even when bearing a reliable *Kosher* certification—must be considered dairy. The same concern extends to “non-dairy” coffee creamers (both liquid and powders), many of which contain true dairy components.

The *Kosher*, traveling coffee drinker must also be aware of other *Kashrus* considerations relating to the accoutrements of the habit. Artificial sweetener powders often contain lactose (milk sugar) as an inactive ingredient that comprises over 90 percent of the powder in the packet! While manufacturers of such products in North America use Pareve maltodextrin for this purpose, most of the product manufactured in the rest of the world indeed uses lactose that is (at best) dairy and (at worst) possibly not *Kosher*. Clearly, a coffee must be carefully nurtured both at home and away.

Our discussion of coffee would not be complete, however, without mention of a uniquely flavored coffee, known as “Kopi Luwak.” This gourmet coffee is made from the partially digested beans collected from the feces of the *luwak*, a marsupial that lives on the plantations of Java, Sumatra, and Sulawesi. It seems that the digestive juices of this creature create a special chocolaty flavor in the coffee, the *Kashrus* of which is certainly something worth pondering.

The *Talmud* (*Shabbos* 119b) notes that *Rav Chanina* required that a person prepare a meal at the conclusion of *Shabbos*, even if he wants to eat only a small amount. He notes that hot food and drink at this meal are “*Melugma*”—“healing.” Although many would agree that a hot cup of coffee is certainly refreshing, an explanation of its healing properties may be found in the words of *Shu”t Hillel Omer* (198), quoting the explanation of *Rav Meshulem Zushe zt”l*. He notes that the first letters of *CHamin B’Motzoei SHabbos Melugma* are the same as those used in

the words of “*uMechabesh l’Atzvosam*” (*Psalms* 143:3)—“he who heals their sadness.” The *Hillel Omer* therefore notes that hot drinks—at least on *Motzo’ei Shabbos*—may be a reliable cure for depression!

### **The Bottom Line**

- Water-based beverages such as coffee are exempt from *Bishul Akum* concerns.
- Unflavored coffee beans (regular and decaffeinated) are generally free of Kosher concerns.
- Flavored coffees require reliable Kosher certification.
- Decaffeinated coffees require a Passover certification for Passover use.
- Instant coffee may contain additives such as maltodextrins, and requires a reliable Passover certification for Passover use.



## The Story of Colors

### מן האדם האדם הזה

בראשית כ"ה ג'

#### From This Red, Red Food

*Genesis 25:3*

*Chaza"l* tell us that the relationship we have with food is not limited to taste and smell; sight plays an important part in our appreciation of what we eat. The *Talmud (Yoma 74b)* tells us that a blind person, who cannot see his food, is never sated. Some of the greatest skills attendant to the culinary arts are related not to cooking but to its presentation, in which the choice of colors figures prominently. The color of a food can also have significant *Halachic* implications. It may affect the type of wine we use for *Kiddush* (the blessing sanctifying the onset of the *Sabbath*), the proper *B'rachah* (blessing) for a processed fruit, and the Kosher status of certain types of fish. The “blueberry” bits in a muffin, candied “watermelon” pieces, and bright-red maraschino cherries may all owe their existence to a food color. Issues related to food colors have their source in *Halachic* discussion that hearkens back to the time that the *Torah* was given.

#### **Natural Colors**

Coloring agents are divided into two categories, natural and synthetic. Natural colors are extracted from plants, animals, or minerals, or are created by processing foods. For example, a red color can be extracted from beets and a brown caramel color can be produced by controlled oxidation of sugar. From a marketing perspective, many manufacturers prefer to use natural colors because they are perceived as healthy and are basically exempt from special regulatory over-

sight beyond that for all food ingredients, although they tend to be less stable than synthetic colors. (Even a natural color, however, cannot be so labeled unless the color is “natural” to itself. For example, red beet color may come from natural beets but, when using it to color strawberries, such a color cannot be termed “natural.”) As we shall see, several such colors pose significant Kosher concerns. Synthetic, or man-made, colors are produced from nonfood chemicals and are subject to specific regulatory control. These colors tend to be more stable and potent, and pose much less of a Kosher concern. Some coloring agents are available in different forms that, although chemically identical, may derive from both natural and synthetic sources.

#### **Dyes and Pigments**

All coloring additives, including those used in food, can occur in two forms, dyes and pigments. Dyes are chemical compounds that exhibit their coloring power when dissolved. Pigments, also known as lakes, are insoluble, colored materials that color by dispersion. Lakes for the food industry are produced by fixing a dye onto a special form of aluminum hydroxide and are useful when coloring oils or other materials when the material itself cannot, or should not, be dyed. For example, the “blueberry” bit in a muffin is often nothing more than a bit of food gum that has been colored blue. If a blue *dye* were used, this color would migrate into the muffin—but

blueberry muffins are not supposed to be all blue. By using a blue *lake*, however, the dye stays fixed to the aluminum hydroxide that is bound to the gum. Almost all food colors, whether natural or synthetic, are available in both dye and lake forms.

### **Colors Derived from Insects**

Far from being merely of pedantic interest, the entomology [*sic*] of the word *lake* opens an interesting *Halachic* discussion. The word is probably derived from the Italian *lacca*, a term used by medieval craftsmen to indicate the scum they removed from their dye vats and sold to painters. This word, in turn, probably derives from the Sanskrit *laksa*, which means one hundred thousand. One of the trees mentioned in Sanskrit writings is *lakshatarn*, the tree that nourishes a hundred thousand insects. (Even today, Indian vernacular uses *lakh* to mean “a whole lot” in much the same way as Americans use the number “a million.”) It also seems that these *lac* scale insects—which grew on the legendary *lakshatarn* tree—had a deep-red color and were prized for their dye. (They are also important for the *lac* resin they exude, called *shellac*. When used in food production, this chemical is also called resinous glaze and is itself the subject of significant *Halachic* discussion; see *Igros Moshe Y.D.* II:24 and *Minchas Yitzchok* Vol. X:65.) Indeed, the *Talmud* (*Chullin* 28a) discusses a red color called “*laka*,” although its source seems to be from blood. The Egyptians used a similar insect called *Kermes*, from which we derive the word *crimson*, and this type of color served as one of the most important dyes for thousands of years. When the Spaniards colonized the New World, they discovered another insect, called the cochineal bug, which yielded a red color eight times more vivid than *Kermes*. The Spaniards treasured this insect, according to a higher value than the gold they plundered, and created a red-dye industry based

on the carminic acid that it produces. The color carmine, which is the lake pigment of carminic acid, is both natural and stable and, with recent restrictions on the use of certain synthetic red dyes, has become ubiquitous in the food industry. Issues relating to the Kosher status of this material must therefore be addressed.

Discussion of the *Halachic* status of such red colors goes back to the time of the Tabernacle and the use therein of colored wool referred to as *To'la'as Sha'ni*, the scarlet-dyed wool used for many purposes in Tabernacle and for the priestly vestments. Many commentaries translate *To'la'as Sha'ni* as a type of red worm; the color derived from it was used to dye wool (see Rabbi Aryeh Kaplan, *The Living Torah* [Exodus 25:3]). Rabbeinu Bachye (*ibid.*), however, disputes this origin and bases that argument on the concept that items used for holy purposes must be of a Kosher species (see *Shabbos* 28a). He therefore argues that the red color was a derivative of a nut that served as the home to a specific worm; the worm itself was not the source of the color. The *Noda b'Yehuda* brings a proof to this approach from *Rashi* in *Isaiah* 1:18, which follows the position of the *Radak* who distinguishes between the “*To'la'as*” (worm) and “*Tola'as Sha'ni*” (red wood). This question does have a practical application to our discussion, however, based on the *Halachic* discussion relating to musk. *Maimonides* explains that the myrrh used in the incense was the congealed blood of a certain animal, considered to be “musk.” The *Ra'avad* disagrees, however, arguing that this material derives from a non-Kosher animal and could therefore not have been used in the Tabernacle. The *Kesef Mishnah* answers this question by stating that because this material has been dried and considered to be mere dust, its original source is of no import. The *S'dei Chemed* quotes opinions that extend this logic to the red dye derived from a non-Kosher insect. The *Minchas Yitzchok*, noting

that the cochineal insects are thoroughly dried before obtaining the red color, argues that such drying is equivalent to the twelve-month drying process established in the *Talmud* that converts the insect into mere dust. For this reason, it would seem that a red extract made from a thoroughly dry insect might indeed be permitted. Although the *Minchas Yitzchok* does not give unequivocal approval, the issue is certainly not closed. From a practical perspective, however, most authorities do not permit the use of this material. (Interestingly, someone has suggested that a supply of cochineal insects could be sequestered for twelve months before being made into carmine, which may allay many of the *Halachic* concerns.)

### **Plant Extracts**

Plant extracts are another source of natural food colors. One class of such colors is called the anthocyanins, derived from such foods as red cabbage, plums, and grapes. Another type of natural red color is derived from beets. Although most are *Halachically* innocuous, enocianina, or grape skin extract, poses a significant issue. Grape skin extract has actually been in use for thousands of years—to make red wine. Indeed, the distinction between red and white wine is quite *Halachically* significant. The *Shulchan Aruch* (*O.C.* 472:4) rules that one may recite *Kiddush* (the blessing sanctifying the onset of the *Sabbath*) on white wine, although the *Ramban* rules that only red wine is acceptable. The *Mishnah B'rurah* notes, however, that all opinions agree that red wine is preferable for this purpose. The source of the red color, however, is not the juice pulp of the grape. Squeezing any type of grape, including dark-red varieties, yields a pale juice. If you cut open a concord grape, for example, you will notice that the pulp is almost clear. All the color is located in the skin. When vintners wish to produce a dark-red wine, they crush the skins to release their color. Today, skins are collected from grape

crushers and processed into a commercial coloring agent called enocianina. However, because the source of most such material is from productions of *S'tam Yaynam* (non-Kosher wine), significant Kosher issues must be addressed. Although at first blush this would seem to be an insurmountable obstacle, the rules of *S'tam Yaynam* do not apply to all grape derivatives. For example, *Halacha* allows that grape seeds and skins that have been dried and then soaked in water are permissible (*Y.D.* 123:14), as is grape seed oil (*Chasam Sofer Y.D. T'shuvah* 117). *Argol* crystals (cream of tartar) that form on the inside of wine barrels are also permitted (*Y.D.* 123:16). The basic premise behind the permissibility of all these products is that they have been sufficiently dried so that none of the grape flavor remains. Although such an argument could be made in the case of enocianina, in practice it is generally not accepted as a Kosher product. Were the grape skins to be processed in a manner so as to remove any trace of grape juice and dried for twelve months, producing a Kosher enocianina color may be possible.

Other natural botanical colors are also used in food production. The extract of the annatto seed imparts a bright-yellow color, often used in dairy products. The extract of the turmeric root also imparts a yellow color and is often used to color pickles. Paprika, a mainstay in the kitchen, is actually rather insipid. Its primary use is for the red color it imparts. Indeed, this color was so highly regarded that the Hungarians, in their drive to protect the indigenous paprika industry, borrowed an old Egyptian technique (see *Sanhedrin* 33a). A longstanding Hungarian law requires that all paprika exported from the country must be ground to preclude anyone from growing Hungarian paprika outside the borders of the Magyar State.

### **Methods of Coloring**

Plants have also been used to alter the color of food while still “on the hoof.” An animal

is what it eats, and aside from providing nutrition, food can impart flavors or colors to the flesh of livestock. A breed of French sheep, for example, is fed seaweed and garlic for preseasoning. An enterprising, which is tough breeder of poultry, feeds yellow marigold petals to his tender chickens to give a golden glow to the chicken skin. The practice becomes *Halachically* relevant, however, in the raising of fish.

The Kosher status of fish is dependent on their exhibiting certain types of scales, and no fish may be eaten unless one verifies that the species has such scales. In the absence of inspecting the fish, however, the *Shulchan Aruch* (*Y.D.* 83:8) rules that red fish roe may be eaten nonetheless because it has been reliably ascertained to come from Kosher species of fish. Today, some authorities permit canned and filleted red salmon on a similar basis, reasoning that all red fish are assumed to be Kosher. Although the *Shulchan Aruch's* ruling itself is not universally accepted (see *P'ri Chodosh*, *ibid.*, and *Aruch ha'Shulchan*), modern fish nutrition may have made this argument a bit of a red herring.

In its search for a cheaper salmon, the fishing industry has hit upon a new "species"—salmon trout. This fish is nothing more than a species of trout that has been fed a diet high in chemicals that cause red pigmentation in the fish. These feeds can include red crab, shrimp, marigold, and natural and artificial astaxanthin, and the use of these feeds has achieved some modicum of success in providing a less expensive alternative to true salmon. Trout is a Kosher fish, and the use of these feed additives (even if not Kosher) would not compromise its Kosher status because they do not constitute the sole source of its sustenance (see *Y.D.* 60:1 and *Rama, and Sha"Ch s.k.* 5). However, this ichthyological sleight-of-hand might also be applied to non-Kosher species and would therefore seem to make this new coloring process cloud earlier assumptions concerning color. Assuming that red roe or

red filets must always be of a Kosher species of fish may therefore no longer be appropriate.

### ***Oleo and Aquaresins***

Colors from plants and other botanicals are often extracted from the plant and concentrated as resins. A resin is the oily portion of the plant that contains the coloring agents. Two types of resins are produced: oleoresins and aquaresins. The former are suspended in an oil carrier, whereas in the latter the resins are suspended in water with the aid of an emulsifier.

### ***The Color of Butter and Margarine***

Food colors can also be instruments of political intrigue. The color of butter varies with the cow's diet but usually is of a yellow shade. Consumer preferences for the color of butter were noted as early as the 1300s, when saffron was added to butter to make it more yellow. In more recent times, margarine was developed as an alternative to butter, but left to its own devices would be white. Sensing vulnerability, the butter industry attempted to frustrate its competition. First, it tried to have Congress pass a law requiring margarine be colored pink. When that failed, it prevailed on Congress (and many dairy states) to levy a tax on yellow margarine, a ploy that was not fully repealed in some areas until the mid-1960s. Indeed, for many years, white margarine was sold with a color packet, which the consumer mixed into the margarine at home. In any event, both butter and margarine now use a color called beta carotene to ensure that the product meets customer expectations. Beta carotene occurs naturally in many vegetables, notably carrots. Commercially, however, it is produced synthetically from petrochemicals or as a natural product through yeast fermentation. When metabolized, beta carotene is converted into vitamin A, a

characteristic that addresses the nutritional need to augment margarine with the vitamin A found naturally in butter.

### **Maraschino Cherries**

On the other hand, some very colorful foods owe their luscious brilliance, and perhaps their *Halachic* status, to food color. The bright-red maraschino cherry is an excellent example of the changes food technologists have brought to a classic delicacy. Classic maraschino cherries were developed in Dalmatia, a province on the Balkan Peninsula. There, the *marasca* cherry was crushed (pits and all) and fermented, with the resulting liqueur sweetened with sugar to create a distinctive elixir. Cherries preserved in this liqueur were called maraschino cherries and became known world over for their sweet and unique flavor. Modern-day production, however, differs significantly from the classical process. Cherries are first soaked in brine consisting of sulfur dioxide and calcium chloride to bleach all the flavor and color from the fruit. The “cherry” that is left is tasteless and a pale, yellowish-white, little more than a blob of cellulose with a skin. The garishly red maraschino cherry is then created by steeping it in a sugar solution, followed by the addition of a red color and an almond flavoring. Green maraschino cherries use green food color and mint flavor. Because all the flavor and color of the original fruit is removed during the processing, the appropriate *B'rachah* (blessing) may not be one for fruit (*ha'Etz*) but for a manufactured product (*she'Hakol*) (see *Sefer V'Zos ha'B'rachah*, who questions this logic because the *B'rachah* of *ha'Etz* applies to even inferior types of fruit). Similarly, a “fruit” bit may be nothing more than a colored and flavored piece of turnip, regardless of the luscious appearance it may have. It should also be noted that recent restrictions on certain FD&C (food, drug, and cosmetic) red colors (due to possible car-

cinogenic properties) have caused many manufacturers to use carmine as a coloring agent for these cherries, as well as those used in fruit cocktail. As noted previously, the use of carmine in a cherry would still require an “artificially colored” declaration even though it was not an FD&C color, so a reliable certification for these products is necessary.

### **Chlorophyll**

The resourcefulness of color chemists in their search for novel natural agents, however, should never be underestimated, and neither should the *Kashrus* implications of their work. Chlorophyll is an all-natural green color, and mulberry leaves are an excellent source of this material. Mulberry leaves are of great importance in the Far East, serving as the food for the industrious silkworm. In the spirit of conservation, a Japanese company has developed a means of recovering the green chlorophyllin from the mulberry leaf after it has passed through the silkworm. Although insects, including silkworms, are not Kosher, their excretions may be Kosher, because this material may be considered the quintessential *Pirsha b'Alma* (inedible waste product) that is indeed permitted. A final ruling as to *Halachic*—as well as general consumer—acceptability should prove interesting.

### **Clouds**

The use of food colors is not limited to providing a distinct color. Sometimes, a clouding of the issue is all that is required. Fruit juices often have a natural opacity. For example, aside from the yellow color of lemonade, lemon juice gives the drink a distinct cloudy appearance.

When a lemonade-type drink is produced, it is often based on artificial flavors and colors and completely devoid of its natural namesake (notice the mandated statement

“contains no fruit juice” on many such products). To provide the perception of lemon juice, however, color chemists have developed an additive called a cloud. This ingredient, which is often nothing more than powdered shortening, imparts no flavor or specific color to the product but provides the satisfying impression of real juice. Shortening, however, may be produced from either vegetable or animal fat and therefore requires reliable Kosher certification.

### **Synthetic Colors**

Although natural colorings have been around for thousands of years, synthetic dyes are much more recent. In 1856, an eighteen-year-old chemistry student named William H. Perkin was working in the London Chemistry Laboratory of August Wilhelm von Hoffman. He was attempting to synthesize quinine, a chemical of great importance in battling malaria (the disease that had become one of Britain’s greatest adversaries in its quest to colonize the world). With the serendipity that characterizes many of the world’s great discoveries, Mr. Perkin accidentally converted aniline (a hydrocarbon derived from coal) into a black, tarry mess. When he removed it from the flask with alcohol, he noted that the diluted chemical produced a purple color, and when he dipped a piece of silk into the mixture, the silk was dyed a reddish color. Recognizing the potential of his discovery, Mr. Perkin soon thereafter opened a factory near London to produce the first synthetic dye, mauvine.

Although this first synthetic dye was of British creation, German scientists soon exhibited their famed chemical acumen and developed synthetic dyes that revolutionized the textile industry. The base for these dyes was a material called coal tar, a mixture of literally thousands of chemicals derived by condensing the vapors created by heating coal. These colors are known generically as coal tar dyes and before long before their

benefits were being realized as additives to food. Because these chemical demonstrated no overt toxicity, they provided food producers with an array of new coloring agents.

By the year 1900, about eighty man-made color additives were available for use in foods. At that time no regulations existed regarding the purity and uses of these dyes. Out of the jungle that constituted the food-processing industry in the early 1900s was born the Pure Food and Drug Act of 1906. Among many other food ingredient issues, this law established the concept of voluntary certification of synthetic food colors under the United States Department of Agriculture (USDA) for purity and strength. These are now termed certifiable colors. This contrasts with natural food colors, which were not subject to the same regulatory oversight. The Pure Food and Drug Act of 1938 transferred such testing to the Food and Drug Administration (FDA) and made such certification mandatory (currently charged at 25 cents a pound). Finally, the Color Additive Amendment of 1960 ordered a wholesale review of the safety of food colors, including a requirement to ban any food or color additive that has been shown to cause cancer in any animal regardless of the level of use (known as the Delaney Clause). As a result of these laws, made-made colors are divided into three categories:

FD&C	Approved for foods, drugs, and cosmetics
D&C	Approved for drugs and cosmetics
External D&C	Approved for external drugs and cosmetics only

At the present time, only seven FD&C colors are approved for food use in the United States: Blue #1, Blue #2, Green #3, Red #3 (lake only), Red #40, Yellow #5, and Yellow #6. Titanium dioxide, although not an FD&C color, is used to impart a brilliant white color. Although this list may seem small, coloring experts have been able

to blend these basic materials into virtually any color needed. Regulatory approval for synthetic colors is not universal, however. Red #40 is not approved for use in the European Union (EU), whereas several colors approved in the EU are not legal in the United States. Manufacturers are very careful to ensure that only appropriate colors are used for specific markets, and several formulas of a product, different only in the colors used, may be produced in a given factory to address this concern.

Regulatory differences between countries are not limited to the ingredients that are permitted. Although most of these additives must be listed on the packaging of a food product, significant differences exist in the way these declarations are made. The EU has created a master list of food additives, assigning each additive a specific identification number. For example, carmine is simply referred to as “E-120.” Clearly, carmine by any other name is still carmine.

### **Kashrus Issues Related to Synthetic Colors**

The actual manufacture of synthetic colors poses no *Kashrus* concerns, but their subsequent processing and the ingredients added to them may. FD&C colors are generally spray-dried into a powder, and ensuring the Kosher status of this equipment is therefore important. Pure FD&C colors are also extremely concentrated and difficult to handle, so color manufacturers have developed products that make them easier to handle. For example, a candy manufacturer may use a preblended packet containing glycerin to color hard candies. Colors used in oil- or waxed-based products, including baked goods, may contain lakes suspended in oils or emulsifiers. Colors can also be suspended in alcohol solutions or can be incorporated into gelatin beadlets to aid in dispersion. All these ingredients require verification of their Kosher status.

### **Bitul**

No discussion of colors would be complete without noting the *Halachic* implications of *Bitul* (nullification). Although the level at which such colors are added to foods is invariably much less than one to sixty (the standard level of *Bitul*), some argue that non-Kosher color may nonetheless not be considered *Batul* because it is still noticeable (see *Sha”Ch Y.D.* 102 *s.k.* 5). Others disagree and do not consider a residual color of significance (see *GR”A*, *ibid.*). The *P’ri Chodosh* and the *Chasam Sofer*, among others, suggest that one should be stringent when Biblical prohibitions are involved and lenient in Rabbinic prohibitions, which is the normative *Halachic* approach to post facto situations. All, however, agree that one may not intentionally add a non-Kosher color to a product. On the other hand, if the color itself were permitted, the addition of non-Kosher carriers or additives would allow it to be *Batul*. In addition, the use of non-Kosher color in a non-Kosher-certified product would not compromise the Kosher status of the equipment in which it were used.

To paraphrase the bard, we might pose the following question: “What’s in a color? That which we call a strawberry ice cream, by any other color would taste as sweet?” Based on the historical use of food colors, the answer might seem to be no! The *Talmud* (*Sukkah* 51b) notes that colors may create wonderful optical allusions, but we must take care that they not cloud the application of *Halacha* in their use.

### **The Bottom Line**

- Colors that are approved for food use can be classified as either natural or synthetic.
- Most natural colors derived from vegetable sources are inherently Kosher.
- The Kosher status of natural red color derived from insects (carmine) has been the subject of significant discussion

among *Halachic* authorities for thousands of years. From a practical perspective, carmine is not accepted as Kosher by most *Kashrus* authorities.

- *Enocianina*, or grape skin extract, poses a significant concern in that it is derived from non-Kosher wine production (*S'tam Yaynam*) and is not accepted as Kosher by most *Kashrus* authorities.
- Oleoresins derived from various botanicals require Kosher certification because of the use of oils and emulsifiers in their processing.
- Fish may be colored through their feed. As a result, the assumption that red-colored fish and roe are always Kosher may now be brought into question because of the prevalence of coloring fish red through this process.
- Natural green color, called chlorophyllin, may be recovered from material excreted from mulberry-eating silkworms. This material may pose a concern in that it comes from a (non-Kosher) insect source, although it may be subject to certain leniencies if it is considered inedible.
- Chemicals that cloud fruit drinks may contain shortening, which requires Kosher supervision.
- Synthetic colors, also known as coal tar dyes, are inherently Kosher.
- Their Kosher status may be compromised, however, by additives or carriers blended into them or by equipment used to further process them.
- Non-Kosher colors may not be *Batul* if they are noticeable in a product.
- However, the use of a non-Kosher color in small quantities, even if noticeable, in non-Kosher-certified products does not compromise the Kosher status of the equipment.



## The Story of Condiments

### והנה עלה זית טרף בפיה

בראשית ח' י"א

**And Behold There Was an Olive Leaf Torn in Its Beak**

*Genesis 8:11*

The *Talmud* (*Y'rushalmi Rosh ha'Shanah* 1:2) teaches us that the names of the months in the Jewish calendar were adopted on the return of the Jews after the Babylonian captivity. The *Ramban* (*D'rasha l'Rosh ha'Shanah*) explains that one originally referred to months merely by their ordinal relationship to *Nissan*, the month in which *Hashem* redeemed Jews from the Egyptian bondage, for by doing so one would be constantly reminded of this redemption. After the redemption from Babylonia, however, Jews began adding the names of the months that were used at the end of that exile, conforming to the injunction of *Jeremiah* (16:14–15), who promises that one would no longer (only) praise *Hashem* for the redemption from Egypt but (also) for the redemption from Babylonia. (The *Ramban* notes that the names brought back from Babylonia are actually Persian, being the names that were current in *Bavel* [Babylon] after it was captured by Persia.) Of these names, the eighth month is unique in that it occurs in two forms, *Heshvan* and *Marheshvan*, and several explanations for this duality have been advanced. Some maintain that the name is actually *Marheshvan*, derived from the phrase *k'Mar mi'Dli*—“like drops of water from a bucket” (*Isaiah* 40:15). This name is based on the fact that the month of *Marheshvan* marks the beginning of the rainy season in Israel. According to this approach, the name *Heshvan* is merely a shortened version of the true name. Others, however, consider *Heshvan* to be the basic name of the

month, with the addition of the prefix *Mar*—bitter—to connote its ignominy of being the only month that is devoid of a significant holiday.

Bitterness, however, is in the eyes—or the tongue—of the beholder. Although very bitter foods have virtually no appeal, such a sensation is often sought after in condiments, those spicy sauces and dips eaten together with a main food. The flavor of a condiment serves as a counterpoint to that of the food, thereby enhancing its perceived flavor. For example, many people eat hot horseradish with sweet gefilte fish. Although many people do not appreciate a hot taste in the fish, such a flavor in the documents accentuates the fish's sweet taste. Indeed, the variety of condiments eaten in the world mirrors the diversity and tastes of its inhabitants and can range from intensely hot habanero relish to fermented fish entrails. Although Lucretius may have said that one man's food is another man's poison, *chacun à son gout* (everyone to his taste) seems a more appropriate nostrum in dealing with such potions. Although condiments may have the *Halacha* of a *To'fel* (secondary to the main item) as regards the blessing that must be said (it is considered secondary to the main food, and the *B'rachah* made on the primary food suffices), the *Kashrus* issues that attend them are hardly inconsequential. Certain condiments have earned international recognition and, when produced in many countries, have also earned a Kosher status. The *Kashrus* issues raised in their production make for an

interesting accompaniment to any *Kashrus* discussion.

### **Mustard**

The oldest condiment commonly used in the Western world is mustard. Indeed, the Middle English *mustarde* was the generic word for condiment. Mustard and *Kashrus* can be traced back to Abraham and the feast he made for the three angels who graced his tent, where, *Chaza"l* tell us, he served them calf tongue with mustard. The Greeks extolled the health benefits of this pungent seed, believing that its pungency stimulated both appetite and digestion. The Romans introduced it to Gaul, where it grew in abundance near the ubiquitous grape vines. It was the French who perfected the art of *prepared* mustard, for which crushed mustard seeds were mixed with grape juice or wine to create the mustard paste we recognize today. In fact, the primary theory behind the etymology of the word *mustard* stems from the Latin *mustum*, meaning crushed grapes. English mustard is usually prepared with vinegar and posed few *Kashrus* concerns other than the source of the vinegar. French mustard, on the other hand, carried on the tradition of using wine with various regions of France, such as Dijon, with each region developing its own unique version based on the wines characteristic of that region. (Some even argued that the French version of the word mustard, *moutarde*, comes from the battle cry of the Dijonnais subjects of King Charles VI, who followed the rousing call *moult me tarde* [off to battle], which has since been adopted as the slogan of the town. Ignoring the troublesome *me*, *moutarde* came to signify the redoubtable army of Dijon mustardmakers and their culinary masterpiece.) Regardless of where such mustard is made, however, the *Kashrus* sensitivities inherent in wine dictate that such mustard requires a careful *Hashgacha*, and today, many domestic brands of Dijon-style

mustard use Kosher wine and carry such *Hashgacha*. The use of mustard for *Pesach*, however, is precluded for *Ashkenazim* because they consider mustard to be *Kitniyos* (see *Rama O.C.* 464:1). Recently, however, one enterprising company produced imitation mustard using a synthetic mustard oil (allyl isothiocyanate), which indeed bears a reliable Passover certification.

### **Ketchup**

Until recently, the most popular modern condiment had been ketchup. So pervasive is the use of this tomato-based sauce that one U.S. administration proposed treating it as a “vegetable” in the school lunch program, reasoning (probably correctly) that kids ate more ketchup than they did the canned peas mandated by government dietitians. Whatever ketchup’s nutritional claims, we do eat prodigious amounts of it, and it was one of the first major commercial products to bear a nationwide *Hashgacha*. Today’s ketchup, however, bears little resemblance to its humble ancestors. Historians trace its ancestry as far back as the Roman Empire, in which a sauce called “garum” was made from the entrails of dried fish. The more familiar word “ketchup,” however, probably had its origins from what the Chinese called “kê-chiap” or “kêtsiap,” a sauce made from the brine of pickled fish or shellfish. Travelers returning from Singapore in the seventeenth century lauded the virtues of ketchup, and because many of the Oriental ingredients used in the original formula were not available, new recipes were created to take advantage of local raw materials. Although mushrooms were the original replacement of choice, tomatoes proved most popular, eventually yielding our modern version.

The choice of the tomato as the new ketchup base, however, was not without *Kashrus* implications. Although the production of most fruit tends to pose few *Kashrus* concerns, tomatoes lend themselves to use in

many non-Kosher products. Tomato sauces often contain meat, pizza sauces often contain cheese, and tomatoes are used as a base in many meat products. As such, many ketchup production facilities are used for the production of such non-Kosher products, creating serious *Kashrus* concerns. Although ketchup may have been one of the first Kosher-certified products, it was—and often still is—produced under the supervision of a full-time *Mashgiach*. *Hashgacha* on this product can change from time to time; checking for the *Hashgacha* is important.

### **Salsa**

Although ketchup may have enjoyed a reputation as the “All-American” condiment, recent sales figures indicate that it has been overtaken by a quintessentially Hispanic product, salsa. In Spanish, the word *salsa* means any sauce or gravy, from the Latin *salsus*—“salted.” In English, however, the word has come to mainly mean a spicy sauce made of tomatoes, onions, and hot peppers, the amount and type of the last ingredient dictating the pungency of product. From a *Kashrus* perspective, salsa mirrors many of the same issues as ketchup. It is a cooked tomato product, and because it is often produced in facilities that also process non-Kosher meat items, a reliable Kosher certification is imperative.

### **Soy Sauce**

One Oriental condiment, however, has remained true to its heritage. Soy sauce, at least real *brewed* soy sauce, is still produced the old-fashioned way, by fermenting the base material with special strains of koji mold (a fungus grown on wheat bran), followed by the addition of strains of bacteria and yeast for the final fermentation. This fermentation can take several months, after which the material is filtered and bottled.

In many cases, however, the term “soy” sauce may be a bit misleading, giving rise

to potential health as well as *Kashrus* concerns. Traditionally, “soy” sauce is actually a fermentation of both soy *and* wheat, creating a concern for those individuals who are sensitive to gluten, a protein complex found in wheat. From a *Kashrus* perspective, although both soy and wheat are inherently Kosher, neither is acceptable for use on Passover, since soy is considered *Kitniyos* and wheat is *Chometz*. While the inclusion of wheat in this product may not be readily apparent, its resulting *Chometz* status creates significant concerns in terms of Jewish ownership of it during the Passover holiday. However, wheat will *not* create a *Chodosh* concern in brewed soy sauce, since the aging process virtually guarantees that any *Chodosh* grain would have already become *Yoshon* by the time the soy sauce had finished fermenting.

Another *Kashrus* concern stems from the microbial cultures used in the fermentation, requiring verification that they are grown exclusively on Kosher nutrients. A further complication comes from the fact that soy sauce is the base for another condiment called teriyaki sauce, which commonly contains wine. Teriyaki sauce is often pasteurized on the same equipment as soy sauce, creating another concern for the *Hashgacha*.

Not all soy sauce, however, is prepared in the traditional manner. Soy sauce is technically referred to as hydrolyzed vegetable protein, in which the vegetable protein (in this case, soy—and, possibly, wheat—protein) is broken down (hydrolyzed) into its basic constituents. When proteins are hydrolyzed, they tend to develop distinct flavor profiles, and the fermentation hydrolysis described previously and the microorganisms used are unique to each producer of soy sauce. Hence, each yields a product with its own unique taste. An alternative method of hydrolyzing proteins involves the use of strong acids or bases, which can instantly hydrolyze the protein, creating a similar

product. This method is used by manufacturers of less expensive soy sauce. Although such products are not subject to fermentation concerns, the same equipment can be used to hydrolyze milk or other animal proteins with significant *Kashrus* concerns. In addition, “instant” soy sauce containing wheat may pose a *Chodosh* concern, inasmuch as it does not benefit from an extended processing period.

### **Worcestershire Sauce**

Worcestershire sauce is another condiment that raises a rather unique *Kashrus* concern. Although named after the town of Worcester, England, where it was produced, it is actually a variation of a sauce popular in India in the early 1800s. It consists of a mixture of tamarind, molasses, garlic, vinegar, sugar, spices, and anchovies. Aside from the need for the Kosher status of all the ingredients (including the verification of the Kosher status of the fish), a significant *Kashrus* concern arises based on one of its most popular uses as a condiment with meat. The *Shulchan Aruch* (*Y.D.* 116:2) rules that one may not eat meat and fish together, based on a *Talmud* (*P’sachim* 76b) that such a combination under *Hashgacha* therefore bears the appellation “Fish” adjacent to the Kosher symbol as an admonition not to use the product with meat.

Interestingly, when the amount of fish is *Batul* (less than 1.6 percent of the sauce), such a constraint may be unwarranted. The *Issur v’Heter* (23:7), among others, rules that mixtures of fish and meat are subject to conventional parameters of *Bitul*. Often, manufacturers include just enough anchovy to be able to list it on the ingredient panel, giving the impression that the product follows the traditional recipe, but well below the threshold of *Bitul*. Since the anchovies virtually add no flavor to the product, they are *Halachically Batul* and, as such, may thus be used as a steak sauce.

However, the *Darkei Moshe* and the *Ta’Z*, among others, disagree and posit that *Bitul* is ineffective when both materials are permitted and only their *combination* creates a problem. In such a case, they marshal proofs to show that no level of such a mixture can be negated by *Bitul* (see *Yabia Omer Y.D.* 1:7,8 for a thorough exposition of this *Sugya*). Because some *Kashrus* organizations are lenient on this matter, people who wish to be stringent (*Chamira Sakanta mey’Issura*—“one must be more stringent regarding issues of health”) should always check the ingredient panel to verify that the product is indeed fish free. Those products that contain higher levels of fish, however, always bear a “Fish” declaration.

### **Horseradish**

Horseradish has been used as a spice and medicament for more than three thousand years, with one Greek legend ascribing to it a value greater than gold. The origin of its name is obscure, some ascribing it to an English corruption of the German *meerrettich* (sea radish) because it grows by the sea, which became *mare* radish and subsequently *horseradish*. Whatever its etymological root, commercial horseradish varieties abound. Basic white and red versions of horseradish are prepared by grinding the root (which activates the enzyme that initiates the reactions leading to the pungent flavor of the root), after which vinegar is added to arrest this activity, along with sugar or beets, or both, for flavor.

Although the Kosher status of prepared horseradish is usually based on the vinegar and other ingredients added to it, an interesting *Kashrus* issue is raised when creamed (dairy) horseradish is produced on the same equipment as Pareve product. In general, dairy and Pareve products may be processed on the same equipment without the need for *Kashering*, provided that the processing takes place without heat.

Although horseradish processing invariably takes place at cold *temperatures*, its inherent hot *taste* may nevertheless occasion the application of the concept of a *Da'var Cha'rif* (sharp flavor) that is tantamount to processing at a higher temperature, allowing flavor transfers between the product and the equipment to occur in as little as six minutes (*b'Chdei she'Yarsi'ach*) (somewhere between six and eighteen minutes). The resolution of this issue is based on the *Sha"Ch* and *Ta"Z* in *Yorek De'ah* 69, as explained in the *P'ri M'gadim Mishb'tzos Za'hav* 105:1. The *Sha"Ch* holds that although a *Da'var Cha'rif* transfers flavor to a vessel in a short period of time, *Ka'vush* (soaking) a Kosher (or Pareve) product in a non-Kosher (or dairy) vessel does not effect a transfer of flavor from the vessel into the food in fewer than twenty-four hours. Although the *Ma'gen Avrohom* (*O.C.* 447:28) follows the opinion of the *Prisha* and holds that this will also occur in a shorter time, the consensus of *Poskim* follows the opinion of the *Sha"Ch*, allowing both dairy and Pareve horseradish to be mixed using the same equipment. (Please note that *grinding* such horseradish would pose a problem according to all opinions because of *Duchka d'Sakina*—pressure of the knife.)

### **Hot Sauce**

Another category of sharp condiments is called hot sauce, generally based on various kinds of pungent chili pepper. The appeal of such fiery brews may be caused by the pleasure-inducing endorphins that the body produces as a reaction to them, and their use transcends many cultures, from *Cha'rif* favored by *S'phardim* to the Tabasco sauce of Louisiana and the habanero of the Southwest. Although the basic pepper may not pose a *Kashrus* concern, the use of vinegar and other ingredients, such as the butter flavor in some types of hot sauces, necessitates a reliable Kosher certification.

Bitter foods do, of course, come into their own on *Pesach* in the form of *Maror*, the bitter herb we eat at the *Seder*. (*Prepared* horseradish cannot be used at the *Seder*, however, because the horseradish is *Ka'vush* (soaked) and has been mixed with other ingredients.) However, our usual use of such piquant foods is as an accompaniment to a main food, as implied in the word *condiment*, derived from the Latin *condire*—to preserve with spices. Indeed, the *Talmud* (*Eruvin* 18a) notes that the dove brought Noah the bitter leaf of an olive tree to symbolize that although sweet foods are preferred, he would rather eat the bitter olive provided directly by *Hashem* than to be reliant on the kindness of a human providing him more delicious fare. Interestingly, the *Tosafos* (*P'sachim* 36a) discuss the possibility of using olives as *Maror*, based on the passage just noted in the *Talmud*, but conclude that only the olive tree is bitter, not the fruit itself. (The *Shulchan Aruch* (*O.C.* 447:8) follows the opinion that olives are indeed considered a sharp food, and the *Sha"Ch* (*Y.D.* 96:20) notes that the dove's action implies that the olive itself is bitter; see the *Noda b'Yehuda* in *Doresh l'Tzion* (13) for an interesting explanation of these two opinions.) Whatever the status of the olive, perhaps we should keep the dove's intent in mind when we relish our condiments, recognizing that our sustenance derives directly from *Hashem*, whether it seems sweet or bitter.

### **The Bottom Line**

- Mustard requires Kosher certification because of the use of vinegar, as well as the possible use of wine.
- Ketchup and salsa require Kosher certification because factories that produce otherwise Kosher tomato products also tend to produce non-Kosher meat and cheese tomato-based products.
- Soy sauce may contain wheat, a point of

- interest for Passover as well as for those allergic to wheat.
- Brewed soy sauce poses no *Chodosh* concerns, but hydrolyzed vegetable proteins containing wheat may.
  - Hydrolyzed vegetable protein may be produced on equipment also used to hydrolyze milk and other animal proteins.
  - Worcestershire sauce may contain anchovies, raising both *Kashrus* issues and issues of using such a product together with meat.
  - Both Pareve and dairy versions of prepared horseradish may be prepared on the same equipment, provided that the Kosher certification addresses cleaning issues appropriately. (Prepared horseradish is not acceptable for use at the *Seder*.)
  - Hot sauce requires Kosher certification because of the use of vinegar, as well as the possible use of flavorings (some of which may be dairy).

## The Story of Eggs

### כביעתא בכותחא

עירובין ס"ב ע"ב

“As an Egg in Sour Milk”—Not As Simple As It May Seem

*Eruvin 62b*

The *Talmudic* paradigm for a concept that is blatantly obvious is *k'Be'asa b'Kutchā*—“as (clearly permissible) an egg in sour milk,” because the permissibility of mixing eggs and dairy products is common knowledge. This common knowledge, however, may not be as simple as it might appear, because the bird from which the egg is obtained is indeed subject to such a prohibition. As the *Tosafos* (*Eruvin 62b*.) deal with this question, we are reminded that what may seem “obvious” is often less so. Indeed, *Kashrus* issues relating to eggs are an excellent example of the *Halachic* complexities involved in a basic food, and the purpose of this essay is to discuss some of the issues that confront modern *Kashrus* supervision as they relate to this incredibly versatile food.

Eggs are not just for breakfast anymore. In addition to the flavor they impart, the chemical properties that they possess provide important functionality in many foods. Mayonnaise, for example, relies on the natural emulsification properties of egg yolks to stabilize the oil and water it contains. Bakery products rely on eggs for several functions, from the foamy structure of meringue from egg whites to the body imparted by whole eggs in a cake. Many candies are based on whipped egg whites, and the best ice cream relies on eggs to create the richness that people crave. Given the tremendous number of Kosher products manufactured today that depend on eggs, an adequate supply of this Kosher ingredient must therefore be assured.

The use of eggs in food production historically began with the chef liberating the yolks and whites from the shell, inspecting the egg for bloodspots, and separating the whites and yolks as necessary. Demands of modern food production, however, have made it impractical to amass an army of egg crackers in each food factory. The egg industry has recognized this challenge and has devised a means of providing not only prodigious amounts of liquid egg products to industry *sans* shell but also methods of processing to allow for the shipment, storage, and use of eggs in ways undreamt of by food processors of previous generations. Whole eggs, yolks, and whites are sold as fresh liquids, frozen, or dried into a powder. Various ingredients, such as sugar, salt, and oil, may be added to control viscosity or to meet customer requirements. Technology has been developed to remove cholesterol from egg yolks or to give egg whites (which have no cholesterol) some of the functional characteristics of whole eggs. Programs are even under way to vary the feed of the chicken to manipulate the fatty acid composition of the egg. However, you cannot make an omelet (or other eggs products) without cracking a few eggs.

To process the huge volumes of product needed, eggs are removed from crates and placed on large conveyor belts, washed, and then passed over a bright-light source (candling). Usually, the blood in the egg can be observed and the egg removed by attendants.

(Electronic sensing equipment has recently been developed to detect the bloodspots.) The eggs are then automatically placed into an egg-cracking machine. Such a machine consists of a series of individual egg holders that crack the egg, separate the yolk and white (if required), and dump each component into a separate pipe. It can process thousands of eggs an hour, and operators typically monitor the machine to detect eggs that do not separate properly or contain bloodspots. When such a discrepancy is noted, they operate controls that direct the egg to a separate stream or have it discarded. The fluid egg produced by such a system can be either a whole egg or separated yolks and whites.

An interesting point to note is that the United States Department of Agriculture (USDA) maintains a very strict oversight for egg-processing plants. A full-time USDA inspector is assigned to every egg-breaking plant, similar to the supervision required for meat-packing facilities. Such a presence, although it does not take the place of a *Mashgiach*, serves as a useful adjunct to a *Hashgacha* (see the upcoming comments of the *Minchas Yitzchok*).

One of the first issues addressed by egg processors was a concern over bacterial contamination. The producers of the eggs themselves—the chickens—are not noted for living in a particularly hygienic environment, and the eggs are generally a bit dirty when they are collected from the coop. Although the eggs are washed with antibacterial solutions before being sold or processed, salmonella (a bacteria that causes food poisoning) can enter the egg while it is still being formed in the chicken. To reduce the risk of spreading such contamination, the USDA has mandated that all egg products must be pasteurized. Heat-treating eggs is no easy matter; enough heat has to be used to kill the bacteria without turning them into omelets!

### **Eggs from Kosher Species**

Eggs processed for industrial use pose several *Halachic* concerns. The first issue involves the status of the egg itself. Only the eggs of Kosher species of birds are considered Kosher, provided that they were not laid by a bird that was a *T'reifah* (suffering from a significant defect) or removed from a *N'veilah* (dead bird). Although the *Talmud* (*Chullin* 64) discusses the means by which one can verify that an egg came from a Kosher species, the *Shulchan Aruch* (*Y.D.* 86:2) rules that because eggs of non-Kosher birds are not common, one may accept *whole eggs in the shell* without any special investigation. One is also permitted to follow the majority (*Rov*) and assume that most eggs are not from a *T'reifah* or *N'veilah* (*ibid.*, 1, and *Sha"Ch s.k.* 5). Eggs that had been cracked and sold as a liquid, however, have been the subject of discussion by many early *Halachic* authorities. The *Bais Yosef* (*ibid.*) quotes *Rabbeinu Y'rucham*, who explains that the Kosher status of liquid eggs is dependent on two opinions in the *Talmud*. The *Sha"Ch* (*ibid.*) quotes the *Toras Chatas* to the effect that even though one is permitted to eat *Pas Palter* (bread baked by a non-Jewish baker) that contains eggs (because eggs commonly available are always Kosher), one should nevertheless refrain from using liquid eggs unless they have been supervised to assure that they came from a Kosher source.

Although this discussion may not have been terribly significant in the days when eggs were routinely cracked by the food producer, the issue is of major concern in modern food production. The *Minchas Yitzchok* (II:68) discusses the acceptability of liquid and powdered eggs at length and concludes that whenever only Kosher eggs are processed, one may—as a matter of *Halacha*—accept liquid eggs as Kosher even if a *Mashgiach* does not check the eggs. This is especially true when the government has



established standards and requirements for such productions and all the more so when a government inspector is present to enforce such rules. Although the *Minchas Yitzchok* is less than sanguine about such a leniency in his time, the consensus of virtually all *Halachic* authorities today is that, given the rigid governmental control and total absence of any non-Kosher eggs, fluid eggs produced by the modern egg industry may be accepted without question.

### **Ova**

A second issue involves *ova*, the term used for eggs that are harvested from slaughtered chickens. Depending on the level of development of these eggs, they would be considered *Fleishig* (meat) if recovered from Kosher-slaughtered chickens (see *Tur* and *Shulchan Aruch Y.D.* 87:5 and *Sha"Ch s.k.* 9). If the chickens were not Kosher slaughtered, they would have the same *Halachic* status as the non-Kosher chicken. One of the largest egg producers in the United States formerly processed ova, which required a full-time *Mashgiach* for their Kosher productions. Fortunately, from a Kosher perspective, the processing of ova has diminished to the point of being practically nonexistent in egg-processing plants in the United States. Nevertheless, the USDA has developed a "Kosher Statement," which it appends to its certification of egg productions at the request of the manufacturer. This statement vouches for the fact that a given lot of eggs contains no ova or blood-spotted eggs (see the discussion of bloodspots that follows). Given the USDA's strict control of egg-processing plants, such a guarantee has relevance in *Halacha*.

### **Bloodspots**

The next *Kashrus* issue involves bloodspots that are occasionally found in eggs. The *Talmud (Chullin 64b)* discusses the status

of eggs in which blood is found. A bloodspot was typically considered by *Chaza"l* as an indication that the egg had been fertilized, and any resulting embryo that had been formed would be prohibited. As regards the bloodspot itself, however, a significant discussion exists among the *Rishonim* (see *Tosafos*, *ibid.*) concerning where such a bloodspot must be found, as well as whether only the blood is prohibited or the entire egg must be discarded. The *Rama (Y.D.* 66:3) quotes the prevailing custom to the effect that, in order to follow all opinions, the entire egg should be discarded regardless of where the bloodspot was found. This is indeed the custom in Kosher households today. Were this to be the requirement for industrial eggs, however, guaranteeing that such eggs are free of bloodspots would be impossible. Egg processing is monitored by factory workers, not the *Mashgiach*, and with thousands of eggs being processed every hour, no way exists to guarantee the point—even with the USDA "Kosher" statement. Indeed, new egg-processing equipment is being designed that eliminates human oversight entirely. Fortunately, such a rigorous supervision is not *Halachically* required. The *Shulchan Aruch (ibid., 8)* states explicitly that roasted (hard-boiled) eggs may be eaten, even though checking them for bloodspots is impossible, and the *Rama* explains that the rationale for this is based on the right to rely on the majority of eggs that have no bloodspots. The *Rama* notes, however, that the custom is to check eggs during the daytime when possible, but he clearly allows the use of unchecked eggs at night because the option of checking them is not available (see *Aruch ha'Shulchan*, who rules that failure to check, even when possible, would not prohibit the use of the eggs).

Concern over blood-spotted eggs today is further mitigated by the fact that the vast majority of eggs sold for food are derived from hens that have never been near a male in their lives. Hens are segregated in huge

coops—with such operations approaching one million birds at a time—for the sole purpose of converting chicken feed into eggs. Such eggs are referred to in the *Talmud* as *Safna me'Ar'ah* (literally, “heated from the ground”), and blood found in such eggs is believed to be created by the rupture of small blood vessels at the time of ovulation. (These are usually found on the yolk, although they may occasionally appear in the albumin.) As such, they are not indicative of a fertilized egg and cannot prohibit the entire egg. The *Igros Moshe* (*Y.D.* 1:36) discusses the status of blood-spotted eggs in countries where such eggs predominate and notes that the custom is still to discard the entire egg. However, when a blood-spotted egg is cooked in a pot with another egg, no basis exists to be concerned with the status of the other egg or the pot (unless one is aware that it is definitely from a fertilized egg).

### **Protein and Meat Spots**

Egg albumin is virtually all protein and water, and some of this protein naturally clumps and congeals (similar to the *chazaze*). Occasionally, especially in the case of brown eggs, some of the eggs' natural pigmentation leaks into the albumin and collects in these clumps. These colored clumps, which are always found in the albumen, may have a reddish color, and have been confused with classic bloodspots. Since, in fact, they contain no blood, some have argued that the above-noted custom to discard all blood-spotted eggs does not extend to protein spots. Meat spots, on the other hand, are believed to be actual bits of tissue that slough off the oviduct of the hen as the egg is being formed. These would certainly pose a greater *Kashrus* concern, in that they may well be considered *Ba'sar min ha'Chai* (meat separated from a living animal), which is prohibited. From a practical perspective, however, most consumers (and *Mashgichm*) may not be sufficiently versed in the nuances

of the distinction between blood, protein, and meat spots, and would tend to discard the entire egg.

### **Eggs Left Overnight**

Another concern discussed by both the *Minchas Yitzchok* (*ibid.*) and the *Igros Moshe* (*Y.D.* III:20) concerns eggs that have been removed from their shell and left overnight before being processed. The *Talmud* (*Niddah* 17a) states that one who eats a peeled egg that has been left overnight is placing himself in danger. The *Igros Moshe* is of the opinion that one needs not be concerned with this statement because it is not quoted in *Shulchan Aruch*. In addition, he opines that the concern does not apply to factory productions. Note, however, that other authorities are much more concerned with this issue. Therefore, certifications at many hotels and restaurants insist that fresh eggs be cracked as needed and that salt is added to any liquid eggs that are left overnight, because “salted eggs” are not considered subject to this concern (see *Darkei T'shuvah* 116:74).

### **Pasteurization**

Now that the status of the fluid egg itself has been discussed, additional *Kashrus* concerns relating to the manner in which the eggs are processed must be addressed. As already noted, eggs must be pasteurized to eliminate the risk of bacterial contamination. Pasteurization involves heating the liquid to a temperature that reduces dangerous bacteria to very low levels; it is typically accomplished in a machine called a *heat exchanger*. In such an apparatus, liquid egg passes on one side of a metal plate and hot water on the other, allowing the eggs to reach the required temperature for an appropriate period. The hot water used for this purpose does not come in direct contact with the eggs and is reheated and recirculated through the

system. The *Kashrus* concern with this process stems from the fact that many egg plants pasteurize both pure eggs and an egg/milk blend. Not only must the pasteurizer itself be *Kashered* between dairy and Pareve productions, but the water that has been used to heat a dairy product must also be changed before processing a Pareve product.

Pasteurization, however, poses additional *Kashrus* concerns. Conventional pasteurization is based on heat. Many food products, such as fruit juices and milk, can be pasteurized with relatively high levels of heat, without significantly degrading the product. When egg proteins are heated, however, they coagulate, changing the physical characteristics of the product. Although whole eggs can tolerate a minimal pasteurization temperature, egg whites solidify under such conditions. To enable a lower pasteurization temperature, an oxidizing chemical called hydrogen peroxide is added to the egg whites to aid in the reduction of bacteria. (This is the same chemical found in many medicine cabinets and is used to cleanse and disinfect wounds.) Although hydrogen peroxide does indeed address the need to kill bacteria, its presence in the final egg product is not desired; it is unstable in the eggs and releases oxygen gas over time. Hydrogen peroxide can be removed from the eggs by use of an enzyme called *catalase*, the classical source of which was (non-Kosher) liver. Although used in infinitesimal amounts, the addition of any amount of a non-Kosher ingredient *l'Chatchila* (ab initio) is generally not permitted. Fortunately, enzymologists have discovered new ways of producing a microbial *catalase* through fermentation, which can be entirely Kosher.

### **Modified Egg Yolks**

Another point that should be noted concerns ingredients that may be added to liquid egg yolks. As noted earlier, egg yolks are natural emulsifiers due to the lecithin

and cholesterol they contain. Indeed, the word “lecithin” is derived from the Greek word *lekithos* meaning “egg yolk.” Lecithin is a type of *phospholipid*, a fat derivative in which one of the fatty acids has been replaced with a phosphate group and one of several nitrogen-containing molecules (amines). While the fat portion of the molecule repels water, the phosphate and amines attract water, thereby allowing the phospholipids to mix with both water and fat. The lecithin in egg yolks, however, may be modified with the addition of an enzyme called *phospholipase*, which cleaves a fatty acid from the lecithin creating a chemical called a *lysophosphatide* with improved emulsification properties. While such “super” yolks may prove better emulsifiers, *phospholipase* is often derived from porcine pancreas and is clearly a non-Kosher product. Kosher *phospholipase* products, derived through microbial fermentation, however, are also available to effect similar results.

### **Bishul Akum**

The use of heat in the processing of eggs is not, of course, limited to pasteurization. Although egg whites may be whipped into a meringue and mayonnaise prepared with fresh liquid egg yolks, the eggs in most foods must be *cooked*. The cooking of omelets, hard-boiled eggs, and quiche in a factory setting therefore raises concerns of *Bishul Akum*, which must be addressed by the involvement of a Kosher-observant Jew in the cooking process. Although eggs *may* be eaten raw—and, by definition, the restrictions of *Bishul Akum* do not apply to foods that are edible without cooking—eggs are a notable exception (*Avodah Zarah* 38b). (The *Tosafos* [*Y'vamos* 46a] explain that although eggs *may* be eaten raw, because their *primary* culinary use is as a cooked item, they are indeed subject to this rule.) Kosher certification of certain cooked egg products must be evaluated in light of this concern.

## Powdered Eggs

Fluid egg products are perishable and must be kept refrigerated and used within a short period. Longer-term storage may be effected by freezing. Another method of preserving eggs involves drying them into a powder, in which case they are stable for long periods without refrigeration. The most popular method for drying eggs is a process called *spray drying*, in which the liquid egg is sprayed as a fine mist in the presence of hot air, allowing for the evaporation of the moisture in the egg and leaving a stable powder. (An older, more specialized process used for egg whites involves spreading the egg whites on a pan and allowing the egg whites to crystallize. Few companies still use this process, although such pan-dried product is highly prized by the confectionery industry.) Most powdered egg products may be pasteurized as a liquid before drying. As noted previously, egg whites are difficult to pasteurize, and when they are destined to be dried, they are typically not pasteurized in their liquid state at all. Rather, after the egg whites have been dried and packaged, the boxes of finished product are stored in a hot room for more than a week. This slow “pasteurization” kills the offending bacteria. A technical problem with this process, however, is caused by the small amount of natural sugar contained in egg whites. When certain sugars are heated with protein, they react in what is termed the *Maillard reaction*, which causes the product to become brown. (This same process produces the brown color in bread crust.) Were natural powdered egg whites to be subjected to the heat treatment just described, the powder would turn brown. However, customers have not yet expressed a desire for brown-colored egg *white* powder, and to avoid this problem, the liquid egg whites must be desugared prior to drying. Desugaring can be done in two ways. The first method is to culture the eggs with a bacteria or yeast, which metab-

olizes these sugars. The second method is to employ an enzyme called *glucose oxidase*, which is also derived from fermentation. This enzyme breaks the sugar into new components that do not contribute to the Maillard reaction. Both methods raise *Kashrus* concerns in that some of the other nutrients used to grow these microorganisms may be non-Kosher. In addition, both the yeasts and the enzymes may not be acceptable for *Pesach*.

Powdered, whole-egg product is not free of *Kashrus* concerns, either. The USDA distributes free egg “product” as part of its nutrition program both at home and abroad. To balance the interests of its competing agricultural constituencies, the USDA mandates that the egg product it purchases must contain both dairy and egg ingredients. From a *Kashrus* perspective, however, this creates a problem, because this product is produced on the same equipment as conventional powdered whole egg. Because these companies’ regular powdered products are generally certified as Pareve, all equipment used to produce USDA product must be *Kashered* appropriately before the production of Pareve powdered eggs.

In the final analysis, the consumer rarely purchases the processed egg products that we have discussed. With the exception of cholesterol-free egg mix, the houseperson still buys—and cracks—eggs the old-fashioned way. Concerns over salmonella, however, have led companies to offer more and more pasteurized liquid egg products. Processed eggs are very much a part of many of the foods we eat. The vigilance of the *Kashrus* authorities is critical for this incredible food product.

## The Bottom Line

- Eggs from Kosher species of birds are permitted and are not subject to the laws prohibiting the mixing of meat and milk.
- Eggs from carrion (*N'veilos*) or defective birds (*T'reifos*) are not Kosher. Ova (eggs

harvested from slaughtered chickens) are not Kosher unless obtained from Kosher-killed birds and subsequently soaked and salted, in which case they would be considered “meat” and not Pareve.

- One is not required to verify the Kosher nature of the sources of whole eggs, because non-Kosher eggs are not commonly available. Similarly, accepted Kosher standards allow for the use of commercially produced liquid and powdered eggs.
- Although eggs with known blood spots are not permitted, one may nevertheless use eggs that have not been checked when such inspections are impractical.
- Although protein spots may be permitted, most people would not be able to distinguish between blood, protein, and meat spots, and all usually cause the entire egg to be discarded.
- Liquid eggs are often pasteurized on equipment that is used for dairy products (for example, dairy egg blends). Pareve egg productions require that the pasteurizer be Kosherized and issues relating to the recirculating hot-water system be addressed.
- Egg yolks may be treated with non-Kosher lipase enzymes to enhance their functionality.
- Cooked egg products (for example, hard-boiled eggs and omelets) are subject to concerns of *Bishul Akum*.
- Enzymes used to treat liquid egg whites after pasteurization require appropriate Kosher certification. Enzymes and cultures used to treat egg whites before drying are subject to the same concern.
- Some have a custom to avoid leaving uncooked, liquid eggs overnight without adding salt or sugar to them.

# The Story of Emulsifiers

## אסתר מן התורה מנין

חולין קל"ט ע"ב

### Whence Cometh Est(h)er?

*Chullin 139b*

One of the most commonly asked questions in the *Kashrus* world is “Why can’t I look at the ingredient list of a food to determine whether it is Kosher?” Because most modern processed foods bear an “ingredient statement,” a legally mandated list of the ingredients used in its production, one may often wonder whether this information is sufficient in making a *Kashrus* determination. In truth, many reasons make the true Kosher status of a product impossible to be divined from reading the ingredient list. First, although many ingredients may be derived from both Kosher and non-Kosher sources, their sources are not obvious from the legal name of the ingredient. Second, the Kosher status of a food depends not only on the ingredients but also on the *equipment* on which it is produced. A third reason is that certain “minor” ingredients need not be listed at all, even if their use would indeed compromise the Kosher status of a product. And fourth, the nomenclature used in ingredient declarations often obscures the true nature of an ingredient and its potential *Kashrus* implications. Generic names such as “emulsifiers” and “stabilizers” may sound innocuous, but their *Kashrus* implications are far from harmless. The purpose of this chapter is to offer the reader an understanding of some of the *Kashrus* issues relating to these hidden ingredients that blend so seamlessly into the foods we eat.

### **Emulsification**

Many of the foods we eat contain mixtures of different types of liquids, such as water

and oil. Often, these liquids tend to separate even after they have been mixed well, such as when blending vinegar and oil to make salad dressing. Under certain circumstances, however, the repulsion of such liquids from each other may be overcome. Milk contains a certain amount of fat and, indeed, that fat did at one time tend to separate after a while. Those who remember milk before the days of homogenization can recall that when a bottle of milk was delivered to the home, a layer of cream had floated to the top. However, the milk and cream were originally mixed together when the milk came out of the cow and by simple mixing they could be recombined, albeit not permanently. The term *emulsion*, from the Latin *emulgere* (milk), was coined to describe this phenomenon. It was later understood that milk contains a number of natural emulsifying agents, and as science began to understand the nature of these chemicals, many types of emulsifiers were developed to address a varied list of food and chemical requirements. Today, we augment these natural emulsifiers by homogenizing milk, which involves breaking the oil droplets into such small particles that they can remain suspended much longer in the milk without separating.

The problem with mixing oil and water is that each liquid tends to attract molecules that are similar to it and repel those that are different. Fats are part of a category of chemicals called *esters*, complex chemicals produced by the reaction of an acid and an alcohol. (The term was coined by the German chemist Gmelin as a contraction

of the German *Essig* (vinegar) and *Äther* (ether.) In the case of a fat, the major ester is composed of three fatty acids and glycerol (glycerin), and is known as a *triglyceride*. The structure of the three ester bonds is *nonpolar*, which means that electrical charges are evenly distributed. Water, on the other hand, is *polar*, which means that some positive and negative charge are always found separated, with the positive at the two ends (hydrogen molecules) and the negative in the “middle” (oxygen molecule) of the molecule (of H<sub>2</sub>O). Therefore, when triglycerides and water are mixed, they quickly separate. A long-recognized fact, however, is that triglycerides can be treated with chemicals to allow them to mix with water; this is the process used to make soap, a classic emulsifier. In this process, lye (sodium hydroxide) creates a mixture that is predominantly sodium stearate (soap) and glycerin. One end of the soap molecule is attracted to water (*hydrophilic*, water loving) whereas the other end is attracted to oil (*lypophilic*, fat loving, or *hydrophobic*, water hating). By providing a bridge between the two materials, both the oil and the water can remain mixed together. Food emulsifiers function in essentially the same way.

### **Eggs—Cholesterol and Lecithin**

The French arguably gave us one of the earliest applications of the use of natural food emulsifiers. Mayonnaise is a blend of vinegar (acetic acid and water) and oil, a trick that seems to defy the conventional rules regarding the mixing of oil and water. However, necessity is the mother of invention—in this case, the use of lecithin (and cholesterol) as an emulsifier. The story is told that, in 1756, the French chef of the Duke of Richelieu was preparing a victory feast to celebrate his master’s defeat of the British at Port Mahon. His creation called for a sauce made of cream and eggs, but realizing that he had no cream in the kitchen, he improvised, substituting

olive oil for the cream. A new culinary masterpiece was born and the chef named it “Mahonnaise” in honor of the duke’s victory. Although he succeeded in keeping the vinegar and oil mixed together, he probably did not realize that it was the lecithin and cholesterol in the eggs that allowed this feat to be accomplished. Lecithin is an ester of glycerol with one of the fatty acids ending with a phosphoric acid derivative that can attract water, while the rest of the molecule can attract fat. Cholesterol is a complex molecule that has both hydrophilic and lypophilic regions. Both attract both fat and water; that is, they function as emulsifiers. Although mayonnaise continues to be made with egg yolks, virtually all the lecithin used as a food emulsifier in other food products comes from soybeans. Soybeans are inherently Kosher. However, fatty acids are often added to lecithin to improve its consistency, so the source of these fatty acids is a major *Kashrus* concern. Lecithin can also be treated with certain enzymes to enhance some of its properties, and such enzymes are often derived from non-Kosher animal tissue. An additional concern relates to *Pesach*. Many foods, notably chocolate and margarine, use lecithin as an emulsifier, so such products must be reformulated for *Pesach* use.

### **Monoglycerides**

Another major category of emulsifiers is called *monoglycerides*. Fat molecules (triglycerides) are composed of three fatty acids connected to one molecule of glycerin. A monoglyceride is produced by splitting off one of these fatty acids and combining it with another molecule of glycerin, or by splitting off two fatty acids. Monoglycerides are excellent emulsifiers and may be used alone, further reacted with other chemicals, or used in combination with other emulsifiers to achieve the desired results. (The *diglycerides* that are a by-product of this process have no active emulsification

properties and may be left in the product, creating a product called *mono-* or *diglyceride*, or removed to leave purified *distilled monoglycerides*.) In addition to emulsifying oil and water, mono- and diglycerides offer an additional advantage to the food industry. Although these products are derived from fat, a quirk in labeling law makes them no longer considered fats and foods that contain them may be labeled “fat free.”

The production of this type of emulsifier poses a number of *Kashrus* concerns. First, the source of the original fat must be Kosher. Unfortunately, animal fat is often significantly less expensive than vegetable fat, and both produce an equally functional monoglyceride. An economic incentive therefore exists to use animal-based monoglycerides, especially because the animal-based version may be added to a “vegetable oil” product without being declared an animal derived. (These emulsifiers are permitted in 100 percent vegetable oil without further labeling.) In addition, even if all the ingredients of a given emulsifier are vegetable based, many emulsifier manufacturers produce both animal- and vegetable-based versions on the same equipment. These facilities therefore require careful cleaning and *Kashering* to produce Kosher products. An additional concern stems from the glycerin that is added to produce such emulsifiers. Synthetic glycerin is produced from petroleum and poses no inherent *Kashrus* concern. However, as noted in the description of the production of soap, the splitting of a triglyceride results in the production of glycerin, and commercial glycerin is produced from both animal and vegetable fat sources. Care must therefore be taken that the glycerin used in the production of Kosher emulsifiers come from Kosher sources.

### **Tartrates**

Certain emulsifiers have properties in food production in addition to allowing the mix-

ing of oil and water. Monoglycerides can be reacted (esterified) with tartaric acid to produce a chemical called DATEM (diacetyl tartaric ester of monoglyceride) that reacts with both starch and protein and is especially useful in the production of bread. By binding with these components of flour, it allows for easier processing of the dough and makes the dough rise better. In addition to the *Kashrus* concerns raised with the monoglyceride component, tartaric acid poses another area of potential concern. Tartaric acid has historically been derived from the sediment that crystallizes in wine casks in the form of argol, which remains the major commercial source for this chemical. Virtually all such tartaric acid is produced from non-Kosher wine and grape juice, raising a question as to its Kosher status. The *Halachos* relating to wine, however, are somewhat unique, and the *Shulchan Aruch* (*Y.D.* 123:17) indeed rules that because the argols are dried for twelve months and bear no resemblance to wine, they have the *Halachic* status of earth and are permitted. Note, however, that the permissibility of tartaric acid produced *today* may not be as clear. First, not all authorities accept tartaric acid as a Kosher product (see *Darkei T'shuvah*, *ibid.*). Second, virtually none of tartaric acid produced today is actually dried for twelve months; modern heat treatment is used to accelerate the drying process, and the impact of this processing change is debated among the authorities. Third, a new process for extracting tartaric acid from fresh grape juice has been developed, further complicating the *Halachic* picture for tartaric acid. Suffice it to say that the Kosher status of DATEM, even when made from vegetable monoglycerides, is not universally accepted.

### **SSL**

Another emulsifier commonly used in the baking industry is called SSL, sodium stearyl lactylate, which is produced from



lactic and stearic acids plus other chemicals. By binding to starch, it has the ability to retard the staling process in baked goods, thus increasing their shelf life. Although the lactic acid poses no dairy concerns (it is produced through the fermentation of various types of sugars and should not be confused with its linguistic cousin “lactose”), the source of the stearic acid is a significant issue. Stearic acid is a fatty acid produced by splitting fat molecules, and even if the fat itself is Kosher, if the facility also processes animal fats, care must be taken that the equipment on which it is produced is properly *Kashered* from non-Kosher fatty acid production.

### **Polysorbates**

Another common class of emulsifiers is called *polysorbates*, which is produced by the esterification of sorbitol and a fatty acid. In addition to the *Kashrus* concerns regarding the status of the fatty acids, the use of sorbitol opens new vistas in the *Kashrus* concerns regarding emulsifiers. Sorbitol is produced by the hydrogenation of glucose and usually poses no year-round *Kashrus* concerns. *Pesach*, however, is another story. Glucose may be derived from corn (*Kitniyos*) and is generally forbidden to *Ashkenazic* Jews during *Pesach*. However, at least one major *Kashrus* organization has taken the position that the esterification process serves to change the status of sorbitol to such an extent that it is no longer considered *Kitniyos*. A greater concern, however, stems from the use of polysorbates that are produced in Europe, where much of the sorbitol is produced from wheat starch and is true *Chometz*. Although *Kitniyos* polysorbates may be owned and used on *Pesach*, those that contain true *Chometz* are completely forbidden.

In discussing the holiday of *Purim*, the *Talmud* offers us an insight into the nature of the miracle itself. It notes that the peril

in which the Jews found themselves—as well as their ultimate salvation—was orchestrated by *Hashem* under the aegis of the natural order, a sort of “behind-the-scene” operation. A certain level of improper behavior by the Jewish people caused *Hashem* to punish them by obscuring His divine protection, hence the mnemonic allusion of *Esther*: “hidden.” The *Talmud* therefore ascribes the verse “I will hide my countenance” (*Deuteronomy* 31:18) to the miracle of *Purim*, and on their repentance, *Hashem* returned the Jewish people to safety through behind-the-scene political machinations. In celebrating the holiday of *Purim*, Jews declare that they indeed recognize that it is *Hashem*’s hand that guides all facets of our lives, even if they are not readily discernible to the naked eye. In *Kashrus*, we are often faced with the same test, and whether it be with “*Esther*” or “*ester*,” we take the same care to understand what is really behind the scenes.

### **The Bottom Line**

- Certain liquids tend to repel one another and do not naturally remain together as a mixture. Emulsifiers are chemicals that allow for the mixture of certain liquids that would otherwise separate.
- Many foods depend on the emulsification of their ingredients to make a stable product. Mayonnaise, for example, relies on the natural emulsifiers in egg yolk to prevent the oil and vinegar from separating.
- Chocolate uses lecithin derived from soybeans for the same purpose. Egg yolks and lecithin are readily available as Kosher products.
- As a soybean derivative, lecithin is considered *Kitniyos* and generally not approved for Passover use.
- Monoglycerides are esters produced from fat when the fat triglyceride is reacted with additional glycerin or two of the fatty acids are removed. Kosher certification is

critical for this product because animal fats are the traditional, and less expensive, sources of both triglycerides and glycerin.

- Even “100 percent pure” vegetable shortening may contain emulsifiers of non-Kosher animal origin.
  - Monoglycerides may be reacted with tartaric acid. Although many *Kashrus* authorities accept tartaric acid derived from non-Kosher grape juice, this position is not universally accepted.
  - Sodium stearyl lactylate (SSL) is produced from lactic and stearic acids.
- Stearic acid may be derived from non-Kosher animal fat and must be certified to be of Kosher vegetable origin. (The product is Pareve; the term *lactylate* is unrelated to lactose.)
- Polysorbates are produced through the reaction of sorbitol and a fatty acid. The fatty acid requires a reliable Kosher certification. If the sorbitol were derived from wheat glucose, it would be *Chometz* and not acceptable for Passover use. Polysorbates based on sorbitol that is derived from corn (*Kitniyos*) are accepted by some authorities for Passover use.

# The Story of Enzymes

## עת לכל חפץ

קהלת ג' א'

“-*Ase l'Chol Chayfetz*”—A Time for All Things

*Ecclesiastes 3:1*

In the *Book of Ecclesiastes*, King Solomon notes that *la'Kol Z'man, v'Ase l'Chol Chayfetz* (“To everything there is a time and season”; *Ecclesiastes 3:1*). The Hebrew word *ase* means a season, but in the realm of food technology, *-ase* is the modern suffix used to indicate an enzyme. This etymological parallel need not be coincidental, for just as for all things there is a season, enzymes are fundamental to virtually every form of life in the universe. Food production from bread to wine has always relied on enzymatic activities, and science has developed sufficient understanding of their functioning to permit harnessing them to many interesting food applications. Indeed, enzymology and related fields such as biotechnology are among the fastest growing and innovative fields of food production. It is therefore incumbent on those responsible for Kosher food production to understand their use and their *Kashrus* implications.

### **Definition of an Enzyme**

An enzyme is a protein, usually produced by a living organism, that functions as a biological catalyst. All organisms—animal, vegetable, or microbial (bacterial, fungal, yeast, and mold)—produce enzymes to aid in the performance of specific chemical reactions necessary for the life of that organism. The Greeks recognized that there were certain properties in leaven that caused chemical changes that converted flour and water into risen bread. *Zymose* (Greek for “leaven,” meaning “to elevate”) yielded the concept

of *zymase*, the enzyme mix produced by the yeast in leaven. The word *enzyme* means “in leaven” and remains the term by which we refer to this class of biological catalysts.

Food technologists have discovered that if we can isolate specific enzymes produced by certain organisms, we can use them to catalyze certain chemical reactions desired in the food industry. For example, a kernel of grain such as barley is composed of an endosperm (predominantly starch) and a germ, both of which are covered by a layer of bran. This kernel was created to be planted and to then grow into a new barley plant (see *Genesis 1:11*). The living part of the seed is the germ, which lies dormant until it is planted where it can come into contact with water to germinate and begin growing. The living germ needs nourishment, which the nascent germ finds adjacent to it in the form of starch (and protein) in the endosperm. These nutrients, however, are not biologically available to the germ; for example, the germ cannot digest the long chains of glucose that form the starch molecule. The germ senses this and secretes the enzyme amylase to break the starch into smaller units of glucose and maltose that it can then digest. (The proteins in the kernel are handled in much the same manner.)

Many years ago, people recognized that if barley was soaked in water and allowed to germinate, a sweet syrup could be extracted from the barley—even though the native barley was not sweet at all! This process is known as *malting* and can produce malt

syrup through the enzymatic hydrolysis of barley starch into sugar (maltose). Also noted was that the malted barley could be used as an aid in the fermentation of other grains by having the malted barley hydrolyze the starch in those grains into more easily fermentable sugars. We now understand that the enzymes in the malted barley break the grain (starches) down into glucose or maltose. This is just one basic example of enzymatic activity being used in the food industry.

Enzymes are categorized by the substrate that they affect. The modern terminology employed to reflect these categories is to use the name of the substrate that is affected and add an *-ase* suffix. For example, the Greek word for starch is *amylon*, so the enzymes that degrade starches are called *amylases*. Enzymes that degrade proteins are called *proteases*, those that degrade fats (lipids) are called *lipases*, and so on. The older system for naming enzymes was based on the name of the material from which they were isolated and adding an *-in* suffix, such as papain (from papaya), chymosin (from chime, the thick fluid mass of partially digested food that leaves the stomach), pepsin (from the Greek *peptein*, to digest), and bromelain (an

enzyme derived from pineapple, which is a member of the Bromeliad family). Also note that almost all enzymes used in food preparation degrade a substrate; they break the food into smaller units. Starch is broken down into dextrins and sugars; sucrose is split (inverted) into glucose and fructose; and the casein molecule is split so that part of it coagulates into cheese. A notable exception to the breakdown rule with foods is glucose isomerase, which actually reconfigures a glucose molecule into a fructose molecule. Other enzymes, such as transglutaminase, bind (“cross-link”) certain proteins together and are used in the production of imitation meat products to provide a meatlike texture. Another cross-linking enzyme, known as a pectin methylesterase (also known as Crystalzyme<sup>®</sup> AES Super), is used to strengthen the molecular bonds in fresh fruit, reducing their tendency to become soft during processing.

### Enzymes Used in the Food Industry

The following is a list of some commonly used enzymes and their applications in food manufacture:

Enzyme	Functionality	Common Applications
<i>Alpha Amylase</i>	Hydrolyzes starch into dextrin	Glucose (corn) syrup, alcohol fermentation, and bakery products
<i>Catalase</i>	Degrades hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> )	Removes residual hydrogen peroxide that had been added to liquid egg whites during pasteurization
<i>Cellulase</i>	Hydrolyzes cellulose	Used in the fruit juice industry as a pressing aid to break down the cellulose in the fruit
<i>Glucoamylase</i>	Hydrolyzes dextrin into glucose	Glucose syrup
<i>Glucose isomerase</i>	Converts ( <i>isomerizes</i> ) glucose into fructose	High-fructose corn syrup (HFCS), also known as <i>isomerase</i>
<i>Glucose oxidase</i>	Degrades glucose; used to degrade sugars, such as in dried egg whites. If the sugar would remain in the dried egg whites, it would caramelize during the heat treatment to which the powdered eggs are subjected and give a brown color to the product	Removes residual glucose in powdered egg whites prior to pasteurization

(continued)

Enzyme	Functionality	Common Applications
<i>Invertase</i>	Inverts (converts) sucrose into its components glucose and fructose (also known as <i>invertose</i> )	Used in fondant and other confectionary
<i>Lactase</i>	Converts <i>lactose</i> (milk sugar) into its components glucose and galactose	Allows people who lack natural lactase in their systems ( <i>lactose intolerance</i> ) to consume dairy products
<i>Lipase</i>	Degrades fats ( <i>lipids</i> )	Used to enhance buttery flavors in dairy products
<i>Pectinase</i>	Hydrolyzes pectin	Used in the fruit juice industry to break down pectin and increase juice yield
<i>Protease</i>	Degrades proteins	Used to chillproof (remove the protein haze) in beer, tenderize meats, and to age cheese (enzyme-modified cheese, EMC). It is also used in the baking industry as a dough conditioner

### **Animal-Derived Enzymes**

Enzymes used in the food industry can be derived from three basic sources: animal, vegetable, and microbial. Several enzymes commonly used in food preparation today are derived from animal tissue. The enzyme preparation called rennet is an extract of the fourth stomach of a calf and is rich in the enzymes rennin and pepsin. Both are proteases that cause milk to curdle into cheese. The use of rennet is discussed in the *Talmud* and is generally considered Kosher only when extracted from the stomachs of Kosher-slaughtered calves (*Y.D.* 87:11). Note that, in addition to ensuring the Kosher-slaughtered status of such stomachs, care must be taken to ensure that all prohibited fats (*Cheylev*) are removed from the flesh, after which the stomachs must be soaked and salted to remove residual blood. (The permissibility of the use of such material, in light of the prohibition of *Ba'sar b'Cholov*—the prohibition of mixing milk and meat together—is discussed by Rabbinic authorities; see *Pischei T'shuvah*, *ibid.*, 19. Most authorities rule that such rennet is permitted, based on the fact that the prohibition of *Ba'sar b'Cholov* assumes a mixture of milk and meat flavors. Even though the action

of the tiny amount of rennet used may be noticeable, its flavor is imperceptible; see *Sha"Ch*, *ibid.*, *s.k.* 35.) Although opinions vary regarding rennet extracted from dried non-Kosher animal stomachs (see *Rama*, *Y.D.* 87:10), such material is generally not considered Kosher.

A second animal-derived enzyme is lipase. It is used to impart buttery flavors to oils by degrading some of the lipids and to hasten the aging of cheese (EMC). As in the case of rennet, lipase derived from non-Kosher animal tissue is prohibited. (Although *Igros Moshe Y.D.* [III:9] does discuss a possible manner of preparing such material from non-Kosher sources, it has virtually no practical application in modern food preparation.) Recently, a process for the Kosher production of lipase derived from kid, calf, and goat oral gastric tissue found near the gullet has been perfected. It involves the extraction of the desired enzyme from Kosher-slaughtered and -processed animal tissue and its subsequent processing to ensure that no trace of meat flavor remains in the product so that it may, therefore, be considered Pareve. (This process is similar to the production of Kosher gelatin from Kosher meat by-products, which is also accepted as Pareve.)

A third animal tissue preparation used in the food industry is called pancreatin, which is desiccated pancreatic tissue, generally from swine. Rich in a plethora of protease enzymes, it is used to modify protein to make it more easily digested. Trypsin, derived from both beef and swine pancreas, is used for the same purpose. Pancreatic tissue and its derivatives are the ingredients used in Nutramigen<sup>®</sup>, Alimentum<sup>®</sup>, and Good-Start<sup>®</sup> infant formulas to break down the protein for children who cannot otherwise digest it. Of importance to note is that, although these infant formulas are not certified as Kosher, the amount of non-Kosher enzyme in them is quite small. Permitting the use of these products may therefore be *Halachically* appropriate in certain circumstances. (These ingredients are also found in some so-called health foods designed to increase muscle mass. Such products require reliable Kosher certification.)

### ***Plant-Derived Enzymes***

Three plant-derived proteases and one amylase are used commercially today. Papain is derived from the papaya plant, bromelain from the pineapple plant, and ficin from the fig. Papain and bromelain are commonly used as meat tenderizers, with ficin having more limited applications (such as the chill-proofing of beer) because of its higher proteolytic activity. Beta amylase, derived from barley, is also used to make maltose syrup.

### ***Microbially Derived Enzymes***

The recent explosion of interest in enzymes involves the third source, microbial. The growth of microorganisms on nutrient media allows these microorganisms to produce various enzymes as part of their natural metabolic function. This process is commonly referred to as fermentation. A classic example of such a process is the growth of mold on canvas. Each molecule of cellulose

in canvas is composed of long chains of glucose molecules. Although mold may indeed feed on glucose, it cannot consume the long-chained cellulose molecule directly. The mold overcomes this problem by secreting cellulase enzymes that break the cellulose into individual glucose molecules, which it can then metabolize. If the growth of the microorganism can be manipulated in such a way so that the microorganism produces a surfeit of desired enzymes, these enzymes can be harvested and concentrated for use in other applications. This is the heart of enzyme production via commercial fermentation.

The microorganisms used in fermentation (bacteria, fungi, and yeast) are naturally occurring, and (until recently) the art of enzyme production was limited to discovering and isolating those strains of a microorganism that would produce substantial amounts of specific enzymes under optimum conditions. Over the years, various such microorganisms were isolated and grown, with natural mutations of the organisms being observed. Some of the mutations of these microorganisms proved superior in their ability to produce desired enzymes, and they were isolated and propagated. Manipulating the chemical or physical environment of the microorganism (mutagenesis) can also induce mutations. Enzyme manufacturers now have collections of such microorganisms and are continually striving to improve their microbial strains.

### ***Genetically Engineered Enzymes***

A more recent advance has been the development of recombinant DNA technology, commonly known as cloning. One way to use this technology is to identify the genetic code that causes an existing microorganism to produce the desired enzyme and reproduce it several times within the same organism. The organism is now “supercharged” compared to its normal potential for production

of this enzyme. However, scientists have now learned to reprogram microorganisms found in nature with genetic information copied from entirely different organisms, allowing the host organisms to produce enzymes (or other chemicals) that they would originally be incapable of synthesizing. This new organism is one that never occurred in nature but is now a living, reproducing organism with unique qualities.

A good example of the application of these two approaches is in the production of what is commonly referred to as “microbial rennet.” Rennin, the major enzyme found in the rennet preparation made from a calf’s stomach, is a specific protease enzyme and is used in the food industry because of the way it breaks the casein molecule in milk, causing the casein to curdle, which is the first step in making cheese. Because of the limited amount of animal rennet available, scientists looked for another protease that functions in a manner very similar to rennin. Several strains of microorganisms were identified, which, when grown under appropriate conditions, produced proteases that made cheese in a manner very similar (but not identical) to rennin. These are the “microbial rennets” that formerly were used to make Kosher cheese. Some of the common organisms used for this purpose are *Mucor mehei*, *Mucor pusillus lindt*, and *Endothia parasitica*; their rennets are known in the industry by the trade names Fromase<sup>®</sup>, Emporase<sup>®</sup>, and SureCurd<sup>®</sup>, respectively. The problem with these products is that they are not chemically identical to rennin and function slightly differently. In addition, these microorganisms produce other enzymes that can impart undesirable flavor characteristics to the cheese during production. Several companies have now developed genetically altered microorganisms that have been coded to produce true rennin. These include Chymax<sup>®</sup>, which was originally produced by a genetically modified strain of *Escherichia coli*; Chymogen<sup>®</sup>, produced from a genetically

modified *Aspergillus niger*; and Maxiren<sup>®</sup>, produced from a genetically modified *Saccharomyces*. (Chymax<sup>®</sup> has since been reformulated and is now produced in the same manner as Chymogen<sup>®</sup>.) Because conventional microbial rennets function well for cheesemaking and are easier and less expensive to produce, the advantage of rennets produced through genetic engineering is a matter of debate. However, the technical distinction is important, and most cheese made in the United States today uses genetically engineered rennet.

The application of recombinant technology for enzyme production may not be limited to microorganisms, however. Research has been conducted into the feasibility of modifying the genetic coding of certain types of plants or animals in such a way to produce a desired enzyme. In such a scheme, the genetic coding of the organism would be modified so that the desired enzyme would be expressed in either the plant tissue or the milk produced by the animal, from which the enzyme could be recovered. Such a production would have the theoretical advantage of avoiding the need to maintain costly and microbiologically sensitive fermentation systems. To date, however, such technology has not resulted in any commercial applications.

### **Halachic Concerns**

With the exception of the plant and animal proteases and animal lipases listed above, virtually all enzymes used in food production today are derived through microbial fermentation. Plant proteases, being extracts of plant tissue, usually pose no *Kashrus* issues other than the diluent used. Enzymes are very powerful and typically must be diluted and standardized to a uniform usable strength. A common diluent is lactose, which is dairy and generally not *Cholov Yisroel*. One must be careful, for example, because papain and bromelain—although inherently *Pareve*—may nevertheless be dairy when

blended with lactose. (Lactose used as a diluent is not subject to the leniencies of lactose fermentations noted later in this essay.)

Animal proteases from non-Kosher animal tissue are generally considered non-Kosher (see previous reference to rennet made from dried non-Kosher calf stomachs). Similarly, lipase derived from animal tissue is considered non-Kosher unless specifically produced under Kosher conditions.

The fermentation process of enzyme production is what poses a new series of *Halachic* issues. A brief discussion of the process is now in order. Microorganisms, whether fungi, bacteria, or yeast, are living entities that, when grown as a single species, are referred to as “cultures.” They are isolated from nature and chosen for their desired characteristics, or they are modified using genetic engineering. The organism must then be preserved, which is typically done by freezing or lyophilization. For production of the enzyme, the organism is inoculated into a nutrient medium that allows it to propagate and develop a sufficiently large population to produce the enzyme efficiently. Because these organisms are living cells, they must be fed a diet conducive to their well-being. Their propagation may consist of growing the organisms in flasks of nutrient broth, on an agar surface containing nutrients, or both. When appropriate growth has been achieved, the culture is then added to a large fermentor, in which it is allowed to grow and produce the enzymes. Two types of such enzyme productions exist: intracellular and extracellular. Intercellular production means that the organism produces the enzyme within its cell walls, which must then be lysed (broken open) to harvest the enzyme. Extracellular production means that the organism secretes the enzyme through its cell wall as part of its metabolism, and the enzyme is recovered from the media in which the culture grows. At the end of the fermentation, certain chemical and filtering processes are used to separate the enzyme from the dead organisms

and other waste material, and the enzyme concentrate is then blended with chemical preservatives to make a finished product.

Enzymes are also distinguished in their use between immobilized and nonimmobilized enzyme catalysts. The definition of a catalyst is that it aids in a chemical reaction but does not become part of it. It should therefore be available for reuse many times. However, because enzymes are proteins and some enzymes are proteases, they may self-destruct. In other cases, the enzyme may bind to the substrate sufficiently that the enzyme would be lost as product is removed. To solve this problem, scientists have developed immobilized enzymes. An immobilized enzyme is one in which the active enzyme is attached to an inert substrate, such as a plastic bead, and usually placed in a reaction column. The liquid that is to be modified with the aid of the enzyme is passed through this column and comes into contact with the treated plastic bead. Such an arrangement allows the enzyme to be used for long periods without being replenished. A nonimmobilized enzyme is a liquid or powder that is added directly to the product to be modified. Typically, no means exists of recovering this enzyme, so it remains in the finished product. If necessary, heat is often used to stop enzymatic reactions. However, although such enzymes may no longer be active, they (or their components) remain in the product.

The primary issue involved in determining the Kosher status of such enzymes is whether the media on which the organism is grown must be Kosher. This has been the subject of much discussion in recent years, with the “vinegar controversy” serving as a notable example. (In the mid-1980s, ethyl alcohol produced from non-Kosher wine was used by a number of Kosher companies to produce vinegar. The status of that vinegar was the subject of much debate, with one authority making several arguments to permit the product, one of which is relevant to our discussion. He argued that



microorganisms have the *Halachic* status of a living animal, and because the non-Kosher status of an animal's diet has no bearing on its Kosher status, the vinegar produced by acetobacter growing on non-Kosher alcohol would similarly be permitted. Most authorities, however, disagreed with that approach and prohibited the vinegar.) Some have argued that these microorganisms can be considered a *Halachic cow*, and just as we are not concerned with a cow's diet when permitting its milk, neither should we be concerned with the nutrients consumed by the microorganism as it produces an enzyme. The consensus of the *Poskim* is, however, that the enzyme has the *Halachic* status of the media on which it was grown. Microbes are not a cow, with the critical distinction being that a cow is visible and a microbe is not. An enzyme derived through fermentation therefore assumes the Kosher status of the substrate on which it is grown.

### **Lactose Fermentations**

Note, however, that a significant exception may exist to this approach. Lactose is the sugar naturally found in milk and has a Dairy status. However, some authorities argue that fermentations of lactose may nonetheless be considered Pareve. Lactose may not be considered "milk" *m'Doryssa* (at a Biblical level) because it is derived from the non-proteinaceous part of milk. The concept of *Nishtanah* (a significant change in the characteristics of a material) may allow it to lose its "Dairy" status, especially if the lactose becomes putrid during the fermentation and the finished product has no dairy flavor.

### **Ayn M'vatlin Issur l'Chatchila**

Another concern involves the issue of *Ayn M'vatlin Issur l'Chatchila* (purposefully nullifying a prohibited substance through dilution). Again, the accepted *Halachic* position is that a Kosher-certified product may not be produced with even small

amounts of non-Kosher material, even if added by a non-Jewish company for its own purposes. Therefore, *all* ingredients used in the growth process of the microorganism, from the early flask to the final fermentor, as well as those used to recover, stabilize, and preserve the enzyme, must be Kosher. This means that any glycerin used to preserve the organism or defoamers used to aid in the fermentations must be acceptable. Any chemicals added to the finished product for preservation or standardization must also be Kosher. Similarly, equipment used in all stages of culture preparation through final fermentation must have a Kosher status consistent with the production, for example, Pareve equipment for a Pareve product.

### **Passover**

As far as enzymes certified for Passover are concerned, all yeast extracts used as nutrients, as well as glucose and dextrose, must be Kosher for Passover. As far as *Kitniyos* (legumes) is concerned, however, the accepted position is that enzyme fermentations of *Kitniyos* are acceptable. The rationale for this approach is that we consider the enzymes to be *Nishtanah* (changed). *Halacha* tells us that even Rabbinically prohibited items that become *Nishtanah* are permitted, which would certainly permit enzymes made from *Kitniyos*, which are prohibited only by custom.

We read about a brave new world emerging in food science, with the potential of major changes in how we process and produce food. By being aware of these issues, we can take the necessary steps to ensure compliance with Kosher requirements.

### **The Bottom Line**

- Enzymes are proteins produced by living organisms that function as biological catalysts. They are used in food manufacture to modify or convert many common food products.

- Enzymes commonly used in food production may be derived from plants, animals, or microorganisms (for example, bacteria, fungi, molds, and yeasts).
- Plant enzymes, such as bromelain, papain, and ficin, occur naturally in plants and are inherently Kosher. The equipment used in their processing, however, must be monitored, as must the diluents or other ingredients blended with the enzymes. For example, lactose poses significant *Kashrus* concerns and is often used to dilute enzyme powders. (Lactose used as a diluent is not subject to the leniencies of lactose fermentations noted later in this list.)
- Animal enzymes, such as trypsin, rennet, and lipase, are generally derived from non-Kosher meat sources and are considered non-Kosher. Kosher and Pareve versions of these products may be produced from Kosher-slaughtered animal tissue that has been processed to remove all traces of meat flavor.
- Microbial enzymes are those produced by microorganisms, such as bacteria, fungi, yeasts, and molds. As a rule, products obtained through fermentations, such as enzymes, have the same *Halachic* status as the media on which the organism was grown. For example, a fermentation of dairy ingredients would yield a “dairy” enzyme and a fermentation of *Chometz* (such as wheat glucose) would yield a *Chometz* enzyme.
- Significant exceptions to the preceding rule, however, are accepted by many authorities. Under certain circumstances, fermentations of lactose may yield a Pareve enzyme and fermentations of *Kitniyos* may yield enzymes that are acceptable for Passover use.
- Concerns of the Kosher status of ingredients used in fermentations extend to the nutrients used in the propagation of the initial culture, as well as equipment used in all stages of culture propagation and media preparation.

## The Story of Essential Oils

מרדכי מן התורה מנין  
חולין קל"ט ע"ב

### Whence Commeth *Mordechai*?

*Chullin* 139b

The manufacture of flavor essences is one of the oldest crafts in the food industry. While many botanicals are used as spices, only a small fraction of the plant material actually contributes its distinctive flavor. Food chemists of old had realized this and had developed various methods of concentrating these active flavor components. As we shall see, an “absolute” understanding of such products plays an “essential” role in understanding many “concrete” *Halachic* concepts, allowing us to “extract” the information we need to ensure that our foods “resin”-ate with a proper *Kashrus* standard.

One of the major methods of extracting the flavor components of spices is by extracting their “essential” oils. Indeed, oil is the primary source and carrier of flavor in many types of foods, which is the reason that formulating tasty “fat-free” products poses such a challenge. Essential oils may be recovered using a variety of processes, each with its own *Kashrus* concerns.

### **Citrus Oils**

Citrus oils, such as orange, grapefruit, and lemon, are found in the outermost layer of the rind, known as the “zest.” The zest is typically *cold pressed*, which means that the oils are expressed without using any heat or solvents. The oil is located in tiny sacs within the rind, which are ruptured during the pressing. After pressing, water is used to wash the droplets of oil from the rind, with the water subsequently removed through distillation. The flavor of citrus oils differs not

only from species to species, but even from variety to variety within the same species. Orange oils, for example, are given the name of the variety from which they are derived—Jaffa orange oil differs significantly from Valencia orange oil.

Historically, the most significant *Kashrus* concern with such products involved citrus oils derived from fruit grown in Israel, since such products are subject to the rules of *T'rumos u'Ma'asros* (tithes) and *Sh'mittah* (the Sabbatical Year). As such, Jaffa orange oil requires a reliable Kosher certification, whereas orange oil from Morocco may pose much less of a *Kashrus* concern. Advances in food technology, however, have raised new *Kashrus* concerns for even such a simple product. In order to increase the yield of oil than can be extracted by cold pressing, as well as to reduce the amount of water required, enzymes have been developed that break down the cellulose and pectin that serve to entrap the latent oil. Although used in small amounts, one must ensure that these enzymes are Kosher. In addition, many of such Kosher-certified cellulases and pectinases are grown on *Chometz*, which raises a concern as to the Kosher for Passover status of citrus oils processed with such enzymes.

### **Solvent Extraction**

Oils and other plant components can also be removed from botanical products using a process called *solvent extraction*. In this process, the botanical is steeped in a solvent, usually an organic material such as

hexane or alcohol, allowing the oil and other soluble material from the plant to dissolve in the solvent. The resulting solution is then heated in vacuum to allow the volatile solvent to evaporate, allowing recovery of the extracted plant material. Indeed, solvent extraction using hexane is the primary method by which soy and canola oils are extracted.

Solvent extractions can be used to produce *oleoresins*, *concretes*, *resinoids*, and *absolutes*. A concrete is an extract of plant material that contains many components, including waxes, and is generally a solid or semisolid, as its name implies. An absolute is a purified form of a concrete where alcohol is used to dissolve and remove the undesirable waxes, yielding a more potent product. An oleoresin is a liquid extract that contains the essential oil plus other important non-volatile components that characterize the flavor, color, and other aspects of the starting raw material. A resinoid is a solvent extract of *resin*, which is a gum or sap that exudes from the plant, as opposed to an extraction of the plant itself.

Such processes involve several *Kashrus* concerns. The first involves the Kosher status of the solvent itself. While hexane is an inherently Kosher material (it is derived from petroleum), much of the ethyl alcohol produced in Europe is derived from non-Kosher wine. In addition, countries with large dairy industries, such as Ireland and New Zealand, produce much of their alcohol from lactose (milk sugar). Alcohol extracts and absolutes therefore require reliable Kosher certification.

A second concern may apply even where a Kosher solvent is used, since the solvent is typically recovered after being separated from the oil and reused for subsequent extractions. In situations where the solvent is used to recover oil from a non-Kosher product (such as produce from Israel that suffers from concerns of *T'rumos u'Ma'asros* and *Sh'mittah*), the solvent may not then be used to produce Kosher products.

Solvent extraction has also gone hi-tech, using the physical properties of *supercritical carbon dioxide*. At very high pressure, carbon dioxide exists as both a liquid and a gas and functions as an ideal solvent. Although the equipment required for such a process is more complex to design than that required for other solvent extraction processes, its advantages in efficiency and specificity have made it ideal for extractions as diverse as caffeine from coffee and tea to flavoring resins from hops. It poses no significant *Kashrus* concerns other than that of the use of CO<sub>2</sub> recovered from non-Kosher extractions.

### **Steam Extraction**

Steam extraction is one of the oldest methods for the recovery of essential oils. In this process, the botanical material is placed in a chamber through which live steam is passed. The steam tends to vaporize the oil and the steam/oil mixture is then condensed to yield a mixture of essential oil and water. The water is then separated from the oil, yielding the final product. Generally, the only significant *Kashrus* concerns of such systems relate to produce from Israel, as discussed above.

### **Oleoresins and Infused Oils**

The production of oleoresins poses other *Kashrus* concerns, in that their production often involves the addition of other vegetable oils and emulsifiers. A related product, called *Aquaresins*<sup>®</sup>, is water-soluble version of oleoresins, where the oil-product raw material is blended with emulsifiers in order to allow them to be water miscible. *Infused oils* are produced by soaking a flavoring agent, such as garlic or truffles, in a vegetable oil, allowing the flavor and aroma of the spice to mix with the oil. All such oils and emulsifiers pose significant *Kashrus* concerns.

In addition to conventional Kosher considerations, it is significant to note that not

all “Kosher for Passover” oleoresins are universally accepted as such. A common type of emulsifier used in the production of oleoresin is polysorbate (sorbitan monostearate or sorbitan monooleate), which is based on sorbitol and a fatty acid. Passover polysorbate uses fatty acid derived from palm or coconut oil, which poses no Passover concern. The sorbitol, however, is typically derived from corn glucose, which is generally proscribed on Passover as *Kitniyos*. Some authorities have argued that the synthesis of polysorbate changes to *Kitniyos* to permitted material (*Kitniyos she’Nishita’nah*—see “The Story of *Kitniyos*”), and this material is often used in the production of Kosher for Passover oleoresins and other products. One must check with the Kosher-certification agency to determine whether or not a Passover-approved product incorporates such polysorbates.

The *Talmud* (*Shabbos* 88a) notes that, although the Jewish people accepted the *Torah* at *Ha Sinai* under divine coercion (*Kafa Aleihem Har k’Gigis*—He suspended the mountain over them to force them to accept the *Torah*), they nevertheless willingly accepted it again at the time of *Purim*. *Rava* derives this point from the phrase in the *Megillah* “*Kiyemu v’Kiblu*”—“they fulfilled and accepted”—which he explains to mean, “they fulfilled (at *Purim*) what they had previously accepted (at *Sinai*). The *Chasam Sofer* (*Drush l’Erev Rosh Chodesh Adar* 5560) notes that this willing acceptance is hinted in the *Talmud* in *Chullin* (139b), where the *Gemora* tells us that the *remez* (hint) for *Mordechai* in the *Torah* is in the name of first spice listed in the formula for the *Shemen ha’Mishchah* (holy anointing oil). This spice is called “*Mor D’ror*,” which is translated in the *Targum* as “*Mira Dachya*”—similar to the name “*Mordechai*.” The *Chasam Sofer* explains the hidden meaning behind this mnemonic relationship by noting the disagreement between the *Rambam* and the *Ra’avad* con-

cerning this spice. The *Ra’avad* holds that *Mor D’ror* is a type of sap—similar to the botanical products discussed in this essay. The *Rambam*, however, learns that it is “musk,” which is an excretion produced by a deer roaming freely in the wild that it deposits on the foliage as it rubs against it. (“*D’ror*” means free; see *Vayikra* 25:10.) In discussion about the opinion of the *Rambam*, the *Ramban* (*Sh’mos* 30:33) questions why must the deer be roaming freely; would it not be easier to trap the animal and then obtain the musk much more easily? The *Ramban* answers that the sweetest and most desirable musk can only come from an animal that produces its musk freely. With this *Ramban*, the *Chasam Sofer* eloquently explains why “*Mordechai*” is related to “*Mira Dachya*”—for the sweetness of *Torah* was accepted willingly in his time. As we celebrate *Purim*, we should use it as an opportunity to eagerly undertake the learning of *Torah* and all of the *Halachic* issues related to fulfilling its *Mitzvos*.

### **The Bottom Line**

- Essential oils enjoy the same *Halachic* status as the material from which they are derived, including concerns over *Sh’mittah* (the Sabbatical Year) and *T’rumos u’Ma’asros* (tithes). These concerns apply only to fruit grown in the Land of Israel.
- In the case of solvent extraction involving alcohol, the Kosher status of the alcohol must be assured.
- The solvent from non-Kosher productions may not be recovered and used in the production of Kosher material.
- Oleoresins typically contain oils and emulsifiers that may pose a *Kashrus* concern. In addition, some Kosher for Passover oleoresins incorporate polysorbates whose Passover status is not universally accepted.

# The Story of Fat and Fat Replacers

## ומשמני הארץ

בראשית כ"ז כ"ח

### And from the Fat of the Earth

Genesis 27:28

“Fats,” or more technically “triglycerides,” are combinations of fatty acids and glycerol and serve as an integral component of the foods we eat. Fat is a rich source of energy (that is, calories) and certain vitamins that are critical to good health. Although seemingly maligned by proponents of a healthy eating style, they are actually an excellent example of the precept of “everything in moderation.”

### **Animal Fats**

For many years, the main source of fat in the diet came from animal sources—either as animal fat (lard and tallow) or as milk fat. Butter is an ancient source of milk fat, as are cheese and other products using whole milk. The quality of meat is historically based on the amount of fat, or marbling, contained within the meat tissue, which adds flavor and tenderness. (USDA “prime” beef is the most heavily marbled, followed by “choice” and then “select” (formerly “good” ).) For these reasons, animals were bred to produce milk with the highest level of butterfat and abundance of fat in the meat. Animal fats used in food production are lard (from swine) and tallow (from beef and mutton), which are harvested from slaughtered animals. From a Kosher perspective, milk fat from Kosher animals (for example, cows), in the form of butter, butter oil, or anhydrous milk fat, is inherently Kosher. All require a reliable Kosher certification, however, because of Kosher concerns relating to their process-

ing. Although fats from Kosher-slaughtered animals may be Kosher, harvesting and processing such fats on a commercial basis as Kosher products is not practical; animal fats may therefore not be used to produce Kosher products.

### **Vegetable Fats**

Until fairly recently, vegetable sources of fats were limited to olive oil, which, as are all vegetable oils and fats, is inherently Kosher. All do require reliable Kosher certification, however, to ensure that they are not compromised by being processed in non-Kosher systems. At about the turn of the century, two advances were made that allowed many other vegetable oil sources to be exploited. Most crude vegetable oils contain substantial amounts of impurities that affect the taste and color of the oil. This problem was resolved with the development of the process of deodorization, in which the oil is distilled to remove these impurities. The second problem was that most vegetable oils are fluid at room temperature and are not suitable for use when a solid shortening is required. This was also solved with the development of the process of hydrogenation, in which hydrogen atoms are added to the fatty acid molecule (that is, going from unsaturated to saturated or less unsaturated) to harden the oil. (This process also creates trans fatty acids, which may be unhealthy for some people—see later in the essay, concerning Appetize®.) These two

developments allowed vegetable fats to compete successfully with lard and tallow.

### **Reducing Fat in the Diet**

Research into the effect of diet on health, however, has indicated that too much fat in the diet is not desirable and may cause heart disease and other health problems. In addition, not all fat is created equal. A typical dietary fat is composed of a mixture of various fatty acid *chains*—fatty acids with different numbers of carbon atoms. Certain fatty acids may be more beneficial, whereas others are less healthy, in the diet. Other components of fat—certain forms of cholesterol—have been shown to have a negative effect on health in some people. Because cholesterol is found only in animal fat, vegetable fat has been the fat of choice for many people. Nevertheless, too much of any fat is not very healthy.

#### **Olestra®**

In recent years, food technologists have tried to find ways to reduce the amount of fat in foods without compromising their flavor, and these efforts have led to the development of a number of approaches to replacing or restricting the amount of fat in foods. Olestra® is a fat that has been modified in such a way that it is not digested at all—zero calories!—and is one of the few fat replacers that can be used for frying. Concerns have been raised as to possible side effects of the product, but it is now being used to produce fat-free snacks on a limited basis. The product is certified as Kosher. Benefat® is also produced from modified oils, but is partially digestible. It is presently used in certain reduced-fat chocolate chips and is certified as Kosher.

#### **Simplese®**

Other products, however, take different approaches to imitating the sensory properties of fat. Simplese® is a *microparticulate*

(very tiny particles) of whey (or egg) protein, which creates the slippery sensation of fat by acting as miniature ball bearings in the mouth. Because this product is not a fat, it cannot be used for frying or baking. It is used in ice cream and cheese and is certified as Kosher Dairy. Other products are blends of starches and gums that also mimic some of the properties of fats. Again, they are not suitable for cooking or frying and are generally used in salad dressings and ice creams. Many are certified as Kosher Pareve.

#### **Fruit**

In what is perhaps the most ironic twist in the fat replacement saga, products have been developed that are based on another dieter's anathema—sugar. The puree of certain dried fruits (such as prunes) can impart characteristics to baked goods that mimic those of fat. They are often used in fat-free cookies, as are certain sugar blends. These ingredients tend to retain moisture in the product, allowing for the reduction in the use of fat. Please note that although such products may be fat free, the added sugars used may offset much of the caloric savings from the elimination of fat.

#### **Margarine**

On the other hand, not all fat replacers were designed to be “fat free.” One of the first attempts to make a fat substitute was margarine. Butter had become too expensive for the peasants of France in the 1830s, and Napoleon III offered a prize to anyone who could develop an economical alternative to this diet staple. This new product—margarine—was originally a blend of tallow and cream and was never a Kosher product. Political intrigue dogged this competitor of the dairy industry in the United States in the form of discriminatory legislation and taxes; the dairy industry even tried to have a law passed that all margarine be colored pink to discourage its use! Margarine was eventually produced from vegetable oils, much

of which is Kosher certified (although some margarine is still made from lard and tallow). Regular margarine is about 85 percent oil and 15 percent water-based fluid (which often includes dairy components)—containing as much fat and the same number of calories as butter. It was never intended as a fat replacer, although vegetable oil versions are cholesterol free. Low-fat margarine is produced by reducing the amount of fat and increasing the aqueous portion of the margarine. Because water and oil do not readily mix, additives must be used to allow the two phases to emulsify. Gelatin has been used for this purpose, and such low-fat margarines are not currently Kosher. Fortunately, recent advances have allowed other additives to be used for this purpose and these products may indeed be Kosher certified.

### **Appetize®**

Unfortunately, not all attempts to modify fats in the diet yield Kosher results. A new process has been developed to remove cholesterol from animal fats. The manufacturer claims that Appetize® is more healthful than the hydrogenated oils used in vegetable margarine and shortening because this product also contains no trans fatty acids. Although this issue is far from settled, it may pose a significant problem for Kosher supervision. Heretofore, Kosher-certification programs had dovetailed with the prevalent notions of healthful foods; vegetable oils were considered inherently more healthful than animal fats. If an animal fat product comes to be perceived as a healthier alternative to vegetable fat, Kosher-certification programs may lose some of the synergy that has been enjoyed from compatibility with health concerns in the past.

### **The Bottom Line**

- Milk fat from Kosher animals (such as cows) is inherently Kosher.
- Butter, butter oil, and anhydrous milk fat require Kosher certification and are dairy.
- Lard is derived from swine; tallow is derived from beef or mutton.
- Although fats from Kosher-slaughtered animals may be Kosher, harvesting and processing such fats on a commercial basis as Kosher products is not practical, and animal fats may not be used to produce Kosher products.
- Cholesterol is found only in fats of animal origin. Fats of vegetable origin are cholesterol free and are therefore preferred by many as a more healthful product. Vegetable oils, however, may be high in saturated fat, and vegetable shortening may contain trans fatty acid.
- Any fat or oil, regardless of the source, is relatively high in calories.
- Various approaches have been developed to reduce the caloric value of fats or to replace them with alternatives. Many of the modified fat products are certified as Kosher. However, animal fat whose cholesterol has been removed is a non-Kosher product.
- Dairy whey has been processed into a fat replacer, which may be certified as Kosher Dairy. Starches, gums, fruit purees, and sugar-based products have been developed to mimic some of the properties of fats in certain applications. However, the functionality of these products is limited, and none is suitable for frying purposes.
- Regular margarine contains as much fat and calories as butter.
- Although margarine was originally produced from animal fat, much of the margarine produced today is based on vegetable fat and is certified as Kosher. It may, however, contain dairy ingredients and thus be considered dairy. A few margarines are Pareve. Low-fat margarine contains a higher ratio of water to fat and must rely on a variety of emulsifiers to emulsify these two components. Very low fat margarine may use gelatin for this purpose and be non-Kosher.



## The Story of Fish

### אין מזל לישראל

שבת קמ"ה ע"א

#### The Fortunes of a Fish

The Jewish calendar is based on lunar cycles, with provision for a periodic intercalary month to ensure that the relationship between the holidays and the seasons is maintained. Every two or three years (seven years during a nineteen-year cycle, to be precise) an extra month of *Adar* occurs, and this *Adar* (known as *Adar I*) does not have the status of the regular *Adar* that follows. For example, the holiday of *Purim*, celebrating the triumph of Queen Esther as told in the Biblical book of *Esther*, is celebrated in *Adar II*, as is the birthday of anyone born in the *Adar* of a regular year. This period is considered to be under the *Mazal* (astrological sign) of *Dagim* (Pisces)—the fish. Fish are considered a symbol of blessing and abundance—our forefather *Yaakov* (*Jacob*) used fish as an aphorism for blessing and plenty: “. . . and they shall multiply like fish in the midst of the earth” (*Genesis* 48:16)—a prediction clearly borne out by the miracle of *Purim* that falls out in the month of *Adar*.

#### Scales and Fins

Aside from such mystical influences, fish play other roles in our lives, primarily as a source of food. The *Torah* requires that Kosher fish must have both scales and fins, which serve as the *Simonim* (signs) of *Kashrus* in fish. The *Talmud* (*Chullin* 66b), however, notes that all fish that have scales also have fins, so in practice Kosher fish need only be identified by their scales. Obviously, crustaceans (such as lobster) and other shellfish (such as clams) are not

Kosher because they completely lack scales. All “scales,” however, are not *Halachically* equal. *Halacha* defines a scale as a growth on the side of a fish similar to a fingernail; it must be removable from the fish without removing the skin. Kosher fish have *cycloid* (round) or *ctenoid* (comblike) scales, which meet this requirement.

After a fish has been determined to bear an acceptable scale, only a minimum number of scales are required (see *Y.D.* 83:1). (Indeed, the *Halacha* states that even if a fish grows scales only as an adult, the yet-to-be-scaled immature spawn are nevertheless permitted. In addition, species that lose their scales on removal from the water are also permitted.) At least one type of tuna, yellowfin, for example, has very few scales, and is nevertheless considered a Kosher fish. The scales found on sturgeon, however, are called *ganoid* scales and are actually bony plates covered by an enamel called *ganoin* that grow on the skin of the fish. Because they cannot be removed without significantly damaging the skin, they are not considered *Halachically* acceptable scales. The scales of sharks are called *placoid* (plate-like) that cover the fish with tiny teethlike armor. Such scales are also *Halachically* insufficient to be considered indicative of a Kosher species. The status of two other species has been the subject of some debate, however. Immature swordfish seem to sport small scales, but these are assimilated and deeply embedded into the skin as the fish matures. Many *Halachic* authorities have concluded that such scales do *not* qualify

as *Simonim* for a Kosher fish. The blue marlin, on the other hand, maintains its scales throughout its life, although they seem to be covered by a unique, thin membrane. In addition, its scales, although easily removed from the skin, are elongated and sharp, as opposed to the shape of normative Kosher cycloid and ctenoid scales. Some authorities have concluded that such scales are indeed acceptable *Simonim*, whereas others reject the Kosher status of this species.

Two additional factors, however, serve to complicate these determinations. First, a given species of fish may be known by many different names around the world, some of which are common to known Kosher species. “Rock salmon,” for example, is a non-Kosher fish (otherwise known as Atlantic wolfish) and bears no relationship to the common Kosher species of true salmon. Second, although *Halacha* requires an accepted Kosher tradition for considering birds (and according to many authorities, even animals) as Kosher species, no such *Halachic* requirement exists for fish. Each of the hundreds of species of fish on the market may be evaluated as to its Kosher status, even if it is newly discovered. One must therefore evaluate a given species very carefully before making a determination as to its Kosher status.

### Verification of Kosher Status

Because Kosher and non-Kosher fish can be very similar, *Halacha* requires that fish not be eaten unless they have been inspected to ensure their Kosher status. One may therefore not purchase fish fillets (from which all the skin has been removed) without a reliable *Hashgacha* and a properly sealed package, because the fillet is no longer identifiable as a Kosher species. The *Talmud* also notes that fish *roe* may not be eaten unless one has verified that it was obtained from a Kosher species. (True caviar comes from a sturgeon and is not Kosher.) Much discus-

sion has debated the Kosher status of canned fish (such as tuna and skinless sardines) for situations in which the supervision of the cannery is based on spot checks and each fish is not checked by the *Mashgiach*. Many authorities are reluctant to accept the Kosher status of such fish (see *Igros Moshe Y.D.* II:8 and IV:1).

### Secondary Simonim

An interesting note is that the *Talmud* (*Avodah Zarah* 40a) discusses other characteristics indicative of Kosher fish. These include the shape of the head and the existence of a bony skeleton (as opposed to the cartilaginous structure of a shark), as well as the shape of the fish roe and of the individual eggs. The *Shulchan Aruch*, however, omits mention of any of these secondary *Simonim* of the fish itself and seems to follow the position of the *Rambam*, who rules according to the opinion in the *Talmud* that such *Simonim* are insufficient (see *Sha"Ch*, *ibid.*, *s.k.* 6). The *Rama* (*ibid.*, 4), however, seems to allow for their application in certain circumstances (see *Sha"Ch*, *ibid.*). Similarly, the *Shulchan Aruch* (*ibid.*, 8) rules that the *shape* of fish roe is not a sufficient indicator of the *Kashrus* of the roe or the fish from which it came.

### Red Roe

The *Shulchan Aruch* does, however, create an entirely novel “*simon*” when dealing with fish roe. As he explains in the *Bais Yosef*, it seems to have been verified that *all* “red” fish roe come from a Kosher species of fish and he therefore permits one to purchase red fish roe from any source without concern as to the fish from which it was obtained (*ibid.*). (Note, however, that the *P’ri Chodosh* [*ibid.*, *s.k.* 26] strongly disagrees with this position, noting that *Chaza"l* make no mention of such a *Chazakah* [assumption].) More recently, it has been quoted in the name

of Rav Moshe Feinstein *zt"l* and Rav Yaakov Kaminetzky *zt"l* that the red color of the raw *flesh* of a fish is also a clear sign of a Kosher status because no one has discovered a non-Kosher species of fish with red flesh. Again, such a *Chazakah* is not mentioned in *Chaza"l*, and its reliability may be argued based on the concerns expressed by the previously cited *P'ri Chodosh*. In addition, some have argued that modern food technology may have compromised the basis of this assumption. Much of the fish consumed today is raised on “fish farms,” ponds, or other enclosed waters where fish are segregated and fed a specific diet. If certain foods containing red pigments (astaxanthin or other carotenoids) are fed to certain fish, their otherwise white flesh develops a red color. This is indeed the process used to produce so-called salmon trout, which is a normal trout that has been fed such red pigments. After such a process has been found to circumvent nature, it becomes very difficult to maintain the *Halachic* rationale that all red fish must be Kosher. On the other hand, research tends to conclude that only inherently Kosher species of fish (such as salmonids) are capable of assimilating such red color into their flesh. Some authorities continue to maintain the veracity of the *Chazakah* of red-fleshed fish until such time as a non-Kosher species can be shown to absorb such pigments in their flesh.

### **Canned Fish**

Canned fish poses another *Kashrus* concern based on the rules of *Bishul Akum*. *Halacha* states that a Jew must be involved in the cooking process of many foods, a requirement that is addressed by reliable *Hashgachos*. Unfortunately, most fish canneries are located in parts of the world that do not lend themselves to full-time (or even significant) involvement by the *Mashgiach*. A number of *Halachic* approaches have been explored to address this issue (based on the method by

which the fish are cooked and whether a particular type of fish is included in the restrictions of *Bishul Akum*), but many authorities do not accept canned fish that has not been cooked with the involvement of the *Mashgiach*. To address both these concerns, many Kosher canned fish now bear a specific designation that they have been prepared under full-time supervision.

### **Smoked Fish**

Smoked fish poses another interesting *Halachic* concern related to the rules of *Bishul Akum* and is one that illustrates how deceptive food terminology can be. *Bishul Akum* applies to important foods that require cooking. Although sushi and sashimi are eaten raw—and thus not subject to concerns of *Bishul Akum*—most people in North America cook their fish. Fish in North America is therefore presumed to be subject to this rule. *Bishul Akum*, however, applies only to food that is cooked with heat; *smoked* food is not subject to this restriction (*Y.D.* 113:13). It would therefore seem a simple matter to certify smoked fish—were it not for the fact that the fish is actually baked! Most commercial smoked fish is actually baked in a large oven, with a small amount of smoke added at the end of the cooking cycle for flavor. The smoking process that is free of *Bishul Akum* concerns involves *unbaked* smoked fish—a tedious and expensive process (for example, for Scottish salmon). Also, fish-smoking plants often smoke sturgeon, eel, and other non-Kosher fish, making a reliable certification for smoked fish an absolute imperative.

### **Worms**

*Kashrus* concerns relating to fish also take an interesting turn with regard to worms. Many Kosher species of fish are omnivorous and their diet may consist of non-Kosher invertebrates as well as other non-Kosher fish. (Such a non-Kosher diet does *not* affect

the Kosher status of the fish, however—see *Rama Y.D.* 60:1 and *Sha"Ch s.k. 5 Y.D.*) Still, any non-Kosher species found inside the fish remain non-Kosher (*B'choros 7b*). In the case of worms, the *Shulchan Aruch (Y.D. 84:16*, based on the *Talmud, Chullin 67b*) rules that those found inside the alimentary tract may not be eaten because they are merely ingested non-Kosher material. However, any worms that have grown in the *flesh* of the fish are permitted because they do not qualify as prohibited invertebrates that had grown outside a living animal. Recently, whitefish have been noted to be particularly prone to worm infestation, and a question arose as to the *Halachic* need to inspect fish for worms. Some authorities maintain that the worms that were permitted by the *Shulchan Aruch* are *not* those found in whitefish because they may indeed be the prohibited worms from the viscera that have migrated to the flesh. Others, however, maintain that the *Halacha* specifically permits such worms; therefore, no requirement to inspect fish exists for them.

### **Surimi**

The *Talmud* also teaches us that for every non-Kosher food, an equal and opposite Kosher version exists (*Chullin 109b*). Modern food technology has indeed given a new twist to this concept. Although lobster, shrimp, and crab may not be Kosher, *imitation* versions of these non-Kosher staples can now be obtained with excellent *Hashgacha*.

*Surimi* is an ancient Japanese process by which minced fish is converted into a protein base and is used to produce a variety of foods. Today, Kosher *surimi* (produced under supervision, of course) is used to produce imitation crab legs, lobster, and shrimp and is deemed a reasonable facsimile of the Real Thing! The key has been the development of artificial flavors to mimic seafood flavor. Most non-Kosher imitation seafood products actually contain shellfish-derived flavor.

### **Fish Oil**

Other interesting applications of ichthyology (the science of fish) in modern food technology relate to fish oil. In many parts of the world, fish oil is used as we use vegetable oil—to make margarine, for cooking, and so on. The fish used to produce fish oil are certainly not inspected by a *Mashgiach*, and such oil is generally not accepted as Kosher. Although this use of fish oil has not yet come to North American shores, a modern version of a child's nightmare has. One time-honored tonic, cod liver oil, provides a rich source of vitamins. Although its use has become less common because of improved diet and vitamin fortification of foods, research now shows that certain fatty acids found in fish oil may have significant benefit in reducing heart and other problems—components commonly referred to as *omega-3 fatty acids*. The fish from which such oil is typically derived are menhaden, sardine, or herring, and the quantities needed of such small fish make it virtually impossible to inspect each one for *Simonim*. However, because these species are indeed Kosher, some authorities permit the use of oil derived from them based on the fact that any non-Kosher bycatch would be insignificant and *Batul*. Note, however, that this position is far from being universally accepted.

### **Fish-Derived Ingredients**

Derivatives of fish often wind up in unexpected places—both ancient and modern—and may pose both health and *Halachic* concerns. *Garum* was a favorite condiment in ancient Rome and was composed of fermented fish entrails. More recently, Worcestershire sauce has become popular, which contains anchovies as part of its flavoring base. Such a product raises issues as to its acceptability in flavoring meats. (Fish may not be eaten together with meat because of health-related concerns discussed in the

*Talmud*.) More recently, food technology has developed a new way of producing gelatin from fish. Gelatin is an animal-derived protein, used as the base of gel-type deserts and gummy-type candies and as a gelling agent in Swiss-style yogurt, among many other uses. Gelatin is generally produced from animal skins and bones, and volumes have been written by *Halachic* authorities discussing the Kosher or Pareve status of gelatin derived from non-Kosher species (pigs), non-Kosher-slaughtered animals (beef), and Kosher-slaughtered animals. The generally accepted position adopted by *Kashrus* authorities in the United States is that only gelatin derived from Kosher-slaughtered hides and bones can be considered Kosher. Such Kosher beef-based gelatin is quite expensive; for this reason, Kosher versions of products normally containing gelatin are often reformulated to use other materials (typically seaweed derivatives such as agar-agar and carrageenan). Recently, however, companies have developed a gelatin derived from Kosher fish, and many candy products are being developed to take advantage of this newly available Kosher alternative. (Persons allergic to fish, however, should check the label for fish gelatin.)

### **Gefülte Fish**

Always interesting to note is how the scrupulous observance of *Halacha* affects all aspects of Kosher observance. A longstanding custom has been to eat gefilte fish on *Shabbos*. Although the gastronomic considerations of this delicacy may seem the most obvious, the real reason for this custom lies a bit deeper. *Shabbos* is a day of rest during which many types of labor are prohibited. One of the activities in which a Jew may not be engaged on *Shabbos* relates to the separation of chaff from grain, which is known in Hebrew as *Borer*. This restriction extends to many types of separation, and the rules governing which types are per-

mitted and which are not can be quite complicated. Eating fish is a common situation in which *Borer* becomes a problem because fish is often served whole and bones are not removed before serving. To avoid this concern, a custom developed whereby the fish was filleted, ground, and stuffed back into the skin and then cooked. The resulting delicacy—*gefülte* (stuffed) fish—was then presented at the *Shabbos* table in a beautiful presentation—ready to be eaten without worrying about *Borer*! Even though we now often eat gefilte fish *sans* skin, the origin of the custom is an apt testimonial to the care that the Jewish people have historically taken to abide by all *Mitzvos* (commandments).

### **Whisky After Fish**

Another interesting—and enjoyable—custom relating to eating fish involves the “*I’Chayim*” that often follows. Many people traditionally take a drink of whisky (*Schnapps*) after eating fish, a custom that, indeed, has a *Halachic* basis. The *Tosafos* (*Mo’ed Katan* 11a) note that one should avoid drinking water after fish for health reasons. Such a restriction, however, creates a problem when eating fish as the first course of a meat meal, since one should eat and drink something after the fish to cleanse the palate before eating meat. However, only plain water was considered to be of concern, which left whisky as a most suitable expedient to solving the problem.

The *Talmud* (*Shabbos* 156a) tells us that Jews can merit being lifted above the celestial influences that affect the ordinary functioning of the world. Perhaps the merit of customs such as gefilte fish and the strict adherence to the *Kashrus* issues that fish present will aid in this quest.

### **The Bottom Line**

- The Kosher status of fish is dependent on the existence of both *Halachically*

defined scales and fins. The *Talmud* teaches us that all fish that have Kosher scales have fins. One must therefore merely verify the existence of Kosher scales to establish that a given fish is Kosher.

- *Halachically* acceptable scales are defined as those that can be removed from the skin without damaging it. Cycloid and ctenoid scales meet this requirement, whereas placoid scales (such as those found on sharks) and ganoid scales (such as those found on sturgeon) do not so qualify. If acceptable scales are verified, only a minimal number are required. (Future growth of scales, as well as past growth, is also acceptable.) The Kosher status of swordfish and blue marlin has been the source of much discussion. Generally, swordfish is not considered a Kosher species, whereas blue marlin is accepted by some authorities.
- One must be exceedingly careful in discussing Kosher species of fish because names of species are commonly interchanged.
- Fish whose scales have been removed (such as fillets) may not be considered Kosher unless a *Mashgiach* supervises the filleting process to ensure that only Kosher fish are used. Such fillets must then be sealed by the *Mashgiach*. To avoid this concern, fillets are often produced with a small piece of skin with scale markings remaining on the flesh.
- Many authorities permit using red-colored fish roe with special supervision, based on an assumption that *all* red-colored roe is Kosher. Other authorities believe that a similar assumption may be made with red-colored fish flesh. Although some fish are now “colored” by providing them with feed rich in a red color, current evidence seems to indicate that only Kosher species of fish tend to assimilate this color into their flesh. Other authorities are less sanguine, arguing that any assumptions regarding red flesh have now been called into question based on this process, although no cases have been documented for which non-Kosher species have been so colored.
- Certain types of fish (such as whitefish) commonly exhibit worms in both their viscera and their flesh. *Halacha* clearly prohibits such worms found in the viscera. However, some question exists as to the status of those found in the flesh. Some authorities require an inspection of fish prone to this concern; others maintain that such an inspection is unnecessary.
- Canned fish (for example, tuna and skinless sardines) usually bear no Kosher markings and many authorities therefore require supervision during their production. Other authorities permit such products if the factory does not process any non-Kosher species.
- Fish is an important food and usually considered subject to the rules of *Bishul Akum*. Smoked fish may be permitted, provided that the smoking process does not involve additional heat. Canned fish may be permitted because of a variety of considerations, including the fact that it may be steamed and not cooked, as well as the fact that such fish may not be considered an important food. (Although sushi and sashimi are eaten raw—and thus not subject to concerns of *Bishul Akum*—most people in North America cook their fish, so it is subject to *Bishul Akum* concerns in the United States.)
- Kosher imitation shrimp, lobster, and other inherently non-Kosher species may be produced from Kosher surimi. Such production requires the use of surimi that had been supervised; also required is that the flavors used are Kosher and the equipment on which it is produced is properly *Kashered*.
- Fish oil may be used as a food supplement or as an edible oil (for example, for the production of margarine) and requires a

reliable Kosher certification. The processing of bulk catches of inherently Kosher species for their oil—without inspection of the individual fish—is the subject of much debate. Some authorities permit such oil based on *Bitul*, whereas others require an inspection of each fish.

- The custom is to consider all mixtures of meat and fish to be unhealthful. Condiments, such as Worcestershire sauce that contain fish products, are

marked as “Fish” and should therefore not be used with meat. Many authorities believe, however, that products containing minute amounts of fish in the sauce (less than 1/60—*Bitul*) may be combined with meat, and such products often do not bear a “Fish” designation.

- Kosher fish gelatin is becoming more common in candies and other food products and may pose a concern for people who are allergic to fish products.

# The Story of Food from the Tree

## המן מן התורה מנין

חולין קל"ט ע"ב

### Whence Cometh Haman?

Chullin 139b

The *Torah* is the timeless testament of the Jewish people. *Chaza"l* teach us that the history of the Jewish people in its entirety is encompassed therein—*Ma'aseh Avos Simon l' Bonim* (“The deeds of the forefathers is a sign for their children”; see *Ramban B'reishis*). Indeed, the *Talmud* (*Chullin* 139b) teaches us that the story of *Haman* in the miracle of *Purim* is alluded to in the mnemonic *ha'min ha'Etz*—“Is it from the Tree?”—an appropriate correlation, given the assistance of a tree in the hanging of our antagonist. Many *Halachos* pertain to the *Kashrus* of the *fruit* of the tree. However, the tree itself, aside from doing its part in the miracle of *Purim*, also provides us with several useful food products with interesting *Kashrus* implications; these products are the subject of this discussion.

### Maple Syrup

Perhaps the most powerful symbol of a non-fruit food derived directly from a tree is maple syrup. Aside from using the maple leaf to declare its own national identity, Canada manufactures a great deal of maple syrup derived from the sap of the sugar of maple tree. Although tree sap poses no particular *Kashrus* concern, the method by which it is processed may. Maple tree sap contains sugar and other chemicals that contribute to its unique flavor. However, their concentration is too low for it to be useful

as a sweetener. The sap is therefore concentrated to produce syrup, a process that involves boiling the sap for the time necessary to allow much of the water to evaporate. However, as the water is heated, small pockets of steam are created and the sticky syrup forms a coating around the pockets of vapor bubbles because of the surface tension of the syrup constituents. This undesirable side effect is called “foam,” and although these bubbles eventually break and release the vapor, the thicker the syrup, the greater the surface tension—and more the foam that is produced.

Historically, this problem was addressed by hanging a piece of pork fatback over the boiling kettle. The heat from the steam slowly melted the lard and allowed it to drip into the syrup. Just as the old adage recommends pouring oil on water to calm it, this small amount of fat is sufficient to reduce the surface tension of the syrup and thus allow the bubbles to break more quickly, solving the foaming problem but creating a *Kashrus* concern. Maple syrup processors today have generally sworn off pork, replacing it with modern antifoam agents. Antifoams are essentially mixtures of different types of silicon, glycerin, and, possibly, fatty acids (emulsifiers), and pose their own set of *Kashrus* concerns. Both glycerin and fatty acids can be made from animal fats, and although antifoams are used in very small amounts, ensuring that only Kosher ingredients are used is important.



### **Turpentine and Oleic Acid**

Other food products from the forest had more direct *Kashrus*—and historical—ramifications. Colonization of the new world required a strong, well-equipped navy, and until modern times the fleet was made of wood. An adequate supply of naval stores—those products needed to keep the ships of a navy well maintained—was critical to the erstwhile projection of military superiority by the British Empire, and the pine forests of North America proved to be a treasure trove of wood rosins to make turpentine and pitch. Although the supply of rosin may no longer herald the underpinnings of world military superiority, it does supply several interesting Kosher products. A fatty acid called oleic acid is used in many food products, including flavors and emulsifiers, and is usually derived from animal fat. Some companies now process a derivative of pine trees called *tall oil* (from the Old Norse *thöll*—young pine tree) into oleic acid, creating a Kosher source for this important raw material.

### **Wood Rosin and CMC**

A chemical called *glycerol ester of wood rosin* is used in many soft drinks to allow the flavors to remain in suspension and not settle. The glycerin used in making this product may come from animal, vegetable, or petroleum sources and is therefore another wood product that requires a reliable Kosher certification. Even the wood fiber itself is processed into CMC (carboxymethylcellulose) and is used as a thickener in many food products, including ice cream, dressings, sauces, and puddings.

### **Sugarcane**

Wood is also a major source of sucrose (table sugar) and has played a role in both international intrigue and *Halachic* discourse. Sucrose is a naturally occurring

sugar found in dates, sugar beets, and sugarcane. Commercial large-scale production of sugar began in the seventeenth century with sugarcane, which became the primary crop in the Caribbean colonies of the European powers. The control of sugarcane production—and the islands that produced it—became part of the strategic balance of power among the world powers of the time, but sugar also posed a *Halachic* question as to its appropriate *B'rachah* (blessing). *Tosafos* (*B'rachos* 36b) considers sugarcane to be a tree, reasoning that it is the subject of the phrase *Ya'ari im Divshi* (“... my forest with my honey”) in *Song of Songs* (5:1); thus, the proper *B'rachah* for sugar is *Bo'rei P'ri ha'Etz*. However, the *Rambam* (*Hilchos B'rachos* VIII:5) discusses the process for making sugar from cane and concludes that because it is made from a juice extracted from the cane, the proper *B'rachah* is *she'Hakol*. On the other hand, *Rabbeinu Yonah* rules that it is *Bo'rei P'ri ha'Adamah*. The *Shulchan Aruch* rules according to the *Rambam*, but many people consider the *B'rachah* for sugar to be less than a settled issue and eat it only together with other items whose *B'rachah* is clear.

### **Xylose and Xylitol**

Wood is also the source of a nonsugar sweetener that is used in many candies and chewing gum. When hydrogen is attached to a molecule of sugar (hydrogenation), a sugar alcohol is created. (The suffix for an alcohol is *-ol*.) Sugar alcohols have properties that differ significantly from those of the sugars from which they are derived. For example, when glucose is hydrogenated, it is converted into sorbitol, a sweetener that has fewer available calories than glucose, is safer for diabetics, and does not promote tooth decay. When xylose (wood sugar) is hydrogenated, a refreshing, low-calorie sweetener called xylitol is created. The *Kashrus* concern with these products stems from the

fact that lactose (milk sugar) can be processed into lactitol using the same equipment, which can compromise the Kosher and/or Pareve status of the xylitol and sorbitol.

### **Torula Yeast**

Wood also serves to resolve one of the basic concerns with respect to Passover ingredients. Yeasts are microorganisms that are traditionally grown on *Chometz* (fermented grain), and such yeasts are prohibited on *Pesach*. However, yeast and yeast extract (the material found within the cell walls of yeast) are used as a nutrient in the growth of cheese cultures and as a flavoring, both of which are useful in the production of *Pesach* foods. The search for a Kosher for Passover yeast finally ended with the help of the timber industry. A great deal of water is used in processing wood and paper, and much of the xylose is washed out of the wood into the processing water. A specific type of yeast called *torula* grows on xylose, and companies have developed yeast products and yeast extracts from torula yeast that are completely Kosher for Passover.

### **Vanillin**

Another commonly used wood product is vanillin or imitation vanilla flavor. Natural vanilla is produced from the unripe fruit of one of several types of tropical climbing orchids of the genus *Vanilla*. The fresh fruit has no flavor or aroma. However, as the fruit is cured and dried, an enzymatic process converts some of the natural chemicals in the fruit into vanillin. Although very popular as a flavoring agent, vanilla beans are quite expensive, and alternative sources for the active flavoring component—vanillin—have been developed. At first, synthetic vanillin was produced by the oxidation of a chemical called eugenol, extracted from cloves purchased from the sultan of

Zanzibar. With the development of the paper industry, however, scientists noted that vanillin could be produced from the eugenol and other chemicals found in the lignin, the waste material from wood pulp production. However, although wood was indeed the main source of vanillin for many years, most vanillin manufactured today is made from eugenol derived from clove oil and cinnamon leaf.

### **Rubber**

One more strategic resource from the forest also plays an interesting role in food products. Latex (or sap) from specific trees has certain desirable properties, yielding the product to which we refer as rubber. When Santa Anna invaded Mexico in his attempt to defeat the Republic of Texas, his troops enjoyed chewing chicle, the latex of the South American sapodilla tree. We might remember the Alamo for many reasons, but one might be the introduction of chewing gum to this country. Although the *Kashrus* of the natural rubber poses no *Kashrus* concerns, the glycerin, fats, and emulsifiers used in the manufacture of chewing gum certainly do. Thus, chewing gum and bubble gum require reliable *Hashgachos*.

### **Heart of Palm**

Although this text has been discussing the use of wood derivatives as foods, wood has managed to become a food itself. The *Talmud* (*Sukkah* 45b) notes a homiletic relationship between the palm tree and the Jewish people. The palm has a straight trunk without branches—figuratively configured with one “heart.” Just as it has but one “heart” so, too, do the Jewish people have but one heart for their Heavenly Father. This heart of palm, however, has been co-opted as a specialty food that was the subject of a discussion in the *Talmud* itself (*B’rachos* 36a). The tender center of the palm trunk is

harvested and eaten as a vegetable, and the question involved is the blessing appropriate to it. The *Shulchan Aruch*, following the conclusion of the *Talmudic* discussion, rules that the appropriate blessing is *she'Hakol* because palm trees are generally not planted with the intention of harvesting the wood food. Owing to the modern environmentalist movement, however, this position can now be questioned. Great concern has been created over deforestation and the loss of the rainforest where these trees are grown. Consequently, producers of hearts of palm now plant and cultivate special species of palm that are particularly suited for this product and that are a renewable resource just as any other crop is. One can therefore argue that the ecological movement has succeeded in changing the *B'rachah* that we make for this product.

*Chaza"l* teach us that when *Hashem* caused the earth to produce vegetation, trees were to be entirely edible; it says *Etz P'ri*—"fruit-tree." The earth, however, produced trees of which only the fruit was edible—*Etz O'seh P'ri*—"tree producing fruit" (see *Genesis* 1:11 and *Rashi*, *ibid.*). The edible product of most trees is indeed limited to its fruit. As noted, however, some arboreal foods are indeed derived from the tree itself and present us with some interesting *Halachic* issues.

### **The Bottom Line**

- Maple syrup is produced by boiling the sap from the maple tree to evaporate much of the water and produce concentrated syrup.
- Antifoams are typically used to reduce the frothing during this process, and may contain non-Kosher fats.
- Kosher oleic acid may be obtained through the fractionation of tall oil from pine trees.
- Glycerol ester of wood rosin is based on wood rosin and glycerin.
- The glycerin component requires reliable Kosher certification.
- CMC (carboxymethylcellulose) poses little *Kashrus* concern.
- Sugarcane is a primary source of sucrose. Xylose—wood sugar—is also used as a sweetener and may be hydrogenated into xylitol.
- *Torula* yeast is often grown on wood liquor rich in xylose and may be Kosher for Passover.
- Vanillin (imitation vanilla flavor) was traditionally produced from wood as a by-product of the paper industry. Today, most vanillin is produced from other sources.
- The original "gum" base used in chewing gum was derived from the latex sap of the chicle tree. Today, most gum base is made from synthetic rubber.

# The Story of Fruit

## מאירין את העינים

סנהדרין י"ז ע"ב

### *A Shine in the Eyes*

*Sanhedrin 17b*

Of the myriad of G-d's creations put into this world to serve humankind, fruit enjoys many unique attributes. The Land of Israel is praised (*Deuteronomy* 8:8) as being blessed with all manner of goodness, including five specific fruit and two grains. For this reason one recites a special blessing of thanksgiving after eating these specific types of produce. Their nutritional value was also noted in the *Talmud* (*Sanhedrin* 17b) in its discussion of the requirements for a fully functional village. Rabbi Akiva stipulates that a proper village must be a home to scholars and, as such, must have an ample supply of fruit. Fruit serves to "brighten the eyes" by providing essential nutrients and it is therefore unbecoming for a scholar to live in a city that does not provide such a basic necessity. Indeed, in their quest to bring the world under its dominion, the British earned the sobriquet "limey" from the fruit that their sailors ate to combat scurvy (a disease occasioned by a deficiency of vitamin C). British naval surgeons realized that limes would provide this essential nutrient that had been missing from the seafaring diet and mandated limes as part of the sailors' rations. Fruit even merits its own *Rosh ha'Shanah* (New Year), known as *Tu b'Sh'vat* (the fifteenth day of the month of *Sh'vat*). The importance of this date relates to the *Halachic* requirement to distinguish between fruit grown in different calendar years. Fruit grown in Israel is subject to requirements of tithing (see text regarding *T'rumos u'Ma'asros* for practical applications of this law) and these tithes must be

taken from each year's crops independently; one cannot take a tithe from this year's crops to satisfy the requirements of crops grown in past years. The calendar year for the determination of the fruit crop begins on *Tu b'Sh'vat*; all fruit that begin their growth (defined as the point at which they form a blossom) prior to this date accrue to the previous year and those blossoming after this date accrue to the next. To commemorate this auspicious date, the *Ma'gen Avrohom* (131:15) notes a custom to eat a fruit (preferably one of the five fruit relating to the Land of Israel, as quoted in *Y'chaveh Da'as Y.D.* I:82) on *Tu b'Sh'vat*.

### *Israeli Produce*

In addition to the significance of fruit on a conceptual level, fruit poses a number of interesting *Kashrus* issues that affect us in very practical ways. These issues relate to both fresh and processed fruit. One concern stems from fruit grown in Israel. As previously noted, produce grown in Israel is subject to special rules based on the special *K'dushah* (spirituality) that such produce possesses. These rules include the requirements for certain tithes to be separated from the crop before it can be eaten and that land in Israel lie fallow every seven years (*Sh'mitah*). Although the Israeli Rabbinate is charged with ensuring that these requirements are met for produce consumed within Israel, produce destined for export is not guaranteed to be free of these concerns. It

is critical that any vegetable or fruit product that might remotely have produce from Israel—processed *or* fresh—bear a recognized Kosher certification. This is especially critical for fresh Israeli tomatoes and oranges, which are often sold in American supermarkets and may not be clearly labeled as to their source. In many cases, separating the required tithes either at home or in a factory is possible, but such a procedure requires competent *Halachic* guidance.

## Orlah

Another *Mitzvah* related to fresh fruit concerns *Orlah*, the requirement that fruit produced by the tree for the first three years may not be eaten. In general, this rule has little applicability outside Israel because *Halacha* stipulates that the rules of *Orlah* outside Israel do not apply in cases of *Sa'fek*—doubt. Because we usually do not grow our own fruit, we may never be sure that any fruit we buy is subject to *Orlah* and is therefore permitted. In addition, most trees do not bear fruit during the first three years of their growth—the three years are counted from the *planting* of the tree, not from the onset of its producing fruit. (If a mature tree was uprooted and replanted, the three-year counting may indeed start again.) Certain fruit, such as papaya, pose an interesting concern in that they are virtually *always* produced during the first three years of the growth of a plant, because the tree ceases to produce fruit after that. Many approaches to this concern have been advanced, most notably the argument that *Orlah* applies only to trees whose fruit would indeed be available after the three years. Trees that never produce fruit after three years are, by definition, excluded from this rule. The consensus of *Halachic* authorities is to permit papaya for this and other reasons.

In Israel, however, the situation is more complicated, especially in the case of grape

vines. Grapes are routinely grafted and replanted, with the new growth producing fruit the very first year. In such cases, the three-year counting would start again, and the leniency of a *Sa'fek* does not apply to Israel produce. For this reason, Kosher supervision of Israeli produce often extends to keeping track of the pedigree of each individual vine in a vineyard!

## Canned Fruit

Issues of the Kosher status of fresh fruit, however, are primarily related to Israeli produce. Processed fruit raises issues that transcend international boundaries. Canned fruit is packed in syrup, sometimes described as heavy, light, or “in juice.” Usually, heavy syrup is corn syrup and poses no particular Kosher concerns. Light syrup may also be corn syrup or a mixture of fruit juices. Indeed, the use of “juice” in a canned fruit product does not necessarily mean that the juice is of the same source as the fruit in which it is packed. A careful reading of the ingredient panels of such fruit will show that pear or grape juice is often used for this purpose. (Some products, however, say “Packed in their own juice,” which generally means just that—such as the case with pineapple.) This distinction is important because of the special rules that apply to grape juice. Grape juice, as distinct from all other pure fruit juices, has the same *Halachic* status as wine and is therefore subject to the rules of *S'tam Yaynam*. Any fruit packed in grape juice should therefore not be considered Kosher without specific Kosher certification.

## Fruit Juices

Concerns of grape juice affect fruit products in other ways as well. Apple (as well as other) juice is commonly pasteurized and processed on equipment used to process non-Kosher grape juice. A reliable Kosher

certification is therefore required for all processed fruit juice, even if it is labeled “100% Pure.” A similar concern exists with orange juice, which is often pasteurized and bottled in dairies on the same equipment used for their regular milk. Many of the modern juices packaged in dairy-type containers have this concern.

### **Colored Cherries**

Another interesting Kosher issue concerns cherries. Although cherries are inherently Kosher, they are often processed to improve and enhance the red color preferred by consumers. *Maraschino* cherries were originally developed in Dalmatia, a province on the Balkan Peninsula.

There, the marasca cherry was crushed (pits and all) and fermented, with the resulting liqueur sweetened with sugar to create a distinctive elixir. Cherries preserved in this liqueur were called maraschino cherries and became known the world over for their sweet and unique flavor. Modern-day production, however, differs significantly from the classical process. Cherries are first soaked in brine consisting of sulfur dioxide and calcium chloride to bleach all the flavor and color from the fruit. The “cherry” that is left is tasteless and pale yellowish-white, little more than a blob of cellulose with a skin. The garishly red maraschino cherry is then created by steeping it in a sugar solution, followed by the addition of a red color and an almond flavoring. Green maraschino cherries use green food color and mint flavor. Because all the flavor and color of the original fruit was removed during the processing, the appropriate *B'rachah* (blessing) for this food may well be a *she'Hakol* (a general blessing) and not *Bo'rei P'ri ha'Etz* (the blessing reserved for normal fruit). Similarly, a “fruit” bit may be nothing more than a piece of turnip that has been colored and flavored using a similar process,

regardless of the luscious appearance it may have. It should also be noted that recent restrictions on certain artificial red colors (because of possible carcinogenic properties) have caused many manufacturers to use carmine as a coloring agent for these cherries, as well as those used in fruit cocktail. Carmine is an extract of the cochineal insect and, according to many authorities, is not considered a Kosher product. It is therefore important for both maraschino cherries and fruit cocktail containing cherries to bear a reliable Kosher certification.

### **Berries**

Whenever we eat a fruit, we give pause to determine its appropriate blessing. Perennial fruit that grow on trees demand a blessing of *Bo'rei P'ri ha'Etz* (Fruit of the Tree). Annual fruit that grow as plants (such as pineapples and bananas) demand a *Bo'rei P'ri ha'Adamah* (Fruit of the Ground). Berries, such as raspberries and strawberries, are the source of discussion among the authorities (see *Shulchan Aruch O.C.* 203:2). Although they are also perennials that grow on low bushes similar to plants, the custom is to consider them as fruit of plants. Just as we always consider the source of the fruit before eating, we must also consider the *Kashrus* issues that affect this erstwhile innocuous but delicious part of our diet.

### **The Bottom Line**

- Fresh fruit is inherently Kosher. Fruit produced by a tree during the first three years of its growth is called *Orlah* and is prohibited. For various reasons, *Orlah* is not a practical concern outside of Israel. In Israel, however, Kosher supervision extends to monitoring the trees from which fruit is derived.
- Produce from Israel is also subject to various other restrictions, such as tithes and

*Sh'mitah* (the Sabbatical Year). Specific Kosher certification is therefore required for all produce from Israel, even if it has not been processed.

- Canned fruit is generally considered acceptable, provided that the syrup in which it is packed does not contain grape juice.
- Maraschino cherries, as well as cherries used in fruit cocktail, may be colored with carmine, an insect-derived color that is generally not accepted as Kosher. Care must be exercised to ensure that only Kosher colors are used for such products.

# The Story of Gelatin

## התחייה העצמות האלה

יחזקאל ל"ז ג'

### Will These Bones Live?

*Ezekiel 37:3*

The *Midrash Tanchuma* (*Parshas Sh'mini*) teaches us that one should not be misled into thinking that *Hashem* has prohibited the joys of life. Rather, for every item that was proscribed, an equivalent, permissible item is available from which to partake. For example, the *Midrash* notes that although pork is prohibited, a certain Kosher fish called *Shibuta* has the same taste. (Unfortunately, we are not certain what *Shibuta* is.) The *Midrash* continues with many such examples and concludes that the prohibited items themselves are designed to be a means for the Jews to merit the rewards of keeping the *Mitzvos*. Perhaps the modern application of this *Midrash*—the duality of interchangeable Kosher and non-Kosher foods—can be best found in the ingredient called gelatin. Gelatin is derived from the bones, hides, and other tissue of animals or fish, and is used in a myriad of applications. It forms the basis of marshmallows and gelatin desserts, finds its way into yogurt and ice cream, and even invades the world of children's candies. Its Kosher status has been the subject of debate over much of the past century, and perhaps no other food ingredient has enjoyed as copious—and passionate—a treatment in contemporary *Halachic* writings as this simple protein. Understanding the issues involved in “Kosher” gelatin is important so that one can ensure that he chooses the truly Kosher version implicit in the aforementioned *Midrash*.

### Derivation of Gelatin

The first part of our discussion is to define what gelatin is and from what it is derived. Gelatin is an animal protein obtained from collagen, the connective tissue found in tendons, bones, and skins. Cooking bones, hides, or other parts of animals or fish with water cause some of the collagen to be extracted from these parts and dissolved in the broth. When such broth cools, it tends to gel. You can see this property in several common foods. Homemade gefilte fish usually involves cooking the bones and skin together with the ground fish, and when the broth cools, it gels due to the collagen that has been dissolved in the broth. (The “gel” in canned gefilte fish typically relies on other gelling agents, such as carrageenan, to look “homemade.”) A European delicacy called *P'tscha* is made from the broth of cooked veal bones, relying on the same collagen to form the gelled finished product. Gelatin is collagen that has been extracted from animal tissue by heating it or by using strong acid or base to partially hydrolyze it. The word *gelatin* comes from the Latin word *gelatus*, meaning stiff or frozen, and this material has a number of properties useful in a variety of food and pharmaceutical applications. Indeed, many of these properties are unique to gelatin; for this reason, interest in dealing with its *Kashrus* status has abounded.



## Halachic Status

Until recently, all conventional gelatins in North America were made from the skin and bones of pigs (a non-Kosher species) or non-Kosher beef (*N'veilah*—carrion, which is similarly forbidden). (In other countries, such as China, other animals such as mules and horses contribute to the fare for gelatin.) All these sources are non-Kosher, so assuming that gelatin from these sources is similarly not acceptable should have been a simple matter. However, as in many matters of *Kashrus*, things are not always as simple as they may seem. The modern story of Kosher gelatin production in the United States begins about forty years ago when a famous chocolate company in the United States wanted to produce Kosher marshmallows. The issue of gelatin has always been controversial, so Rav Nachum Tzvi Kornmehl *zt"l*, the *Rav Ha'Machshir* of the company, posed the *She'ilah* to three of the pre-eminent *Halachic* authorities in the United States—Rav Moshe Feinstein, Rav Aharon Kotler, and Rav Yosef Eliyahu Henkin *zt"l*—and to the *G'dolim* (*Halachic* authorities) in *Eretz Yisroel* (Israel). Although differing in some of the details in their rulings, the consensus of these authorities was that regular gelatin obtained from non-Kosher or non-Kosher-slaughtered animals could not be accepted as Kosher, and their position became the normative Kosher standard in North America. These authorities did, however, prescribe a method by which truly Kosher gelatin could be produced, and indeed two productions took place at that time. This special gelatin was hoarded and used for some years but eventually ran out, and for many years since then no Kosher gelatin conforming to these requirements was available. A few Rabbis in the United States continue to rely on those more lenient opinions that permit regular gelatin; for that reason, virtually every gelatin manufacturer

in the United States manufactures “Kosher” gelatin! Ironically, marshmallows marked with oversized Kosher markings containing such gelatin are often found in Kosher markets around holiday seasons, even though their Kosher status has been rejected by an overwhelming consensus of *Halachic* authorities in North America and much of the rest of the Jewish community. Indeed, all the major Kosher-certifying agencies in the United States adhere to the rulings of Rav Feinstein, Rav Kotler, and Rav Henkin, and do not certify products containing such gelatin.

It is beyond the scope of this essay to delve into the full details of the gelatin controversy, but a brief synopsis should help the reader understand the basic issues involved. Rav Chaim Ozer *zt"l* wrote a famous *T'shuvah* in which he permits gelatin based on three considerations: (a) the hard bones from which the gelatin is produced are not considered meat; (b) gelatin is considered a new product totally dissimilar from the original starting material (*Pa'nim Chadoshos*); and (c) gelatin is rendered inedible for a period of time during its processing (*Nifsal me'Achilah*). The three authorities mentioned previously, however, reviewed the matter and rejected this opinion for the following reasons: First, Rav Moshe Feinstein and Rav Aharon Kotler both held that bones from non-Kosher animals are not Kosher. Further, the argument is essentially academic because, even according to the more lenient approach, the bones would have to be completely clean, dry, and without marrow. Bones generally used for gelatin manufacture may have meat and marrow on them. In addition, most gelatins made today are produced from pigskins, which are not subject to this consideration. (Indeed, the *Talmud* [*Chullin* 122a] considers pigskins to be edible meat, and one need look no further than the snack section in the supermarket to note “fried pork rinds” as proof!)

As to the second consideration, the basis for the concept of *Pa'nim Chadoshos* is a *Rabbeinu Yonah*, an opinion questioned by many authorities. Rav Moshe Feinstein further holds that *Pa'nim Chadoshos* applies only to an *Issur Yotzeh* (an excretion from a forbidden animal) and not to parts of the animal itself. In addition, Rav Yechezkel Abramsky *zt"l* argues that gelatin is not even a “new creation,” but merely an edible extract that had always been present. As such, the concept of *Pa'nim Chadoshos* does not apply, according to these *Poskim*.

As to the third consideration, the status of non-Kosher food that is *Nifsal* and then returned to an edible state is a longstanding question among *Halachic* authorities. Both Rav Feinstein and Rav Henkin rule that the matter remains a *Sa'fek* (an unresolved *Halachic* issue) and one must therefore be strict in its regard. Rav Aharon Kotler, however, argues forcefully that such material is definitely prohibited. In addition, he cites several other reasons to prohibit gelatin. One is that because the processing of the gelatin is done with the *intention* of creating an edible product, the rule of inedible foods does not apply at all. Another is that even if the material would still be considered inedible, eating it intentionally would still be prohibited (*Ach'shvey*). He further argues that because gelatin is used to improve the food into which it is mixed, the fact that it itself may be inedible is of no consequence.

On the other hand, other authorities, notably Rav Tzvi Pesach Frank *zt"l*, *yb"l* Rav Ovadia Yosef, and Rav Eliezer Waldenberg *shlit"a*, permit the use of regular gelatin based on one or more of the previous arguments. On the basis of these opinions, the Chief Rabbinate in Israel does allow the use of certain types of gelatin produced from non-Kosher sources (primarily from “naturally” dried bones, that is, from the bones of Indian cattle that have been “cleaned” naturally in the wild). However, none of

the *M'hadrin* (strict) Kosher certifications in Israel allows the use of this product, and the Chief Rabbinate itself requires that products containing such questionable gelatin be clearly labeled as “permitted only for those who allow the use of gelatin.”

### **Properties of Gelatin**

Gelatin is an exceptionally useful and versatile ingredient, and to understand its *Kashrus* implications—and ways of avoiding them—we must first identify how it is used. The production of gelatin first became commercially significant during the Napoleonic Wars, when the French attempted to use everything but the squeal to feed its people in the face of the British blockade. Although the use of gelatin as a protein supplement may have been a wartime expedient, gelatin is an incomplete protein that lacks several essential amino acids necessary for good human nutrition. Nonetheless, it has recently returned as a protein supplement in many health drinks and muscle-building potions.

Gelatin also possesses certain functional properties that are difficult to duplicate with other materials. Vitamins are often spray-dried into powders for use in vitamin tablets and as ingredients in foods such as breakfast cereals. Some vitamins, such as A, D, and E, are fat based and tend to oxidize and degrade when exposed to air. To protect them from this problem, they undergo a process called *microencapsulation*. This process involves coating each fine spec of powder with a protective layer by mixing a protective agent with the vitamin before spraying. As the droplets form, the agent forms a protective coating around each particle as the powder dries, and gelatin has traditionally proved to be ideal for this purpose. Indeed, it is the only material that seems to work well in tablet manufacture, because it can withstand the stress of the tableting process without rupturing. It was therefore difficult to produce

vitamin tablets that would be acceptable to the general Kosher market.

### **Clarifying Agent**

Gelatin is also used as a processing aid in other ways that are not apparent. For example, apple cider is noted for its cloudy, hazy appearance caused by the fine particles and sediment naturally occurring in the juice. When a clear product is desired, the juice must be “fined” and subsequently filtered, and a classic process involves the use of gelatin. When a small amount of gelatin is added to such juice, it acts as a flocculent—a chemical that binds to the impurities and causes them to come together and settle to the bottom. The *Kashrus* implications of this process to purify drinks are discussed by *Halachic* authorities (see *Nodah b’Yehuda* 1:26, in which he discusses the use of *isinglass*, a type of non-Kosher fish gelatin), and many contemporary authorities have held that apple juice processed with gelatin would be permitted. However, most *Kashrus* authorities concur that certifying a product into which a non-Kosher ingredient is intentionally added is inappropriate, and most Kosher apple juice today is produced using alternative fining processes (or truly Kosher gelatin, made from fish or Kosher animal hides).

### **Gelatin Deserts and Thickeners**

However, perhaps its most celebrated use is as the basis for gelatin desserts. Until the advent of acceptable Kosher gelatin, the Kosher consumer had generally been relegated to using alternative colloids, that is, large molecular complexes derived from various types of seaweed (agar-agar and carrageenan). Although these preparations produce an acceptable product, they tend to be a bit watery and do not perform as well as true gelatin; they are tough and do not melt in the mouth. Gelatin is also used extensively

in dairy products, such as in providing a silky mouthfeel to custard-style yogurts. It is also useful in making low-fat dairy products and margarine because it emulsifies fat and water while providing a slippery “fatty” sensation. It is also used as a stabilizer in sour cream, ice cream, and other frozen deserts, and as a thickening agent in whipped cream. Gelatin is also used in a number of gelled candy confections such as jelly beans and gummy bears. Again, Kosher products can be made using various gums and other colloids such as fruit pectin, but such products fail to meet the same standards as those using true gelatin. Perhaps the greatest “crisis” in this regard is marshmallows—the object of every Kosher child’s fondest confectionary dreams—for no suitable alternative has ever been found.

### **Kosher Gelatin**

With such important needs to be met, several companies have recently developed Kosher gelatins that meet the rigorous requirements of virtually all authorities. One company has developed a product called Kolatin®—a beef gelatin made from *Glatt* Kosher beef hides, which follows the process that was originally approved for Kosher gelatin production forty years ago. The only *Halachic* concern with such a product would be its *Pareve* status, an issue that was indeed dealt with at that time. Rav Moshe Feinstein ruled that clean hides from Kosher animals are not considered meat as regards the rules of *Ba’sar b’Cholov m’D’oryssa* (on a biblical level). Therefore, if they are processed in such a way as to render the final product essentially tasteless (without a “meaty” taste)—as is the case with gelatin—the product is considered *Pareve*. Rav Aharon Kotler, although disagreeing with this concept, nevertheless allowed its use in milk when it constitutes less than 1/60 of the product (similar to the *Halacha* of using Kosher animal rennet to make cheese). The *Bais Din*

(Rabbinical Court) of the *Agudas Yisroel* in *Yerushalayim* (Jerusalem) also ruled that such material would be considered Pareve.

The only practical problem with the product is that its production is complex (particularly *Kashering* the plant prior to production) and therefore more costly than conventional gelatin. First, only part of the production in a Kosher slaughterhouse is indeed Kosher; some animals are *T'reifah* (having damaged internal organs) and others are not slaughtered properly (*N'veilah*), both of which are not Kosher. Hides from *Glatt* Kosher animals must be monitored, and only those passing all subsequent inspections can be segregated for gelatin production. Second, the hides must be soaked and salted (*Kashered*) to remove blood, just as all Kosher meat is processed. Third, the hides used in conventional gelatin production are generally the trimmings and other by-products of the leather industry, which can be purchased at heavy discounts; Kosher hides are prime material and must be purchased at full price. Fourth, the equipment used to produce Kosher gelatin must be completely *Kashered* from their normal non-Kosher production, a time-consuming and expensive process. In addition, the entire process must be supervised.

Nevertheless, Kolatin<sup>®</sup> is used to make true gelatin desserts and real marshmallows, both of which are available with a reliable Kosher certification under the Elyon<sup>®</sup> label.

A second approach to Kosher gelatin has been the use of Kosher fish rather than animal material as the original source. Although fish gelatin does not exhibit the same functionality as traditional beef and pork versions—its “gel” strength is generally not as strong—it is suitable for use in many applications (for example, candies and yogurt). Several companies manufacture such products under reliable Kosher certification, foregoing some of the costs associated with Kosher animal gelatin. The major *Kashrus* issue here is whether one

can mix it with meat, because such mixtures are prohibited due to health concerns (see *Y.D.* 116). The consensus of contemporary *Poskim* is to be lenient in this regard for the following reasons. First, some authorities believe that modern health considerations differ from those discussed in the *Talmud* and that meat and fish mixtures no longer pose a health concern (*Ma'gen Avraham* 173:1). Second, whether all fish were subject to this concern, or whether the rule applied only to the flesh of fish and not to the skins, or to a specific species of fish that cannot be identified in modern times (*Chasam Sofer, Y.D.* 101), is unclear. Third, an independent argument suggests that the health concern is based on the *flavor* of fish with meat. Therefore, because fish gelatin generally has little flavor, it may pose no concern at all. For all these reasons, most *Halachic* authorities have concluded that fish gelatin is truly Pareve even for use with meat.

*Chaza"l* tell us (*Chullin* 7a) that new *Halachic* applications are left for each generation to discover and perfect, and the work done to develop truly Kosher gelatin is a fitting realization of this promise. By understanding both practical needs and the *Halachic* issues relating to gelatin, these “dry bones” (*Ezekiel* 37:4) can indeed live again as Kosher material!

### **The Bottom Line**

- Gelatin is a protein derived from animal or fish tissue. Its unique gelling properties are useful in the production of various types of candies, dairy products, and vitamin preparations.
- The typical manufacture of gelatin involves processing animal tissue with chemicals that render the material inedible during the intermediate stages of production. (Is it really inedible—or soaking in an inedible solution?) Some authorities permit gelatin derived from certain types of otherwise non-Kosher sources because

of one or more of the following considerations: (a) dried bones of non-Kosher animals are not considered prohibited items and gelatin derived from them is permitted; (b) gelatin is a “new” item and does not assume the status of its source; and (c) by being rendered inedible during intermediate steps of its processing, it loses its prohibited status.

- Other authorities, however, dispute the preceding points. The consensus of *Halachic* authorities in North America is that such gelatin is not permitted, and this is the normative practice of most Kosher-certifying agencies. However, because some Kosher certifications do accept such gelatin, their status and acceptability of

any “Kosher” gelatin must be carefully investigated.

- Kosher beef gelatin that is considered acceptable is produced from Kosher beef hides, albeit at a significantly higher price. Kosher fish gelatin is also produced, which meets many of the functionality requirements of traditional beef and pork gelatin.
- In addition to its uses as a thickening agent, gelatin may serve as a filtering aid for juice and wine. Many authorities permit its use in such applications because the gelatin does not remain in the finished product. Most Kosher-certifying agencies, however, prefer to use other means of filtering.

# The Story of Honey and Royal Jelly

## כאשר תעשנה הדבורים

דברים א' מ"ד

### As Made by the Bees

Deuteronomy 1:44

Of the innumerable creatures that inhabit the world, insects serve as prominent examples of many aspects of *Halacha* (Jewish law) and *Hashkafa* (Jewish thought). The classic example given in the *Talmud* of compounded prohibitions is the sixfold set of lashes for which one can be liable by eating a flying insect (*Makos* 16b). At the same time, the lowly ant is given as the paradigm for industriousness and wisdom: “Go to the ant, lazy one, and see its ways and become wise” (*Proverbs* 6:6). Food ingredients derived from insects range from shellac (resinous glaze) to cochineal (carmine), but perhaps the most famous is bee honey. Although the bee is not a Kosher species, the *Talmud* (*B'choros* 6b) states unequivocally that bee honey is Kosher. Honey, however, is not the only food ingredient produced by the bee, and the *Halachic* status of these items are the subject of this essay.

Bees produce five distinct items that are used as food ingredients. Honey is a sweet, viscous liquid produced by bees (and certain other insects). Bees collect sugary fluids, called nectar, from flowers, which they process in a cavity within their body called a honey sac. The sugar in the nectar is primarily sucrose, which is inverted into glucose and fructose using enzymes secreted by the bee. The bee also concentrates this liquid by removing some of the water from the inverted nectar; the resulting honey is stored as food for the bee colony. Honey has been used as a food for thousands of years,

and until the advent of sugar refining, it was the most common food sweetener. Another product manufactured by bees is beeswax, secreted by the bee from special wax glands, which it uses to construct the chambers of the hive. Beeswax has found a use as a polish for candies, fruits, and nuts, and beeswax extract is used as a flavor. Another set of glands, called the pharyngeal glands, produces a special food used to nourish newly hatched larvae as well as the queen bee. This material, rich in certain proteins and vitamins, is called royal jelly or bee milk, and various claims have been made for this nutritional supplement as to its healthfulness. Although any possible health benefits from eating royal jelly are, as of now, merely conjecture, this material has lately enjoyed popularity among certain health food experts. Bees also produce a food called bee bread by compacting pollen together with royal jelly, which is also believed by some health food experts to be beneficial. Another product is called propolis. This natural “putty” is composed of pollen and resin collected by the bees, which are mixed with the bees’ saliva and wax. It is used to coat the inside of the hive and seal fissures and cracks in the hive. It also has natural antibacterial and antifungal qualities and is placed at the entrance of the hive to disinfect bees entering it and protect the health of the hive. Discussion of propolis goes back to Pliny, the Roman naturalist. It has been claimed to cure everything from the common cold and sore throats to

stomach ulcers. Given the practical applications of these five items as food ingredients, their Kosher status must be determined.

### **Bee Honey**

Despite the fact that honey derives from a non-Kosher insect, bee honey is unquestionably permitted. A dispute exists, however, as to the reason for this status. According to the first opinion, quoted in the *Talmud*, honey is permitted because it is not excreted from the insect itself but is merely reprocessed nectar and not an actual excretion of the insect—*Ayno Mismatzeh mi'Gufo* (literally, “not an exudation of the body”). According to a second opinion, its permissibility is based on a specific Biblical dispensation—*G'zeiras ha'Kasuv*—indicating that some items exuded by otherwise non-Kosher insects may nonetheless be permitted. All agree, therefore, that *bee* honey is Kosher.

### **“Wasp” Honey**

The *Talmud* notes that the difference between these two rationales is reflected in the *Halachic* status of honey derived from insects other than bees, which the *Talmud* notes can be derived from insects known as *Tzirin* and *Gizin*, generally referred to as “wasp honey.” While the exact translation of these two terms is not clear, they seem to refer to other insects that process nectar into honey in a process essentially identical to that employed by honey bees. According to the first opinion quoted, such honey would be permitted because it is merely reprocessed nectar. According to the second opinion, however, only *regular* honey is included in the *G'zeiras ha'Kasuv* because it applies only to *pure* honey and has no limiting appellation—“*Shem L'vay*” (an auxiliary title). Bee honey is simply referred to as “honey,” whereas similar products from other insects are referred to as

“wasp honey”—a “*Shem L'vay*,” and any product that is known by its (non-Kosher) insect source is not permitted.

In determining the *Halacha*, Maimonides and *Rabbeinu Tam* rule that these honeys are permitted, whereas the *Rosh* and the *Ramban* prohibit them. The *Shulchan Aruch* (*Y.D.* 81:9) rules according to the first view and permits them while noting the dissenting opinion. Because the question involves a Biblical prohibition, however, the consensus of *Halachic* authorities is to be stringent (*P'ri Chodosh*, *ibid.*).

### **Royal Jelly**

The *Halachic* status of royal jelly, however, has only recently been dealt with by the authorities. Rabbi Eliezer Waldenburg discusses, in *Tzitz Eliezer* (XXI:59), this issue at length and permits royal jelly's use as a medicine, based on a number of considerations. First, he establishes that royal jelly is certainly included in the *G'zeiras ha'Kasuv* permitting honey. The disability of *Shem L'vay*, which was the problem with “wasp” honey, is based on the fact that that type of honey bears the name of the non-Kosher insect and not because it is not called simple honey (see *Rabeinu Gershon*, *B'choros*, *ibid.*, and the *Sefer ha'Yashar of Rabbeinu Tam*). Royal jelly, on the other hand, is not referred to as such and is included in the Biblical dispensation of honey. The *Tzitz Eliezer* further notes that even according to the opinion of Maimonides, who holds that wasp honey is permitted only because it is *Ayno Mismatzeh mi'Gufo*, the use of royal jelly is permissible for several reasons: First, royal jelly is not clearly, in a *Halachically* significant manner, different from honey. Despite the fact that honey contains enzymes and other chemicals that are secreted by the bee, it is nonetheless considered to be in the category of reprocessed nectar and not a bodily exudation. He quotes the *P'ri To'ar* (81:1), who notes that the presence of insect

secretions in honey is obviously not an impediment to its permissible status. In essence, this approach assumes that some secretions of insects, even though they contain material produced by the insect, are not considered a bodily exudation, an approach that would similarly apply to royal jelly (see later in this essay concerning Rav Moshe Feinstein *zt"l*'s approach to a similar situation regarding shellac). Second, the use of such a material may be permitted more readily for medicinal purposes (for various reasons, discussed in the *Tzitz Eliezer*). In addition, royal jelly has an unpleasant, putrid taste (sour and bitter) and would therefore be permitted in mixtures or perhaps even by itself. In summary, the *Tzitz Eliezer* permits the use of royal jelly for medical purposes even if the person is not considered significantly ill.

Another authority who has dealt with this issue is Rav Isser Yehudah Untermann *zt"l* (*Sh'evet m'Yehudah* V:344). Rav Untermann notes a seeming discrepancy in the second opinion noted previously in the *Talmud* regarding the permissibility of honey and the way it is described in the *Tosefta B'choros*. The *Talmud* states that wasp honey is prohibited because it has *Shem L'vay*, whereas the *Tosefta* states that the reason is that it is a *Rir* (waste exudation). Rav Untermann further notes that *Rashi* makes a seemingly unnecessary statement that "only bees have hives." He further notes the *Rashi* explains the Biblical dispensation as permitting all things exuded by insects except for the offspring themselves.

Rav Untermann therefore argues that the Biblical dispensation permitting honey relates to those products of the insect that are classified as a "*Sh'ritzah*," as opposed to mere secretions. He defines *Sh'ritzah* as something created by the insect for the purpose of being retained. For example, honey is classified as a *Sh'ritzah* because the bee creates it to be stored in the hive—hence the emphasis *Rashi* places on the fact that

only bees have hives. This is a contradistinction to a mere exudation of other insects that do not have a hive, for which the liquid is not designed to be stored and is therefore not classified as a *Sh'ritzah*. (Although larvae are also called a *Sh'ritzah* [because they are intended to *remain* in the hive], they are nonetheless prohibited, as pointed out by *Rashi*.) Rav Untermann further argues that the intention of the *Talmud* to consider wasp honey as having an auxiliary name is precisely this point—that the product is *not* considered a "*Sh'ritzah*"—the specific Biblical dispensation by which any honey might be permitted. Rav Untermann continues that even according to Maimonides there would be other reasons to permit royal jelly (because of its bitterness and other reasons), especially when it is mixed with other ingredients. Rav Untermann concludes his opinion by stating that this material is permissible for many reasons and may be used, when necessary, even for a healthy person and certainly for one who is ill (even if his or her life is not in danger).

Additional support for permitting royal jelly may also be derived from the writings of Rav Moshe Feinstein *zt"l* (*Igeres Moshe Y.D.* II:24) in his discussion of the permissibility of shellac (also known as lac resin or resinous glaze). He advances several reasons to permit the use of shellac. He states that according to the second opinion in the *Talmud*, the Biblical dispensation that permits the use of honey extends to all secretions of insects. The only reason that wasp honey is prohibited is because of a scriptural exclusion, which is limited to secretions that have a *Shem L'vay*. He therefore reasons that the concept of a *Shem L'vay* applies only in situations that indeed have two forms (such as in the case of honey), one known as the plain version and one that bears the name of the insect. In the case of shellac, however, because only one version exists and does not bear the appellation of the insect, it would be permitted.



The same rationale would seem to be applicable for permitting royal jelly, because it does not have an auxiliary name. (He notes that this approach does not comport with the opinion of the *Maharsha"l*, who holds that the *G'zeiras ha'Kasuv* applies to bees exclusively.) Rav Feinstein also points out that according to the opinion of Maimonides, who holds that the permissibility of honey is based on the fact that it is *Ayno Mismatzeh mi'Gufo* and not because of a *G'zeiras ha'Kasuv*, shellac would definitely be permitted. He states categorically that according to the opinion that wasp honey is permitted, other similar secretions from insects—such as shellac—are equally permissible. Even though shellac is a glandular secretion of the lac insect, Rabbi Feinstein holds that such secretions are nonetheless not considered bodily secretions. Indeed, we find a similar concept in the *L'vush* (81:8), who states that beeswax comes from the waste of the conversion of nectar, whereas honey comes from the primary part of the nectar. Although beeswax is clearly a glandular secretion, the *L'vush* nevertheless does not consider it a bodily secretion. Royal jelly should similarly be *Ayno Mismatzeh mi'Gufo* and included in the permissibility of wasp honey even without a *G'zeiras ha'Kasuv*. (This approach may also be used to explain why honey is not considered a bodily secretion even though it contains certain chemicals imparted by the bee, as noted in the *P'ri To'ar*, above.)

A further point noted by Rabbi Feinstein is that shellac would be considered a prohibited exudation that is inedible and is therefore permitted even if processed into an edible material. (This is in contradistinction to an item prohibited in its own right, such as spoiled pork, which would remain prohibited if subsequently rendered edible.) In the case of royal jelly, the material is very bitter and arguably fits into the category of a spoiled exudation. Even if this were not the case, however, it would still be permit-

ted because royal jelly is always mixed with other materials to make it more palatable and would therefore be nullified by a majority of other ingredients (a theory also used by Rabbi Feinstein to permit shellac).

An additional proof of the permissibility of royal jelly could be based on the mere fact that it is found in the hive itself. Although some authorities deal with the problem of (non-Kosher) insect pieces found in honey (see below), no similar mention is made of royal jelly “contaminating” the honey. Royal jelly is produced and stored in the hive, and were it considered a prohibited item, it would certainly have been the subject of such a discussion.

On the other hand, a number of authorities have questioned the permissibility of royal jelly. Rabbi Shlomo Zalman Auerbach *zt"l*, in a letter to Rabbi Waldenburg (published in *Tzitz Eliezer* XII:14), is reluctant to permit its use. Rabbi Auerbach questions whether we are sufficiently versed in what constitutes inedible foods; therefore, although he had previously permitted its use, he is now more reticent and declines to take a position. However, it would seem that the position of Rabbi Chanoch Dov Padwa (in *Cheshav ha'Ephod* 104) poses the most cogent argument in this regard. He posits that if royal jelly is indeed a bodily exudation, then it would technically be prohibited according to all opinions. However, *Dayan* Padua still permits its use for two reasons: First, he argues that it is an inedible material and therefore permitted, and second that because it is bitter, it is certainly nullified in the majority of other ingredients.

### **Honeydew Honey**

Some honey involves “two-step” insect processing, creating an additional *Halachic* concern. Aphids, as well as certain other scale insects, feed on tree sap and excrete a sugary, viscous liquid, known as honeydew (after which a popular melon is named).

Honeybees collect and process honeydew in the same manner as they do pollen, but the resulting honey is noticeably darker and maintains the flavor of tree whose sap the aphids had eaten. Such “tree honey” is prized by honey connoisseurs, but raises the following *Halachic* question. If the permissibility of “honey” is based on its being nothing more than reprocessed (permitted) pollen (*Ayno Mismatzeh mi’Gufo*), this dispensation would seemingly be unavailable to honey produced from the seemingly prohibited exudation of a non-Kosher insect. If, however, the permissibility of “honey” is based on a Biblical allowance, the provenance of the raw material should be of no consequence. Given the fact that the matter is in dispute, some authorities contend that such honey be avoided.

It would seem, however, that the assumption that tree honey is prohibited may be challenged on two counts: First, honeydew is not a glandular secretion, but rather a waste excretion of the aphid. As such, it may have the *Halachic* status digested sap and thus be permitted. In addition, the same approach used by Rabbi Feinstein in dealing with shellac should serve to permit tree honey, since he argues that all insect secretions are per se considered *Ayno Mismatzeh mi’Gufo*.

### **Beeswax**

As noted previously, beeswax is also a glandular secretion and, although not generally directly eaten as a food, is permitted. This can be deduced for several reasons: First, the *Lvush* quoted previously states clearly that beeswax has the same *Halachic* status as honey. In addition, honey is considered one of the seven liquids, and the relationship between honey and the wax comb would create a quintessential problem of steeping permitted honey with the wax (*Ka’vush*), were the wax indeed prohibited. Further, Maimonides (in his commentary to the *Mishnah*) notes that the entire honeycomb was rou-

tinely melted to remove the honey. Were the wax not to be permissible, it should pose the same concern as that noted by the authorities of cooking (non-Kosher) bee parts together with honey (see later text concerning honey that was contaminated with parts of bees). A further proof can be deduced from the candles used for Chanukah. Rabbi Shlomo Kluger holds that one should not use candles made of pork fat because items used for a *Mitzvah* must have a Kosher derivation. Nevertheless, the *Rama* (*O.C.* 673) states that the custom is to use candles made of beeswax. Beeswax is therefore obviously considered a permitted product.

Bee bread is nothing more than pollen held together with royal jelly and should therefore be subject to the same considerations as royal jelly. Propolis would seem to be the quintessential *Ayno Mismatzeh mi’Gufo* and should pose no *Kashrus* concern.

### **Bee Contamination**

Another fascinating concept in *Halacha* is based on a discussion of another aspect of honey production. Parts of bees, which are not permitted, are routinely found in raw honey before it is purified. Such honey is routinely heated to remove these impurities, giving rise to concerns of contamination of the honey itself. The *Tur* and the *Shulchan Aruch* (*Y.D.* 81:8) quote the *SMA”G* (132) to the effect that such pieces of insect are considered to be unsavory and therefore of no consequence. The *Bais Yosef* also quotes the opinion of *Rabbeinu Tam* (*Tosafos, Avodah Zarah* 61a), who holds that an unsavory characteristic would not resolve this concern because all insects are unsavory and yet are prohibited. Rather, he considers bee legs (and wings—*Rosh*) to have the *Halachic* status of bones, which are permitted even if they are from non-Kosher species. *Rabbeinu Yonah*, quoted in the *Rosh* (*B’rachos* 86:35), however, assumes the permissibility for such impurities to be based on the concept of

*Nishtanah*—literally, “changed.” According to *Rabbeinu Yonah*, honey has the ability to convert non-Kosher materials into Kosher honey, and he uses this approach to permit musk derived from a non-Kosher source because he assumes the change of “blood” to musk as essentially the same process. Indeed, the *Rosh (T’shuvah 24:6)* uses this approach of *Rabbeinu Yonah* to consider honey into which wheat flour had been added to be permissible for use on Passover, at least theoretically. (Interestingly, this propensity of honey to convert insects applies only to *pieces* of insects—*whole* insects tend to be *preserved* in honey [see *Y.D. 84:13* and *Sha”Ch 37*]. Please note that the entire concept of *Nishtanah* is the subject of significant discussion among the authorities and is beyond the scope of this essay.)

### **Flavored Honey**

Pure honey poses few other *Kashrus* concerns. The various types of honey, such as “clover” and “orange blossom,” are usually devoid of any added flavorings. The “flavor” refers to the flowers on which the bees feed. Because honey is essentially concentrated nectar, the flowers from which the nectar is collected play an important role in determining the flavor of the resultant honey.

### **Adulteration**

Although unscrupulous processors have been known to adulterate honey with corn syrup (and thus raise concerns for Passover), this is quite rare today, at least in the domestic market. (Honey from China continues to raise a significant concern.) The only other additive that is routinely added to honey is an antifoam that, although requiring Kosher verification, is insignificant in the final product.

### **Botulism**

No *Halachic* discussion would be complete, however, without recognizing relevant

health issues, as our Rabbis note *Chamira Sakanta m’Isura* (issues relating to health are of greater importance than those of permissibility). It seems that although honey is a safe and wholesome food for children and adults, honey should not be fed to infants less than one year of age. Honey may contain bacterial spores that cause infant botulism, a rare but serious disease that affects the nervous system of young babies. Infant botulism is different from food-borne botulism. Food-borne botulism is caused by a toxin produced by a pathogenic organism found in food. Infant botulism is caused when conditions in the digestive tract permit the spore for botulism, known as *Clostridium botulinum*, to grow and form toxin in the digestive system. Although this organism is commonly found in many uncooked foods, adults and children develop intestinal bacteria that inhibit the growth of this offensive spore. Infants do not have this bacterial protection until about six months of age. Heat treatment will destroy *C. botulinum* and honey can therefore safely be used in canned foods for infants. Raw honey, however, should be avoided by young children. The issues relating to honey give us an opportunity to comb through a number of significant *Halachic* issues. The *Torah* is often compared to honey, and the *Talmud (Yoma 83b)* states that honey and all sweet things enlighten one’s eyes. The *Torah* of honey affords us the opportunity of gaining tremendous insights into the *Halachic* aspects of the foods we eat.

### **The Bottom Line**

- Most insects (with the exception of certain species of grasshoppers) are prohibited according to Kosher law.
- In general, food products made from insects are similarly prohibited. However, the following commonly used products may be permitted:
  - Pollen honey from bees is permitted according to all opinions.

- The Kosher status of tree honey has been questioned by some authorities, although there may be cogent grounds to permit it.
- Grape-must honey may also be subject to *Kashrus* concerns, but many authorities permit it.
- Honeylike products from other species of insects are questionable and are not used.
- Royal jelly is questionable, although many authorities permit its use, especially when mixed with other ingredients.
- Beeswax is generally considered to be a Kosher material. Propolis is also generally accepted as Kosher.
- Another commonly used insect derivative is shellac. Although the lac insect is not Kosher, many authorities permit the use of shellac based on a number of considerations.

# The Story of Ice Cream

## דק כנפור

שמות ט"ז י"ד

### Fine as Frost

*Exodus 16:14*

During the forty years when the Children of Israel traveled in the desert, *Hashem* provided them with an exotic sustenance called *Mon* (*Mannah*). *Chaza"l* tell us that the *Mon* would have whatever taste the consumer desired—the perfect food. In the world of confections, ice cream may be considered by many as the “perfect food” for, although vanilla is the world’s most popular variety, hundreds of more exotic flavors are on the market to meet the desires of virtually any sweet tooth. Indeed, when asked what he would want the *Mon* to taste like, a typical child might well presciently answer, “ice cream”—just as the *Targum* translates the word *K'for* as “*G'lidah*” (the Hebrew word for ice cream)! As anyone who has tried to make ice cream at home can understand, however, ice cream is far from merely being “frozen cream.” In addition to the expected addition of sugar and flavors, an ice cream ingredient list may include a number of items whose definition—and *Kashrus* status—must be deciphered and understood.

### Ingredients

Ice cream, by definition, is a mixture of milk, cream, sugar, and flavors that—when frozen—forms a relatively soft confection, not a block of “milk ice.” Ice cream is a wonder of *emulsification*—the property that allows fat and water to coexist and not separate. Indeed, the word *emulsifier* is derived from the Latin word for *emulgere* (to milk) because of the natural coexistence of water

and fat in milk. In the case of ice cream, the butterfat in the cream must blend and emulsify with the proteins and other liquids in the milk in such a way that they do not separate, become too hard, or melt too quickly. To aid in this process, additional emulsifiers are added. The classic ice cream emulsifier was egg yolk, which was used in most of the original recipes. Today, however, two fat-derived emulsifiers—monoglycerides and polysorbate-80—predominate in most ice cream formulations. Since these can be derived from either animal or vegetable fat, a reliable Kosher certification is required.

An additional concern involves the tendency of the water in ice cream to form large ice crystals, a situation that does not make for a smooth ice cream. To address this issue, various *stabilizers* are added to ice cream. Gelatin, a protein of animal origin, had historically been used almost exclusively in the ice cream industry as a stabilizer. Thankfully, however, gelatin has been replaced with locust bean and guar gums (derived from plants), carboxymethylcellulose (CMC; derived from wood pulp), alginates (derived from seaweed), and carrageenan (derived from red algae)—all of which are inherently Kosher. Xanthan gum is also used and, although it is produced through a fermentation process that may pose some *Kashrus* concerns, generally it bears a reliable Kosher certification.

Some items used in the production of ice cream, however, are not ingredients at all. “Ice cream salt,” although historically

critical to its production, is not added to the ice cream itself but rather, before the advent of modern refrigeration, to the ice used for freezing. The temperature needed to freeze an ice cream mix (about  $-10^{\circ}\text{C}$ , or  $14^{\circ}\text{F}$ ) is significantly lower than the nominal temperature of ice ( $0^{\circ}\text{C}$ , or  $32^{\circ}\text{F}$ ), due to the “antifreeze” properties of the sugars it contains. Ice could not, therefore, freeze the ice cream. However, by adding salt to the ice, the ice becomes a liquid and its temperature drops, becoming a supercold slush, allowing this liquid/ice mixture to freeze ice cream. This is the same reason why salt melts ice in the driveway—at least as long as the temperature is above  $-17^{\circ}\text{C}$  ( $0^{\circ}\text{F}$ ).

### **Processing and Non-Kosher Ice Cream Flavors**

Another important *Kashrus* consideration involves the equipment on which the ice cream is processed. The first step involves mixing the liquid components (milk, cream, and corn syrup) with dry ingredients, such as the stabilizers and emulsifiers discussed before. In the case of chocolate ice cream, cocoa is generally added at this point. However, all other flavors, as well as particulates (such as nuts and fruit) are added later. This base ice cream mix is then pasteurized and homogenized, after which it is cooled. At this point, the appropriate flavors are added and the mix is then whipped and frozen in a continuous freezer known as a surface swept heat exchanger (commonly referred to as a *Votator*<sup>®</sup>). In some ways, ice cream can be considered “frozen whipped cream,” with the air in the mixture serving an important function in maintaining the fluffiness of the product. Ice cream-freezing machines are therefore designed to incorporate a certain amount of air into the product, which is known as “overrun.” The amount of air in ice cream is generally directly related to its quality, varying between 20 and 50 percent of its volume. Premium ice cream, with a

higher concentration of butterfat, typically needs less air to maintain a smooth consistency, whereas lower-quality products tend to incorporate more air. In most countries, the consumer has no idea how much air is in the product, since ice cream is sold by *volume* and not by *weight* (although the government does mandate a minimum weight for a given volume of the product). As it leaves the freezer, the ice cream is still soft enough for nuts, fruit, syrups, and other additives to be blended into it, after which the ice cream is packaged and frozen into a solid.

It is important for the Kosher consumer to note, however, that some Kosher-certified ice cream companies produce both Kosher and non-Kosher flavors. Although one might question how both types of products could be produced in the facility, the description of ice cream processing allows us to understand such an arrangement, even without the need to *Kasher* equipment in between. Typically, the base ice cream mix is always Kosher and, since this is the only mix that is heated and pasteurized, the pasteurization system remains Kosher. Non-Kosher flavors, if any, are added only *after* the mix has been cooled, after which no heat is used in the processing. (It is, after all, *ice* cream.) Since the equipment used to handle the non-Kosher flavors is cold, a thorough cleaning of the equipment between flavors is all that is *Halachically* required.

### **Rework**

The only issue that must be addressed with this arrangement is called *rework*. During ice cream manufacture, a significant amount of product cannot be packaged for sale. This may be due, for example, to breakdowns in the equipment or product left in the system at the end of a production. Since this ice cream mix is perfectly edible, companies will recycle it back into subsequent productions, since small amounts of most flavors (with the notable exception of mint) can be

incorporated into other flavors of ice cream without being noticeable. Indeed, *chocolate* ice cream is the ideal vehicle for such recycling, since it masks virtually all other flavors. Where non-Kosher flavors are produced, however, the *Hashgacha* must ensure that their rework cannot return as part of Kosher products.

Rework poses an additional concern in that it must typically be repasteurized before it can be used. In situations where the non-Kosher component is not *Batul*, its pasteurization may compromise the Kosher status of the pasteurizer.

### **Other Frozen Confections**

Not all frozen desserts, however, are classified as ice cream, although many do contain milk or cream. *Ice milk* is essentially the same as ice cream, but contains significantly less butterfat (as little as 2 percent, versus a minimum of 8–10 percent in ice cream). *Sherbet* (or, in French, *sorbet laitier* [milk sorbet]) is composed primarily of fruit juice and water (its name comes from *charbet*, a Middle Eastern fruit drink), but contains a certain amount of dairy ingredients (between 1 and 2 percent milk fat, as well as other dairy solids). As such, it is quintessentially dairy.

*Sorbet*, on the other hand, may contain no dairy ingredients (despite its name being derived from *sherbet*) and may therefore be certified as Pareve. This may apply to *Italian* ices or popsicles. However, many of these items are produced—and pasteurized—on equipment that is also used to process ice cream. Unless the equipment is properly *Kashered* between dairy and such productions, however, such products must nevertheless be certified as Dairy or Dairy Equipment.

### **“Pareve” Ice Cream**

Although somewhat of a misnomer, *Pareve* ice cream has become very popular, with

vegetable fat replacing butterfat and soy protein replacing dairy solids. Since most Pareve ice cream is manufactured in regular ice cream plants, a thorough *Kashering* of the equipment must take place before each production. (When Pareve ice cream was first produced, some had raised a concern of *Mar'is Ay'in*—the appearance of inappropriate behavior. However, once the product became commonplace, it is no longer a *Halachic* concern.)

### **B'rachah**

Before and after enjoying an ice cream treat, of course, it is important to know the appropriate *B'rachah*. Ice cream (whatever the flavor or additives, with the possible exception of “cookies and cream”) demands a *she'Hakol*. But what about an ice cream cone or sandwich? Most authorities rule that the question depends on what purpose the cake or cookie serves. In most cases, an unflavored ice cream cone serves only as an aid in eating the ice cream, so it does not require a separate *B'rachah*. Sugar cones, on the other hand, are eaten as a cake in addition to serving as a receptacle for the ice cream, so a separate *B'rachah* should be made on it. Similarly, the cookies in an ice cream sandwich are important and separate from the ice cream, and also require a *B'rachah*. The *B'rachah* at the end of an ice cream feast, however, is a bit more complicated. Many *Poskim* rule that frozen foods can be considered as solids for purposes of a *B'rachah Acharona*, and one could therefore recite a *Borei N'fashos* after eating only a *K'zayis* (a little more than one fluid ounce) within four minutes. Other authorities, however, rule that one does not recite a *B'rachah Acharona* on such items since they are considered *liquids*, and it would be virtually impossible for one to eat enough ice cream within the amount of time that would obligate a *B'rachah Acharona* for liquids (over three fluid ounce within about

thirty seconds). The *Poskim* therefore recommend that one drink some liquid before or after eating the ice cream to avoid this concern.

Everyone agrees, however, that ice cream will eventually return to its liquid state, despite all of the emulsifiers and stabilizers modern food science can devise, and *Kashrus* authorities can permit. So remember to get it into the freezer quickly, for ice cream, just as was the *Mon*—is subject to the *Torah*'s admonishment—*v'Cham ha'Shemesh v'Namas*—"in the heat of the sun it will melt!"

### **The Bottom Line**

- Commercial ice cream relies on emulsifiers to maintain the equilibrium between the aqueous and fatty phases of its ingredients. Historically, egg yolks were used for this purpose. Today, monoglycerides and polysorbates may be added for this purpose. All such ingredients require reliable Kosher certification.
- Stabilizers, such as gelatin, carrageenan, and xanthan gum, are often used to control the crystallization of the ice cream and to protect it from repeatedly freeze/thaw cycles. Many such ingredients require reliable Kosher certification.
- Many ice cream manufacturers produce both Kosher and non-Kosher varieties. Non-Kosher ingredients may include flavors, colors, and particulates. Often, the non-Kosher ingredients are added after pasteurization, in which case the non-Kosher processing does involve any heat. In such cases, the Kosher status of the equipment would not be compromised by the non-Kosher products.
- Rework from non-Kosher ice cream blends may not be blended back into Kosher products. In addition, the repasteurization of non-Kosher rework may compromise the Kosher status of the equipment.
- Frozen dairy products include ice milk and sherbet. Sorbet and frozen ices are typically dairy free. If pasteurized on equipment also used for dairy products, however, they will be certified as either "Dairy" or "Dairy Equipment."
- Pareve "ice cream" contains non-dairy proteins (typically soy) and is produced on Pareve equipment or dairy equipment that has been properly *Kashered*.



## The Story of Imitation Foods

### ונהפוך הוא

אסתר ט' א'

#### And It Was Turned About

*Esther 9:1*

In the book of *Esther*, the miracle of *Purim* is twice couched in terms of overturning the anticipated: the tables were turned on the enemies of the Jews and a feared calamity was transformed into a celebration. Indeed, many customs have developed to commemorate the upending events of *Purim*. For example, people wear masks to conceal their identities, either because Esther hid her true identity or the transgression for which the Jews deserved punishment was one of worshipping an *image* of a deity. (The Jewish people did not worship the deity itself; for this reason, some authorities hold that no true idolatry was involved—see *Tosafos P'sachim 53b* and *Ritv" a K'suvos 32b*.) In the realm of *Kashrus*, however, role-playing is not limited to *Purim*. Foods often masquerade as things they are not, raising a host of interesting *Kashrus* and *Halachic* issues.

#### **Non-Dairy Foods**

Irrespective of any Kosher issues, many basic food products pose marketing concerns based on issues of health, cost, or ease of use. For example, cream is a favorite addition to a cup of coffee. However, many people have difficulty digesting milk products, and cream is both perishable and somewhat expensive. Food technologists have therefore developed alternative “creamers” to address these concerns. These creamers typically contain no cream but are designed to

mimic its qualities so that the customer cannot (more or less) tell the difference while enjoying additional benefits, such as a dry, shelf-stable power. Indeed, in many situations powdered coffee creamer is the only creamer available and has been accepted as such by many consumers. Although many of these products bear a Kosher *certification*, their *Kashrus implications* may not be obvious. To a Kosher consumer, coffee creamer poses an additional set of concerns. First, dairy products cannot be used with or after meat meals, or these products may not be *Cholov Yisroel*. Indeed, conventional powdered creamers—even those labeled Non-Dairy—do not address these specific Kosher concerns. Most coffee creamers, both liquid and powdered, are based on casein, one of the primary proteins in milk. Casein is less expensive than milk or cream and contains none of the lactose (milk sugar) that poses a problem for those who are lactose intolerant. It is, however, quintessentially milk, both from a Kosher perspective and for most of those who are allergic to milk protein. Nonetheless, owing to the idiosyncrasies of the politics relating to food-labeling law, many countries allow (or mandate) products containing casein as the only “Dairy” ingredient to be labeled “Non-Dairy.” It is not sufficient, therefore, for the Kosher consumer to check for the Kosher designation alone and rely on a Non-Dairy label. All reliable Kosher certifications therefore insist that a “D” designation be appended

to the Kosher symbol for such products to alert us to the label's potentially misleading nature.

Most non-dairy imitation cheese is also based on casein milk protein and is therefore *Halachically* dairy. (The reason that it is called "imitation," however, owes to a concept called "nutritional equivalency." Imitation cheese uses vegetable oil in place of the butterfat normally found in cheese, and because the two are not "nutritionally equivalent," the product must be labeled "Imitation.") Truly Pareve creamers are generally geared to the Kosher market, and their labels clearly emphasize their Pareve status. It is interesting to note that some liquid Pareve coffee "whiteners" maintain their Pareve status by being based on nothing more than water, sugar, and a little titanium dioxide—the food-approved version of white paint pigment!)

A similar situation confronts us with margarine. Margarine was developed as a butter replacement—but *Kosher* considerations were far from the inventor's mind. Original margarine was based on tallow and cream (hence the term *oleo*—beef fat) and was clearly not a Kosher item. Over the past number of years, however, *vegetable* shortening has become the standard type of fat used in the product, but whey (a milk by product of cheesemaking) and other dairy ingredients are still part of the standard recipe of most major brands. Again, the Kosher consumer's desire to use margarine as a butter replacement must be tempered with a realization that it may still be dairy.

### **Soy Protein**

From a food technologist's point of view, imitation butter and coffee creamer are relatively simple nuts to crack. More sophisticated products require the use of protein complexes to re-create the texture and mouthfeel of the genuine item. About eighty

years ago, George Washington Carver developed more than three hundred products based on the peanut, from peanut sausage to peanut cheese. Although we do not see many such peanut products on the market today, a close relative of the peanut, the soybean, has burgeoned to become the basis of many modern food analogs. Soy protein is extremely versatile and can be processed into cheese (tofu), hamburgers and bacon bits (texturized vegetable protein—TVP), meat flavorings for Pareve chicken soup (hydrolyzed vegetable protein—HVP), and soy milk and Pareve ice cream (soy protein concentrate), to name but a few. Soybeans were first cultivated in China more than three thousand years ago, and the lactose-intolerant Chinese quickly learned to soak the beans in water to produce soy milk. The soybean has affectionately been called the "Cow of China," but as in many other cultures, this bovine sobriquet was meant to encompass far more than a producer of milk. The Chinese quickly realized that if they took this soy milk and curdled it with nigari (magnesium chloride), they would obtain a soy curd, which they called *doufu* (tofu). Both of these items are now commonly used to replace milk and cheese, respectively. From a *Kashrus* perspective, the ingredients used in the production of these products pose little concern. However, soy milk is often processed on equipment that is used for dairy products, causing many brands of soy milk to be labeled "Dairy" or "Dairy Equipment." As regards Pesach, although soybeans are no more than *Kitniyos*, *Chometz*-derived enzymes are often used to process the soybean. Even *S'phardim* who would otherwise be able to enjoy soybeans on Passover might have a problem with soy milk. Another permutation of soy milk may be found in soy-based infant formula. Although such products are free of milk, virtually all of them are produced on the same equipment used for dairy-based formula, and for this reason they

are marked “Dairy” or “Dairy Equipment.” Based on the special regulatory requirement for these products, however, one can nevertheless be assured that they do not contain any traces of dairy ingredients. Non-dairy frozen deserts raise another interesting set of concerns.

### ***Imitation Ice Cream***

Dairy products have distinct mouthfeels and flavor profiles, and “imitation” ice cream must closely mimic the real thing to gain consumer acceptance. Fortunately, the screaming need of the Kosher consumer for Pareve ice cream has been aided by an equally demanding cadre of consumers who are lactose intolerant. Again, the key to the success of the product is the lowly soybean and the versatile proteins it contains. However, as with other soy-based products, the equipment on which these products are produced raises significant concerns. Virtually all Pareve ice cream is produced in regular ice cream facilities, and a proper *Kashering* of the equipment is required to maintain a Pareve designation. For this reason, many types of otherwise Pareve “ice creams”—and even non-dairy fruit sorbet—are marked with a “Dairy” or “Dairy Equipment” designation because the appropriate Kosherization was not done. Although a product *processed* on dairy equipment may be eaten immediately *after* a meat meal, a Kosher consumer must be certain that none of the *ingredients* are actually dairy before serving it after meat or on meat dishes.

### ***Meat Analogs***

Soy protein is not limited to mimicking dairy products, however. Imitation bacon bits have been around for many years, and Pareve breakfast patties and sausages containing no trace of meat are now considered palatable

enough to be sold in the mainstream market as vegetarian alternatives to beef and pork. Such imitation meat takes advantage of an ingredient called texturized vegetable protein, whereby the soy protein is processed into a matrix that gives the product a chewy consistency similar to meat. However, not all such proteins come from soy. Some types of meat analogs are based on wheat gluten (and are real *Chometz*). Today, one can make a Pareve “cheeseburger” using Pareve versions of both meat and cheese. Note, however, that some of these imitation meat products are *Dairy*, owing to their use of certain dairy proteins in their formulation. Therefore, the consumer should not only check for a reliable *Hashgacha* but also check for a Pareve or Dairy designation. The success of a Pareve burger, however, does not rest solely on how it chews; a meaty taste is critical, and the lowly soybean again affords a Pareve alternative. By breaking soy (or other vegetable or dairy) proteins into their constituent amino acids, many types of meat flavors can be obtained. Such flavors serve as the key to a successful Pareve burger, as well as to the ubiquitous Pareve chicken soup.

### ***Surimi***

Another Oriental contribution to the field of imitation foods is called *surimi*. *Surimi* is minced whitefish that has been processed into a host of different products, from imitation crab legs to shrimp. Using very specialized technology, the delicate texture and flavor of these exotic types of otherwise non-Kosher seafood can be recreated, and indeed Kosher crab, shrimp, and lobster-like products are now available. Note, however, that *surimi* was not developed for the Kosher market but rather to produce unique Japanese products and inexpensive replacements for these types of seafood. Conventional *surimi* shellfish products often contain

significant amounts of real shellfish meat for flavor and therefore offer no Kosher advantage. Even the minced fish from which the surimi is produced requires a reliable *Hashgacha* to ensure that it was made only from a Kosher fish and that the equipment used to produce Kosher surimi was properly *Kashered*. Surimi may therefore be eaten only with a reliable *Hashgacha*.

### Mar'is A'yin

Modern food technology has made a variety of heretofore unattainable items within the *technical* reach of the Kosher consumer. The question we must now ask is the *propriety* of eating them. With regard to eating certain foods, *Chaza"l* are concerned with the concept of *Mar'is A'yin*—the appearance of an inappropriate act. Indeed, we find that *Chaza"l* (*K'risus* 21b) restricted the way one can consume the blood of fish—which is technically permitted—lest it appear that one is eating non-Kosher blood of animals. Although eating blood may seem a bit farfetched today (unless one is living in Yorkshire or has a hankering for German *Blutwurst*), the *Rashb"l* (*T'shuvos* III:247) clearly extends this concept to other situations when the food might appear to be prohibited. Indeed, the *Rama* (*Y.D.* 87:3) discusses a concern with the use of almond milk together with meat, lest it appear that one has cooked meat and milk together. The concept of *Mar'is A'yin* is even cited as one of the reasons to prohibit *Gebrochts*—soaked *Matzah*—on Pesach, lest someone think that the “breaded” chicken contained *Chometz* breadcrumbs instead of *Matzah* meal. Many *Halachic* authorities have grappled with the permissibility of many of the new, Kosher “forbidden fruit” that are now available. Most authorities concur that items that are commonly available as Kosher (and Pareve, if applicable) pose no concern, and Pareve coffee creamer, ice cream, and margarine are

now so ubiquitous that they pose no real concern. Mock shrimp and cheeseburgers, however, may be more of an issue because they *appear* to blatantly violate Kosher law and have not (yet) become common fare. A competent *Halachic* authority should therefore be consulted. As you can see, the Kosher status of imitation foods is truly in the eyes of the beholder!

### The Bottom Line

- Foods that are designed to imitate the properties of other foods pose unique Kosher concerns. The Kosher consumer may assume that a particular product has the *Halachic* status of another and use it inappropriately.
- In addition, eating products that are intended to imitate non-Kosher products poses a concern of *Mar'is A'yin*—the prohibition of engaging in an activity that appears to be inappropriate.
- Non-dairy coffee creamers are often based on casein, which is indeed a dairy component. Although the government may mandate a Non-Dairy designation, the appropriate Dairy designation should appear conspicuously on the package.
- Even though margarine was created to replace butter, many types of margarine nonetheless contain dairy ingredients.
- Soy milk is often processed on dairy equipment and must be labeled “Dairy” even though it is designed to replace milk.
- Although soybeans are only *Kitniyos* and not *Chometz*, they may contain *Chometz* enzymes.
- Fruit ices and sorbet may not contain dairy ingredients but may nevertheless be processed on equipment used for ice cream and other dairy products. When such a product is indeed free of any dairy ingredients, it may be eaten immediately

after a meat meal. Some Kosher certifications employ a “Dairy Equipment”—or “DE”—designation to indicate such a status. Others, however, choose to mark all such products as “Dairy” to simplify their designation system.

- Imitation crab, lobster, and other shellfish may be made with surimi.
- Such products may be Kosher, provided that all ingredients are Kosher and the equipment on which they are processed has been properly Kosherized.

# The Story of Infant Formula

כאשר ישא האומן את הינוק

במדבר י"א י"ב

## As the Nursemaid Carries the Suckling Child

Numbers 11:12

Kosher-certifying agencies have taken upon themselves the responsibility of ensuring the *Kashrus* of the foods eaten by thousands and thousands of people. People who are meticulous in their adherence to *Mitzvos* (commandments) have intentionally placed trust in their work, and this *A'charayus* (responsibility) is taken very seriously. An entire class exists, however, to whom Kosher-certifying agencies are responsible without their express request: infants and children. *Chaza"l* teach us that non-Kosher food is *M'tamtem es ha'Lev* (corrupts the heart), and even a person who eats non-Kosher food should not be allowed to nurse a Jewish child because the non-Kosher food will become part of the milk that will be suckled by the child (*Y.D.* 81:7 *Rama*). Not only are the agencies responsible for determining the permissibility of foods for the general population, they have the added responsibility of effecting the nurturing of the spiritual well-being of the next generation.

Although mother's milk is the acknowledged ideal food for infants, it is often necessary to either supplement or replace mother's milk with a commercially prepared infant formula. Indeed, hospitals often begin feeding formula to infants soon after birth, especially if the mother is not up to nursing immediately. A number of *Kashrus* issues must be taken into account when choosing such a formula, so one must be aware of the various commercial products on the market and to make one's preferences known to the hospital as soon as possible.

(Before proceeding with a discussion of the *Kashrus* of the products available, please note that although a number of such products are not certified as Kosher, there are often *Halachically* compelling reasons to use them. If a physician recommends such products, one should never avoid using them without consulting a *Halachic* authority.)

Because infant formula is designed to emulate mother's milk as closely as possible, it must contain a source of fat, protein, amino acids, vitamins, minerals, sugar, and other micronutrients. Many of these ingredients can be obtained from non-Kosher sources, so formula fatty acids that are ideal for infant nutrition may be of animal origin, vitamins may come from non-Kosher fish, and micronutrients derived from an array of non-Kosher sources may be found in infant formula. As always, "reading the label" is a very inadequate means of ascertaining the Kosher status of an infant formula, because ingredients with potential *Kashrus* problems may be listed in a seemingly innocuous manner. For example, beef fat is referred to as "oleo" and "natural vitamins" may be obtained from non-Kosher fish oil. The same care that is routinely exercised in choosing Kosher adult foods must be used in choosing the foods for our children.

### **Dairy-Based Formula**

Most infant formulas can be divided into two categories—dairy-based and plant protein-based (usually soy). The distinction between

milk and soy products is important because many infants have difficulty in digesting dairy-based formulas and do much better on soy-based versions. In some cases, infants may have life-threatening allergic reactions to milk protein, and Non-Dairy status of soy-based products is critical. From a Kosher perspective, the distinction between dairy and Pareve formulas is important because of two considerations: First, those who use only *Cholov Yisroel* (specially supervised milk) would not accept formula produced with regular (unsupervised) milk. Second, dairy products may not be served on equipment designated for use with meat. Dairy-based products (such as Similac<sup>®</sup> and Enfamil<sup>®</sup>) use milk, casein, and possibly whey for the protein constituent, and lactose as a sugar, and are obviously certified as Dairy. Although most domestic dairy-based infant formula is not *Cholov Yisroel*, special productions of *Cholov Yisroel* formula have been made in the United States, as well as in Israel.

### **Soy-Based Formula**

Soy-based formulas (such as Isomil<sup>®</sup> and Prosobee<sup>®</sup>) use soy protein and dextrose or sucrose and, based on the ingredients, should have a Pareve status. Unfortunately, though infant formula manufacturers are fastidious in their cleaning procedures, these may not be sufficient to be considered a true *Kashering* to allow for a Pareve certification. Recent changes in production systems have therefore required a change from a Pareve designation for many of the soy-based formulas to a Dairy designation. To allay consumer concerns, however, the label specifically states that all ingredients are indeed Pareve, but the product is certified as Dairy because of equipment issues. However, to assure the public that such products contain no dairy ingredients, they are typically marked with a “Pareve ingredients produced on dairy equipment” designation.

Some powdered soy formulas, however, may still bear a Pareve designation.

### **Hypoallergenic Formula**

Although soy-based formula meets the non-dairy needs of most infants who cannot tolerate dairy-based versions, some babies require products that are more specialized. Such infants may require a formula whose protein has been partially or completely hydrolyzed—broken into its component amino acids to make it more easily digestible and hypoallergenic. Certain infants have an allergic reaction to various types of proteins; the baby’s body recognizes the protein structure as an allergen and reacts to it. If the protein is broken down to its constituent amino acids, the body does not recognize it as being from the offending source and no allergic reaction takes place. Products such as Nutramigen<sup>®</sup> and Allimentum<sup>®</sup> are hypoallergenic. Unfortunately, none of these products can bear a Kosher certification because of the non-Kosher ingredients used to effect the required hydrolysis. However, the use of these products may be *Halachically* appropriate for health reasons in certain cases, so a competent Rabbinic authority should be consulted whenever they are recommended by a pediatrician. The basis for permitting their use is that the protease enzymes used to hydrolyze the protein, although derived from animal sources, are *Batul*. In addition, they do not change the physical appearance of the product and would not therefore be considered a *Da’var ha’Ma’amid* (the concept that precludes applying the rules of *Bitul* to an ingredient whose presence is physically noticeable in the product). In addition, the fully hydrolyzed casein in these products has a very bitter taste, allowing for the *Bitul b’Rov* (nullification by a mere majority) of the hydrolyzed casein because of its flavor.

Another type of hypoallergenic infant formula relies on an alternative approach

to resolving this concern. Milk protein is composed of a variety of amino acids necessary for human nutrition. Milk, however, is not their only source. Individual amino acids are produced commercially through the fermentation of various types of carbohydrates. When the appropriate amino acids from such sources are combined, the resulting formula is as nutritionally complete as milk-based formula but has no milk allergens.

Proper infant nutrition is critical. All involved in providing for our children take the responsibility for both the best nutrition and the highest level of *Kashrus* most seriously.

### **The Bottom Line**

- Infant formula is designed to mimic the excellent nutrition afforded by mother's milk. It must therefore contain protein, fat, carbohydrates, vitamins, and minerals. Many of these ingredients, such as the fat component, may come from non-Kosher sources, so a reliable Kosher certification is imperative for them.
- Milk-based infant formula may contain any combination of milk, whey, and casein, some of which may pose significant Kosher concerns.
- The major brands of infant formula sold in the United States are Kosher certified, although they are not *Cholov Yisroel*. (Special productions of *Cholov Yisroel* formula, however, are available.) The use of dairy protein raises other concerns, however. Many infants cannot digest dairy-based formula based on cow's milk. To address this problem, vegetable-based non-dairy formulas have been developed, based primarily on soy protein. Many of these products cannot be certified as truly Pareve because they are processed on dairy equipment that has not been properly Kosherized. Even though they therefore nominally bear a "Dairy" certification, they typically bear a note that all of *ingredients* are indeed Pareve.
- Some infants require hypoallergenic formula, whose protein has been hydrolyzed into individual amino acids to the point at which the body does not recognize them as an allergen. Typically, milk proteins are hydrolyzed with the aid of non-Kosher, animal-derived enzymes, and these formulas do not bear a Kosher designation.
- Nonetheless, the amount of such objectionable material is minor, and using such formulas may be *Halachically* appropriate when necessary for health reasons. Rabbinic guidance should be sought in such cases.
- Hypoallergenic formulas may also be produced using discrete amino acids derived through fermentation. Again, a reliable *Hashgacha* is required.



# The Story of Insect Infestation

## מציץ מן החרקים

### Peering through the Insects

In the *Song of Songs* (2:9), King Solomon relates that *Hashem* was *Mashgiach min ha'Chalonos, Metziz min ha'Charakim*—“watching through the windows and peering through the cracks.” *Rashi* explains that this oversight is referring to the period of slavery in Egypt, where *Hashem* noted every assault on his people, as it says (*Exodus* 3:7), “I have seen the oppression that is Egypt,” and thereby hastened the redemption of *B'nei Yisroel*. When *B'nei Yisroel* carry out *Mitzvos*, they must also exercise keen oversight and vigilance, and the need for such scrutiny is no more apparent than in the requirement to inspect foods for “insect” infestation. Just as *Hashem* was *Metziz min ha'Charakim* (spelled with the Hebrew letter “*Koof*”)—“peered through cracks”—we must, pardon the e(n)tymology, be *Metziz min ha'Characim* (spelled with Hebrew letter “*Kaf*”)—“watch for insects”—in our scrupulous observance of this prohibition of eating bugs. The recent “lettuce crisis” relating to insect infestation indeed provides us with a new window into understanding a variety of *Halachic* issues.

### The Prohibition of Eating Insects

The *Torah* prohibits the consumption of many types of *Sh'ratzim*, such as insects, worms, and other “creepy crawlies.” Specific prohibitions govern those that live in rivers and lakes, those that creep on the ground, and those that fly in the air. The prohibition against eating forbidden insects is

so expansive that the *Talmud* (*Makos* 16b) notes that eating even one whole insect may occasion multiple transgressions. According to the *P'ri Chodosh*, the reason for this extraordinary compounding of prohibitions is the ubiquity of insects and the resultant ease by which one may easily transgress this prohibition. One must, therefore, exercise great care to avoid eating foods that contain insects and thereby transgress these prohibitions. As we shall see, however, not all “insects” are created equal.

The term “*She'retz*” refers to small, slithering creatures. In the case of terrestrial *Sh'ratzim*, these include small animals, such as mice. The short legs of such animals are not readily noticeable as they move, rendering their movement akin to slithering. Even small mammals, such as mice, fall into this category. Fortunately, we are not often faced with the problem of mice in our food supply. Other creatures that are considered *Sh'ratzim*, notably insects, worms, and crustaceans, however, do infest food. As we shall see, in many cases the *Torah* prohibits us from eating foods that may contain prohibited *Sh'ratzim*.

(It is also important to note that while the technical term “insect” is a precise scientific term referring to a specific class of arthropods, in discussing the prohibition of *Sh'ratzim* when we use the term “insect” it is in its nontechnical sense. For the purposes of our discussion, the word “insect” connotes any type of small, prohibited organisms—insects, crustaceans, and worms.)

## **Possible Exceptions to the Prohibition**

While the prohibition of insects is severe, not all insects are prohibited. To further understand the *Halachic* issues involved, it would be helpful to note certain circumstances where insects are indeed permitted.

### Grasshoppers

Certain species of grasshoppers known as “*Chagavim*” are specifically permitted in the *Torah*. This point has limited practical application, however, since *Poskim* (for example, *Ta”Z* 65:1) have ruled that, in most communities, the *M’sorah* (tradition) by which we may identify Kosher species of grasshoppers has been lost. Grasshoppers may thus be eaten only where the *M’sorah* has been maintained, which is generally limited to Yemenite communities.

### Worms in Fish

A more practical example of permitted *Sh’ratzim* involves those found in the flesh of fish. The *Talmud* (*Chullin* 67b) teaches us that worms that originate in the flesh of a fish have the same *Halacha* as the fish itself. As such, most authorities in the United States consider worms commonly found embedded in fish fillets *Halachically* acceptable. Many *Poskim* in *Eretz Yisroel*, however, argue that although these worms are found in the flesh, they are actually whole, visible worms that are swallowed by the fish that then migrate through its intestines into the flesh. Since *Halacha* dictates that *sh’ratzim* found in the intestines of fish are prohibited—and remain so even if they migrate into the flesh—they require an inspection of such fish fillets to identify and remove worms. All agree, however, that extreme care must be taken when removing the viscera from fish to ensure that the prohibited insects commonly found

in them do not escape into the flesh of the fish.

### Waterborne Insects

Aquatic *Sh’ratzim* is another category that has been dealt with extensively in *Halacha*—both historically and in current events. *Chaza”l* teach us that waterborne insects are prohibited only if they meet one of the following two criteria: The first involves the water in which they grow. *Sh’ratzim* that grow in the sea, rivers, and lakes are prohibited, whereas those that grow in containers and cisterns are permitted. The second stipulates that even *Sh’ratzim* permitted by the first rule become prohibited if they became separated from their original breeding environment. These rules were very significant in the days before modern plumbing, for they allowed a person to drink unfiltered water directly from a well, container, or a pit (although not from a river) even if insects were present. If such water were placed in a different container such as a bucket, or even in one’s hands, while the insects were alive, however, this dispensation would no longer apply. In such cases, we would be concerned that such insects may have traveled from the water to the surface of the container, which would qualify them as terrestrial insects not subject to this leniency.

### Vinegar Eels

A corollary to the issue of aquatic insects involves a type of nematode (a parasitic worm) called *Turbatrix aceti*, more commonly known as “vinegar eels.” While bugs in water may be of only passing concern, virtually all vinegar produced by classic fermentation is home to these parasites. (The sediment in vinegar tanks serves as an excellent food for them.) These worms can easily be seen swimming freely in unpasteurized vinegar, and have been the source of much

*Halachic* controversy. The *Poskim* have concluded, however, that such worms fall into the category of *Sh'ratzim* in containers and are thus permitted. From a practical perspective, however, this issue is essentially moot in modern vinegar production, since vinegar is generally pasteurized and filtered in the factory prior to use.

#### Microscopic Insects

Concerns over *Sh'ratzim* in vinegar, however, do afford us another important *Halachic* insight. With the development of the microscope, people realized that vinegar eels were but a miniscule part of the broad microscopic flora found in vinegar—and virtually all other liquids. The *Halachic* ramifications were obvious. If, indeed, magnifying optics revealed “bugs” in virtually all foods and liquid—or, for that matter, the air—how is one *Halachically* permitted to consume them? The answer to this question was unequivocal. All *Poskim* have concurred that *Halachic* requirements relate only to what can be seen by the unaided human eye. This approach has countless *Halachic* applications, from cracks in letters of a *Sefer Torah* to miniature scales on fish to minor blemishes on an *Esrog*. From a *Halachic* standpoint, what cannot be seen by someone with average eyesight has no *Halachic* standing.

#### Dried Insects

*Halacha* also teaches us that dead insects that have been left open to the air and thoroughly desiccated are considered *Afra b'Alma*—“merely dirt”—and are permitted. Although not particularly appetizing, this rule has practical applications in cases such as beans that have been dried and stored for twelve months. As long as one can be sure that no fresh insects have contaminated the beans during this period, they may be eaten without any further inspection. Canned or frozen vegetables, as well as sugary pre-

serves, are not subject to this leniency since these forms of processing tend to preserve the insects without dehydration.

#### The Copepod Controversy

While issues of aquatic *Sh'ratzim* might seem archaic given our advanced state of hygiene and modern municipal water systems, recent discoveries regarding the New York City water system have given us reason to appreciate the relevance of this *Halacha*. The municipal water authority in New York City considers its product so pristine that it does not require filtration. Unfortunately, a variety of small crustaceans, known as *copepods*, find a home in the New York City reservoir system and, since the water is not filtered, into city taps. *Halachic* authorities have grappled with the potential that drinking the water in one of the greatest cities in the world may involve an *Issur d'Oryssa* (Biblical prohibition)! While copepods have been in New York City water for years, their recent exposure to public scrutiny has created a virtual “water crisis” in the city.

Various approaches have been taken to address this new “Watergate” crisis. Some authorities have ruled that one may not drink the water in New York City (in the New York area, only water in New York City itself is in question) without filtering it to remove the offending copepods. Indeed, most *Hashgachos* in the city—restaurants, factories, and caterers—have installed such filters. Other authorities, however, have advanced several rationales to be lenient. Some reasons are based on an analysis of the points already discussed. First, the copepods grow and die in the reservoirs that do not have “free-flowing” water, which, they argue, have the *Halacha* of a cistern. As such, the copepods would be permitted entities per se. Others, however, point out that those large reservoirs may nevertheless be considered “*Shichin*”—“flowing pools”—and thus it results in a disagreement among the *Poskim*. Additionally,

as noted before, taking water from a well and placing it in a container poses other concerns—and most of us do not drink directly from the tap! A second point involves the size of the copepod itself. While we have noted that microscopic insects are permitted and those visible to the naked eye forbidden, copepods fall somewhere in the middle. In many cases, an observer may notice “something” in the water, but would be hard-pressed to actually discern that it was a living creature. Even when looking very carefully, without using a magnifying glass a copepod may be virtually indistinguishable from other eminently Kosher impurities commonly found in water. If we consider such insects to be *Halachically* unrecognizable, they may also be permitted. Others, on the other hand, argue that such insects nonetheless constitute a “recognizable” bug. A third argument involves the question of the level of infestation. If the frequency of finding copepods in tap water is very low, one may be able to rely on the *Halachic* concept known as “*Rov*”—the majority—to drink such water without checking for such infestation. The question then becomes how frequently one can expect to find a bug in a glass of water. As we shall see, some of these points will figure prominently in the most recent “Lettucegate” crisis.

In all of the above cases, however, it is important to note that even where these insects may be technically permitted, their consumption might still be proscribed under the concept of *Bal T'shaktzu*—engaging in disgusting behavior.

### **Prohibited Insects**

#### Derivatives of Insects

While insects may be considered a delicacy in some cultures, Western cuisine does not feature them. Indeed, *Chaza"l* (*Avodah Zarah* 68b) considered them disgusting. As such, most people might think that

they would never knowingly eat an insect. In truth, however, many insect products may be permitted and, indeed, are part of everyday fare. Honey, an ancient and common sweetener, is the quintessential product of the prohibited bee and yet is clearly permitted, as explained in the *Talmud* (*B'choros* 7b). Other bee products also find their way into the food chain. Most *Poskim* concur that beeswax is Kosher, and many permit a product called royal jelly. Shellac, a wax produced by the lac insect, is commonly used to provide a shiny coat to candies. It is often listed under the euphemisms “lac resin,” “resinous glaze,” or “confectioners glaze,” and many, though not all, *Poskim* permit its use. Carmine (also called cochineal) is a red color produced from the dead bodies of the cochineal insect and is prized for its deep color and stable qualities. The *Halachic* status of this material is subject to much debate (according to some it was the *Tola'as Shani*—literally, “the red worm”—mentioned in the *Mishkan* (*Exodus* 25:4)), but most *Kashrus* authorities do not permit its use.

#### Whole Insects

Other than those exceptions noted above, virtually all other insects are subject to a Biblical prohibition. A corollary of this prohibition enjoins us from eating a food that contains a prohibited *Sheretz*. Since fruit and vegetables (with the notable exception of vegetables grown in special hot houses, see below) grow in open areas and may contain prohibited insects, their consumption poses significant *Halachic* concerns. As such, it is important to understand how this prohibition affects our ability to eat many types of fruit and vegetables.

Three factors usually govern the *Halacha*—*Rov* (the majority), *Nir'eh l'ay'nayim* (visible to the normal eye), and *Bitul* (nullification). By analyzing the *Halachic* application of these concepts, we

can understand which and how fruit and vegetables may be eaten. (The term “produce” refers to both fruit and vegetables, and for purposes of this discussion these terms may be used interchangeably.)

When dealing with the concept of *Rov* as regards insect infestation, produce can be divided into three groups. Vegetables in which insects are not commonly found are referred to as *Miyut she'Ayno Matzuy*—an uncommon minority. A vegetable that falls into this category is not subject to a concern that an insect may be secreted in it, and such a vegetable may be eaten without any inspection, although some authorities still recommend a limited inspection, as far as practical. On the other hand, vegetables that are commonly infested are called *Muchzak b'Tola'im*—meaning that a majority of samples would be expected to contain an insect. Such vegetables are subject to a Biblical requirement to inspect each piece to verify that it is insect free. Many vegetables, however, fall into a third category called *Miyut ha'Matzuy*—meaning that although only a minority of such vegetables would be expected to exhibit insect infestation, such infestation is nevertheless considered relatively common. Before eating such vegetables, there is a Rabbinic requirement to check for infestation.

The determination of which vegetables fall into each category depends on the type of vegetable, as well as its locale, and season of growth. For example, people who lived in Europe may remember checking each cherry before eating it, while in the United States we eat cherries without any checking whatsoever. The reason for this difference is that modern pesticides were unknown until recently. As such, Old World fruit was often infested, and had the status of either *Muchzak b'Tola'im* or *Miyut ha'Matzuy*. Modern orchard management, however, uses chemicals and procedures that allow such fruit to reach the market reasonably insect free, allowing such fruit to fall

into the category of *Miyut she'Ayno Matzuy*. This dichotomy between the Old and New Worlds, however, remains in dealing with many other types of produce. Please also note that all assumptions relating to agricultural practices are subject to change, and must be reviewed on a regular basis. In addition, organic produce, which eschews the use of synthetic pesticides, often has a greater propensity to insect infestation.

The designations of *Miyut she'Ayno Matzuy* and *Muchzak b'Tola'im*, as well as the appropriate *Halachic* approach to them, are fairly straightforward. Fruit and vegetables that rarely exhibit infestation, such as apples and cucumbers, are clearly in the category of *Miyut she'Ayno Matzuy*. They may be eaten without any special inspection, and one is not required to look for bugs in such situations. Indeed, even if one or two insects are found, they are of no *Halachic* consequence, although the bug should certainly not be eaten. Finding three or more bugs, however, may change the food's status to *Muchzak b'Tola'im*, creating a requirement to check the entire lot. Fruit and vegetables that are generally infested over 50 percent of the time are considered *Muchzak b'Tola'im*, and each individual piece must be inspected prior to consumption.

The category of *Miyut ha'Matzuy*, however, is less clear. Some authorities rule that an infestation rate of less than 10 percent allows one to consider the fruit or vegetable to be considered a *Miyut she'Ayno Matzuy* and thus free from concern. Any frequency above this confers a status of *Miyut ha'Matzuy*, and the fruit or vegetable must be inspected. Others feel that the cut-off point is 7 percent. In addition, there is a disagreement as to whether one computes the percentage based on individual “servings” or produce “bundles” representing the normal unit of the produce. Produce bundles typically contain more than one serving, thus potentially yielding a higher computed incidence of infestation. Still others reject

the use of an arbitrary percentage, but rather look at the broad expectation of commonly finding an insect. One should therefore conduct himself according to the instruction of his *Posek*.

### **Approaches to Deal with Miyut ha'Matzuy**

Basing himself on a ruling of the *RaShB*"A, the *Rama* (*Y.D.* 84:8) rules that once a fruit is considered in the category of *Miyut ha'Matzuy*, one is required to inspect *each* fruit or vegetable individually. (He specifically states that one cannot rely on the checking of the majority.) As such, many common fruit and vegetables should not be eaten unless thoroughly inspected. (A definitive listing of the status of specific fruit and vegetables at any one time or place is beyond the scope of this essay.) However, three additional factors may serve to mitigate this requirement.

The first involves the concept of *Nireh l'Ayin*—the requirement that a prohibited insect be visible to the unaided eye. Should the insect be so tiny as to be imperceptible to a person with normal eyesight, it would pose no *Halachic* concern. If it can be seen and identified by a person with normal eyesight, albeit only under careful inspection, it would be prohibited. One situation, however, poses an interesting question—if the presence of an insect can be noticed but cannot be *identified* as an insect without further magnification. Some authorities posit that although it may look like a spec of dirt, it nevertheless qualifies as a “visible”—and prohibited—entity. Others, however, argue that it cannot be considered a “visible” insect unless it can be so identified. Again, one should follow his *Posek* in this matter.

A second mitigating factor involves the concept of *Bitul* (nullification). Under normal circumstances, mixtures containing forbidden components are permitted if the offending material is less than one part to

sixty (about 1.6 percent) of the whole mixture and not intentionally added. One could therefore argue that since levels of infestation are generally below that level, most produce should be permitted without any further concern. There are two problems with applying the concept of *Bitul* to vegetables, however. Most authorities rule that since an inspection can identify an insect mixed with vegetables, they are not considered a true “mixture”—a *Ta'aroves*—subject to the rules of *Bitul*. In addition, even if it were considered a *Ta'aroves*, insects generally have the *Halacha* of a *Beryah*, a “complete” item, and a *Beryah* is not considered *Batel* regardless of its ratio in the mixture.

It should be noted that some authorities are lenient on both points. First, the *Aruch ha'Shulchan* (*Y.D.* 100:13–18) reasons that insects mixed in vegetables qualify as a legitimate *Ta'aroves*, since most small insects are not readily visible or removable. Second, he quotes a number of authorities that allow a *Beryah* to be considered *Batel* at a ratio of 960 (by volume), which is generally the case with infested vegetables such as lettuce. Further, he quotes authorities that the rule of *Beryah* may not apply to disgusting creatures, such as *Sh'ratzim*. The *Aruch ha'Shulchan*, while not minimizing the need to check for insects, nonetheless argues that a basis for leniency does indeed exist. (Some contemporary *Poskim* have ruled that one may rely on *Bitul* when dealing with frozen broccoli, since these products are washed very well and any remaining insects are so enmeshed in the florets that they would be considered *Ta'aroves*. As regards the issue of *Beryah* not being subject to *Bitul*, these authorities note that this rule is only *d'Rabbonon* [Rabbinic], and since there is only a *Safek* [doubt] that an insect is present, a *Safek Beryah* would be considered *Batul*. Most authorities, however, disagree with this approach.)

*Bitul*, however, may nevertheless be applicable where it can be assumed that

the insect has been dismembered and is no longer a complete entity. Ground or pureed fruit and vegetables may therefore be permitted even where the infestation level is *Miyut ha'Matzuy*. (This is the basis for permitting raspberry puree.) It should be noted that while grinding a fruit may indeed render the offending insects *Batel*, it may raise a new issue of *Ayn M'vatlin Issur l'Chatchila*—one may not intentionally cause the *Bitul* of a prohibited item. Many *Poskim* have ruled, however, that where the existence of insects is only a *Safek* (a doubt) and the grinding is done to make the desired product and not for purposes of *Bitul*, it is not subject to this concern.

In addition, the *RaShB" A* rules that cooked produce may also be permitted in such circumstances, based on the concept of *S'fek S'feka* (double doubt). Since we do not know that there are insects in the food (one doubt), and even if there were insects inside, they might have disintegrated during cooking (second doubt), the cooked item would be permitted for consumption. (This is the basis for permitting raspberry preserves.)

A third mitigating factor involves establishing a *Chazakah*—a *Halachic* presumption—that a given batch of produce is not infested. Some *Poskim* are of the opinion that if three or more samples of a specific lot are found to be insect free, one may assume that the entire lot has a *Chezkas Kashrus* and is no longer a *Miyut ha'Matzuy*. Although this theory had been proposed by Rav Shlomo Kluger *zt"l* (*Tuv Ta'am v'Da'as O.C.* 123), he is less than sanguine with the concept since it does not seem to comport with the *RaShB" A* (as quoted by the *Rama* noted earlier) that requires that the *entire* lot be checked. He concludes that perhaps this approach may be appropriate where it is virtually impossible to inspect the entire lot, but does not sanction it unequivocally. On the other hand, some of Rav Aharon Kotler *zt"l*'s students have quoted him as having endorsed this approach.

With this rather detailed presentation of the *Halachic* background of the prohibition of *Sh'ratzim*, we can now address the most recent “lettuce crisis.”

## Lettuce

Although the issues involved in dealing with this vegetable are *Halachic*, a bit of history should serve to explain some of the enigmas relating to the controversy. Lettuce is an ancient vegetable, enjoying a royal pedigree from the times of the Romans, for whom romaine lettuce is named. The *Talmud* (*Avodah Zarah* 11a) relates that *Rebbe* and the Roman emperor Antoninus demonstrated their royalty as the scions of the families of *Yaakov* and *Esav* by enjoying lettuce regardless of the season. (“Romaine” lettuce indeed derives its cognomen from its popularity in Rome. Its traditional name was “*cos*”—“*Chasa*” in the language of the *Mishnah*.) Such regal recognition, however, has not always been the lot of this lowly member of the sunflower family.

Not long ago, America was known as the “meat and potatoes” country. Green, leafy plants were not food—they were what “food” ate! To be sure, people ate salads, but these were invariably made from “simple” greens and, given the perishable nature of such vegetables, were limited to locally grown produce. With the advent of refrigerated transport, however, the Salinas Valley in California became the “Great Salad Bowl of America”, shipping millions of pounds of “crisphead” lettuce under ice—hence the name “iceberg”—throughout the United States. Iceberg lettuce grows in a compact head that allows for easy and safe shipping, and this ease of distribution helped to make it the standard lettuce in the American diet. Ironically, these traits had a *Kashrus* advantage, too. Of all leafy vegetables, iceberg lettuce is the least susceptible to infestation. In contrast to open leaf lettuce, insects find it difficult to nestle in the iceberg’s tightly packed leaves and, even when

present, the absence of intricate folds provides little place for them to secrete their special glues that enable them to become attached to the lettuce. As such, insects that may be found in iceberg lettuce are more readily noticeable and easier to wash away.

### **Iceberg versus Romaine**

This erstwhile convergence of *Kashrus* and cuisine, however, has recently come under assault. Iceberg lettuce has a rather pale-green color, while varieties of open leaf lettuce—romaine, big, and Boston, for example—have a much darker hue. As a rule, the darker green the leaves, the more nutritious the vegetable. In addition, the greener varieties of lettuce generally have more pronounced flavors and differing textures, all conspiring to topple the iceberg from its once commanding preeminence at the salad bar. This culinary succulence, however, does not come without a price—at least from a *Kashrus* perspective. Research indicates that the reason for the greener color and greater nutritional value of such lettuce is precisely because they are open to the sun. Unfortunately, being open to the sun's providence also means it is open to hosting insects, which is precisely what they do and, once the insects do take up residence in the nooks and crannies of the leaf, they are much harder to find and dislodge. Ensuring the *Kashrus* of such varieties of lettuce, therefore, requires much greater diligence in verifying the absence or removal of prohibited insects. Indeed, Rav Aharon Kotler *zt"l* is reputed to have fulfilled the *Mitzvah* of *Maror* by eating iceberg lettuce to avoid the possibility of eating an insect, reasoning that the *Halachic* characteristics of iceberg and romaine are identical—they both exude a bitter sap. (The term “lettuce” actually derives from the Latin *lactuca*—which referred to the milky, bitter juice that one sees in older lettuce stalks [“*lac*” is Latin for “milk”] that exudes from both iceberg and

romaine lettuce.) He felt that it was more important to be stringent regarding the Biblical prohibition of insects and less stringent regarding what today is the Rabbinic requirement of eating *Maror*!

The problem of insect infestation of lettuce was further exacerbated by restrictions on the use of pesticides that began in the 1970s due to recognition of the harmful affects of many common insecticides, such as DDT. Growers now develop integrated pest management programs, balancing the need to keep insects at an “acceptable” level against the costs of such control and its ecological impact. The resulting resurgence of insects, coupled with both government and industry policies that accept a “tolerable” level of insects in produce, have conspired to create a significant Kosher problem since such “acceptable” levels may not be *Halachically* acceptable.

### **Bagged Lettuce**

Historically, Kosher consumers were able to deal with this problem by washing and inspecting their own lettuce. Although requiring time and effort, checking whole leaves of lettuce was considered part of keeping a Kosher household. The current “lettuce crisis” can be partially blamed on the general trend in the food industry for “ready-to-eat” foods. Consumers have embraced “instant” foods as quickly as technology has made them available. We make instant soup, bake instant cookie dough, and microwave instant dinners—complete with dessert. All that was missing for an “instant-and-balanced” meal was an “instant” fresh salad.

One might think that it is a simple matter to wash salad and put it into a plastic bag. Alas, anyone who has tried to save a fresh salad by placing it in a plastic bag in the refrigerator knows that it is not long for this world. Plain plastic bags suffocate the lettuce and render it inedible after just a few days, making such a product unfeasible for



mass marketing and distribution. This problem was resolved in the 1990s by the development of selective barrier film materials. These special plastic film materials allow the lettuce to “breathe,” providing for the transfer of oxygen, carbon dioxide, and moisture in a controlled manner. This development, along with modifying the atmosphere within the bag, allows for a relatively long shelf life for fresh, bagged lettuce. Today, merely opening a bag of mixed greens to make an instant salad completes the meal, and packages of croutons and dressing are often included in the bag, creating another set of *Kashrus* concerns.

The problem, of course, is ensuring that this type of lettuce is insect free. It is one thing to inspect whole leaves of lettuce, but quite another to check a chopped salad. If we accept the fact that lettuce falls into the category of *Miyut ha' Matzuy*, then we should be required to check *every* piece of lettuce in the bag, obviating the benefits the product was designed to confer. The consumer would, therefore, much prefer having someone else check the lettuce, certify it as Kosher, and then buy the bagged lettuce with a *Hechsher*. It is to meet this need that *Kashrus* organizations have attempted to devise *Halachically* acceptable certification programs for bagged lettuce.

Kosher-certification programs for such products rely ultimately on creating a situation where we may *Halachically* assume that the bagged lettuce is a *Miyut she'Ayno Matzuy*, in which case there would be no requirement for any further checking. Indeed, if such a status could be appropriately attained, one would be permitted to eat such lettuce on a regular basis—*sans* checking—even though there may be a distinct probability that he will eventually eat a bug! The creation of *Miyut she'Ayno Matzuy* is based on three considerations, and it is the approach to each consideration that distinguishes the various *Hashgacha* programs for certifying these products.

The first consideration involves the cleanliness of the raw product as it arrives from the field. Cleaning systems (as discussed below) are more successful in removing bugs from lightly infested produce. In situations of heavy infestation, there is a much higher probability of bugs remaining. As such, some *Hashgachos* refuse to certify leafy greens (for examples, romaine, Boston, and bib lettuce) that are especially prone to significant infestation. To address this infestation issue, some *Hashgachos* require that a *Mashgiach* inspect the field prior to harvesting to determine its cleanliness. Others may rely on a *Mashgiach* at the factory inspecting the incoming product, while others rely on the company's quality control systems to ensure that only relatively clean product is processed. The problem with the latter approach is that most companies are quite content with accepting a *Halachically* significant—and unacceptable—level of initial infestation.

The second consideration is the washing system itself. The key to a “Kosher” washing system is to develop a method by which the water is sprayed with sufficient force to dislodge the insects, but without pulverizing the lettuce. The size into which the leaf is cut is also a factor. Larger leaves provide a greater haven for the bug than chopped product, but are also more desirable in a salad. Some *Hashgachos* certify only thinly chopped lettuce, while others allow much larger pieces. Some *Hashgachos* decline certification to certain curly vegetables due to a concern that they cannot be properly cleaned. It is important to note, however, that while no washing system has yet been devised that is proved to remove *all* bugs, they may reduce the level of infestation to *Halachically* acceptable levels (that is, *Miyut she'Ayno Matzuy*).

The third consideration involves postprocessing inspections, which can take place either in the factory or after the product has been packaged and delivered. Some *Hashgachos* allow a company to ink-jet a Kosher

symbol on the bag and rely on spot sampling of product off-site. In the event that a significant infestation is noted, the company is advised to stop printing the *Hashgacha* on the bags until the issue has been resolved. The problem with this approach is that the inspection does not take place in “real time”—it may be days or even weeks before a problem is detected and corrective action taken. A better approach is for the Kosher symbol to be affixed *after* it has passed the requisite inspections. In such systems, cases of packaged product are delivered to a distribution center where sufficient random samples are analyzed to establish a *Miyut she’Ayno Matzuy* status. At that point, special labels indicating the name of the product and the *Hashgacha* are placed on the bags of that shipment.

In reality, a synthesis of all three approaches is required for us to consider the product a *Miyut she’Ayno Matzuy*. Checking a field alone is insufficient, as we are required to look at the *general* conditions of the vegetable as it grows in that area, not just a specific field. Washing alone is insufficient, since no cleaning system has proved *Halachically* reliable for this purpose. Post-packaging inspection alone is not reliable, because the *Halacha* requires that *each* vegetable be checked if it has the status of a *Miyut ha’Matzuy*. Many *Poskim* have concluded, however, that a combination of all three does indeed create a status of *Miyut she’Ayno Matzuy*.

The recent withdrawal of certification of bagged romaine, Boston, and bib lettuce—and their subsequent recertification—was based on these considerations. Since insect infestation in these types of lettuce is considered a *Miyut ha’Matzuy*, they could only be permitted if the cleaning and monitoring system was deemed sufficient to address this level of infestation. Some certifications had assumed that lettuce-washing systems were sufficiently thorough to remove virtually all insects, and when this assumption

was found to be faulty, the certification was withdrawn until appropriate systems could be developed. Iceberg lettuce, on the other hand, does not exhibit such a level of infestation and thus was never decertified.

Another approach to dealing with insects in lettuce is to grow them insect free. This has indeed been accomplished by some companies in Israel, where lettuce and other vegetables are grown in special hot houses designed to keep the unwanted critters out. However, while they have been successful in protecting the crop from most insidious pests, they could not prevent certain flying insects from landing on the crop after it was harvested. Fortunately, however, these flies are easily noticeable and wash off readily with a simple water rinse, and customers are therefore admonished to rinse these products before use. To ensure that this directive is heeded, the lettuce is sprayed with “clean” sand prior to packaging, making them virtually inedible without compliance! Customers can take solace in the fact, however, that they are free of the need to check them.

Ultimately, there should be no shortcuts in *Kashrus*. Salads, as nutritious as they may be, must be approached with the same attention to *Kashrus* that we apply to all other foods. We may be tempted to take the easy way out, but King Solomon has already, and poignantly, admonished us (*Proverbs* 6:6), “Go to the ant, lazy one—see its ways and learn!”

### **The Bottom Line**

- Kosher law prohibits the consumption of most terrestrial, aquatic, and airborne invertebrates. (Although certain species of grasshoppers are permitted, the tradition required to identify them has been lost in most communities.)
- Worms found in the flesh of fish are permitted, while those found in the viscera are prohibited. Some authorities prohibit

- even those found in the flesh, arguing that they may have originally entered the fish through the alimentary channel.
- Certain aquatic insects found in containers and cisterns may be permitted, provided they are not removed from their natural habitat. This rule may be significant in dealing with copepods that inhabit certain municipal water systems.
  - Many authorities permit vinegar-container vinegar eels. Today, virtually all vinegar is filtered to remove these parasites.
  - Only those insects that are visible to the naked eye are prohibited. Microscopic organisms are permitted.
  - Insects that have been dried for twelve months are considered as dust and are permitted.
  - Derivates of prohibited insects are generally prohibited, with the following exceptions:
    - Honey from bees is specifically permitted, and most authorities accord the same status to beeswax. Some authorities question the status of royal jelly.
    - Many authorities permit the shellac, the waxy exudation of the lac insect, although most *M'hadrin* certifications eschew its use.
    - Most authorities prohibit carmine and lac dye.
  - Vegetables and fruit that may contain insects are divided into three categories:
    - *Muchzak*—infested to the point where a majority of samples are infested;
      - *Miyut ha'Matzuy*—a common minority are infested; and
      - *Miyut she'Ayno Matzuy*—an uncommon minority are infested.
  - Products that fall into the category of *Muchzak* may not be eaten unless each individual fruit or vegetable is inspected.
  - Products that fall into the category of *Miyut ha'Matzuy* must also be checked. The level of checking required is subject to many factors.
  - Products that fall into the category of *Miyut she'Ayno Matzuy* may be consumed without inspection, although some still recommend a cursory check.
  - As a general rule, insects cannot be considered *Batul* (insignificant when mixed into a large amount of permitted items) because they are a *Beryah*—a complete item. In situations where the integrity of the insect may assume to have been compromised—where the food is ground or cooked—such a mixture may be permitted.
  - Romaine and similar types of curly lettuce pose a significant concern of insect infestation and require careful inspection.
  - The Kosher approval of prewashed, bagged lettuce poses significant Kosher concerns, since the washing process may not be adequate to remove all insects.
  - Some companies sell romaine lettuce that had been grown in specially sealed hot houses, greatly reducing their exposure to insect infestation.

# The Story of Juices

## מעסיס רמני

שיר השרים ח' ב'

### From the Juice of My Pomegranate

*Song of Songs 8:2*

As summer approaches, we look to cool, refreshing drinks as a respite from the hot weather. Although *Rashi* (*Rus 2:14*) notes that *Boaz* recommended vinegar to slake one's thirst, most people today would find the concept of drinking vinegar a bit hard to swallow. Fruit juices, on the other hand, have consistently enjoyed popularity from the days of *Yosef*. In North America, orange juice has become synonymous with breakfast, and apple juice and cranberry juice *cocktail* are staple soft drinks. The passion for fruit drinks, however, is not limited to these species. Rather, it is expressed in any fruit indigenous to a given country and locale—even if less than appreciated elsewhere. For example, the *durian* is considered the “king of fruit” in Southeast Asia and its juice much coveted as a delicacy—yet those Westerners unaccustomed to its peculiar fragrance consider its smell akin to that of sewage. Clearly, appreciation of some fruit juices is an acquired taste. When dealing with the *Kashrus* that attend fruit juice, we are similarly required to acquire the appreciation for the *Halachic* intricacies involved, and these are the subject of this essay.

#### **Fruit Juice from Israel**

The first *Kashrus* issue that must be addressed involves the Kosher status of the fruit from which the juice is extracted. Essentially, such *Kashrus* concerns revolve

around several sets of *Halachos*—those relating to *Orlah*, *T'rumos u'Ma'asros*, and *Sh'mitah*. As we shall see, these issues are generally of concern only to Israeli produce.

The law of *Orlah* stipulates that one may not eat fruit produced by a tree for the first three years after it had been planted (or replanted). In general, this *Halacha* has little practical application for *commercial* fruit produced outside of Israel, since the *Halacha* states that *safek Orlah*—where one is unsure if a fruit is *Orlah* or not—is permitted outside of Israel. (If one actually plants or transplants a tree and *knows* that the fruit is *Orlah*, then it would indeed be prohibited anywhere in the world.) In Israel, however, many types of fruit—such as grapes—actually require a *Hashgacha* for *Orlah*, since they are produced from plants that are routinely transplanted. In addition, *all* fruit in Israel require a *Hashgacha* to ensure that *T'rumos u'Ma'asros* (tithes) had been properly separated and that the laws of *Sh'mitah* (the Sabbatical Year) had been properly observed. These requirements create a significant concern for fruit juice exported from Israel, since *T'rumos u'Ma'asros* are generally *not* observed on product destined for export. Fruit grown on *Sh'mitah* poses an additional concern in that leniencies relied on by some authorities in Israel regarding *Sh'mitah* are generally not accepted by many other *Halachic* authorities. As such, *any* fruit juice originating in Israel requires a reliable *Hashgacha*.

## Grape Juice

Another *Kashrus* issue relating to the juice itself concerns grape juice. Grape juice, as well as the wine produced from it, is unique in that it is subject to the laws of *S'tam Yaynam*. This rule stipulates that any grape juice handled by a non-Jew becomes non-Kosher, regardless of the inherently Kosher status of the grape itself or the purity of the juice. As such, all Kosher grape juice is produced by *Mashgichim*, who operate the presses and control all aspects of the juice production. Grape juice, of course, is of particular importance, as it is often used in place of wine for *Kiddush* and *Havdalah*.

Grape juice has other important uses, however. Juice products boasting the fact that they contain “100% Juice” often include substantial amounts of grape juice, even if this may not be indicated in the product name. For example, “Orange Fruit Punch—100% Juice” may be mostly grape juice! The reason for this is that light grape juice is relatively inexpensive, has a mild and unobtrusive flavor, and is very sweet. By using grape juice, manufacturers can also avoid adding regular sugar and thus include the consumer-friendly claim of “No Sugar Added,” as well as “100% Juice.” Grape juice also finds its way into cookies, jams, and other products as a natural “nonsugar” sweetener. Although the glucose (or “*Traubenzucker*”—“grape sugar” in German) in grapes is as much a sugar as cane sugar, labeling legerdemain allows the claim of “No Sugar Added” when using juice instead of pure sugar.

From a *Kashrus* perspective, of course, the ubiquitous use of non-Kosher grape juice creates a significant concern. Fortunately, a number of large grape juice manufacturers—in both North and South America—have arranged to produce substantial amounts of Kosher grape juice concentrate for such industrial needs. Since this juice is “*Mevushal*”—cooked—it is no longer subject to the rules of *S'tam Yaynam*, and may be handled

by non-Jews and used in general production without compromising its Kosher status. As such, this Kosher grape juice indeed finds its way into a myriad of juice products that are produced for the general market, which may now be certified as Kosher.

## Colorings

One of the allures of fruit juice is their vibrant colors—orange juice is “orange” and “red” grape juice is “red.” Some types of juice products, however, may exhibit a slight “color deficiency,” which food technologists are prepared to remedy. Many fruit punch products contain artificial colors (such as Red #40), which pose no significant *Kashrus* concerns. When dealing with “100% Natural” juice products, however, companies prefer to use natural instead of synthetic colorings, and many natural coloring agents do pose significant *Kashrus* concerns. This is especially significant in the case of cranberry juice *cocktail*. Cranberry juice is much too astringent to be used alone—it must be diluted with water and sweetened with sugar (or other juices) to make a *cocktail*. Such blends typically contain only 25–27 percent cranberry juice and, depending on the quality of the cranberry juice, may yield a product with a paler red color than would be desirable. Some companies use a red color called *carmine*—otherwise known as *cochineal extract*—to boost the color. However, the cochineal is an insect, and most authorities rule that the color may not be considered Kosher. Another natural color often used for this purpose is called *enocianina*—grape skin extract. However, since this color is derived from grape during non-Kosher grape juice production, the color may also be considered non-Kosher. Another color that creates *Kashrus* concerns is called *canthaxanthin*, which is a type of carotenoid and related to beta carotene. Although this chemical poses no significant *Kashrus* concerns per se, it is generally blended with gelatin,

which would compromise its Kosher status. On the other hand, extracts of red cabbage, beets, and plums meet both natural and Kosher requirements.

### ***Vitamins, Minerals, and Nutraceuticals***

Fruit juice production often involves the inclusion of vitamins and other nutritional supplements. Traditionally, vitamin C is added to apple and grape juices, since they naturally contain relatively small amounts of this nutrient. So fortified apple and grape juices can compete nutritionally with orange and other citrus juices that naturally contain far more vitamin C. Vitamin C is produced through the fermentation of sorbitol, and generally poses no significant *Kashrus* concerns for year-round use. However, it may be *Chometz*, and many companies therefore omit its use in juices certified for *Pesach*.

Recently, however, juices have been used as vehicles for the introduction into our diet of nutritional components naturally absent in fruit juice. Calcium is an essentially nutrient and is found in abundance in milk—but not in juice. For a variety of reasons, many people limit the amount of milk they consume, so juice companies have begun fortifying orange juice with calcium. In some cases, the calcium used is indeed derived from milk, in which case the orange juice would be considered dairy. More commonly, however, the calcium is in the form of tricalcium phosphate, calcium lactate, or calcium citrate, which are derived from non-dairy sources. A recent adjunct to calcium fortification has been the inclusion of vitamin D in the product. Just as vitamin D is added to milk to aid in the body's assimilation of calcium (and thus prevent rickets), it was found that it served the same purpose in calcium-fortified orange juice. In general, vitamin D poses little *Kashrus* concerns.

The versatility of orange and other types of juices—and the creativity of their

producers—has been further extended with the inclusion of *nutraceuticals*—a term used to connote the synthesis of nutrition and pharmaceuticals. One major orange juice company introduced an orange juice product fortified with plant sterols, claiming that it could reduce the cholesterol levels in people who consumed it. (The FDA subsequently ruled that there were insufficient scientific evidence to support this claim, and the company agreed to cease making it.) Plant sterols are generally produced from soy oil distillate, which requires a reliable *Hashgacha*. A Scottish biotech firm has also developed a fruit juice fortified with the omega-3 fatty acid DHA (docosahexaenoic acid), which is believed to prevent cardiovascular disease and is critical to brain and eye development. DHA is often produced from fish oil and thus also requires a reliable *Hashgacha*. Clearly, not all types of orange juices are just for breakfast—or inherently Kosher—any more.

### ***Processing and Pasteurization***

In addition to ingredients that may be added to juice for color or nutrition, some ingredients are used only to aid in processing. Certain types of enzymes are used during the pressing of apples and grapes to break down the pectin and cellulose in the pulp and thus allow more juice to be extracted. While such enzymes are generally Kosher, they may pose *Chometz* concerns for *Pesach*. Apple and grape juices are often filtered to remove the haziness associated with the raw juice, and gelatin is often used as a filtering aid. The gelatin does not remain as the final product and some authorities therefore permit the use of non-Kosher gelatin for this purpose. Most *Hashgachos*, however, insist on other filtering processes.

Today, most juice products are pasteurized, which kills pathogenic bacteria and increases the shelf life of the product. Since pasteurization involves heating the product,

the equipment used to pasteurize non-Kosher product may not be used for Kosher production unless it has been properly *Kashered*. Products commonly processed that may compromise the Kosher or Pareve status of such equipment include (non-Kosher) grape juice, clam-flavored tomato juice, and dairy-based beverages. For this reason, a reliable *Hashgacha* is important for *all* juice products.

The *Midrash (Shir ha'Shirim Rabah 8:2)* explains the verse, “I will give you to

drink from spiced wine and the juice of my pomegranate” in the following manner: The spiced wine—a strong drink—refers to the detailed *Mishnayos*, the *Halachic* words of the great *Tana'im*. The juice of the pomegranate, on the other hand, refers to the *Agadic* parables that are the sweet nectar of the pomegranate. By studying the *Kashrus* issues relating to the juice, we may merit a full understanding of both the *Agadic* and *Halachic* riches of our *Torah*.

# The Story of Kitniyos

בין תבין  
משלי כ"ג א'

## Know Thy Beans

Of the many *Minhagim* (customs) that we are privileged to enjoy on *Pesach*, the *Halachic* discussion surrounding the concept of *Kitniyos* is especially fascinating. In truth, the custom itself is somewhat enigmatic, and its application and permutations could fill volumes. The purpose of this essay is to give the reader a basic understanding of the concept of *Kitniyos*, its historical and *Halachic* basis, and some interesting practical applications.

### Chometz and Kitniyos

The basic rule is that one must eat *Matzah* on *Pesach* and may not eat (or own) *Chometz*. By definition, both these products hail from the same raw material—the five major grains: wheat, rye, oats, barley, and spelt. *Chaza"l* teach us that these—and only these—grains can become *Chometz* when they ferment. The fermentation of all other foods, whether we call them a “grain” or not, is considered a *sirchon* (rot) and not *Chometz*. Because *Matzah* must be made from a material that has the ability to become *Chometz*, the *Shulchan Aruch* (*O.C.* 453:1) establishes the rule that *Matzah* may be made only out of the five grains and “not out of rice and other types of *Kitniyos*, and these will also not become *Chometz*.” The word “*Kitniyos*” is generally translated as “legumes” or “beans” but, alas, the use of a name is less than an exact science, as indicated by the language of the *Shulchan Aruch*, which combines “rice and other types of *Kitniyos*” under one heading. In the context of *Pesach*,

the definition of a legume has thus sprouted to encompass many more species and a good deal of controversy.

### Reasons for Prohibiting Kitniyos

The real concern with *Kitniyos* on *Pesach* is not based on their inability to make *Matzah*, but rather on a custom discussed by some *Rishonim* (early commentators) regarding avoiding their use entirely on *Pesach*. Although eating foods that cannot conceivably become *Chometz* would seem ideal, these authorities were concerned that *Kitniyos* might in some way become confused with true *Chometz*. First, cooked porridge and other cooked dishes made from grain and *Kitniyos* appear similar. Second, *Kitniyos* are often grown in fields adjacent to those in which *Chometz* is grown, and these grains tend to mix together. And third, *Kitniyos* are often ground into a type of flour that can easily be confused with *Chometz*. For these three reasons, these authorities suggested that by avoiding eating *Kitniyos*, people would be better able to avoid *Chometz*. The *Vilna Ga'on* (*Haga'os ha'GR"A*, *ibid.*) indeed actually cites a novel source for this custom. The *Talmud* (*P'sachim* 40b) notes that *Rava* objected to the workers of the *Raish G'lusa* (the *Exilarch*) cooking a food called *Chasisi* on *Pesach* because it was wont to be confused with *Chometz*. The *Tosafos* (*ibid.*) explain that, according to the *Aruch*, *chasisi* are lentils and, thus, argues the *GR"A*, establish the basis for the concern of *Kitniyos*.



## Ashkenazim and S'phardim

Based on these considerations, the custom of the Jews in Europe (*Ashkenazim*) developed to avoid eating *Kitniyos*, and this custom was codified by the *Rama* (ibid.). The Jews of Spain, and the Middle East (*S'phardim*), however, follow the opinion of *Rav Yosef Karo* and have never accepted this custom. To this day, most *S'phardim* partake of rice, beans, maize, and other forms of *Kitniyos* without compunction. (Many *S'phardim* in northern Africa, however, follow *Ashkenazic* customs regarding *Kitniyos*.) Of critical importance, however, is that although *Kitniyos* on *Pesach* may be an exclusively *Ashkenazic* concern, actual *Chometz* added to *Kitniyos* is not. For example, vitamins are often added to rice, some of which pose serious *Chometz* concerns. Even “corn” (glucose) syrup may contain enzymes that come from organisms that are grown on *Chometz* ingredients. Of even greater concern, glucose syrup from some parts of the world is actually made from wheat starch, and some such *Chometz* glucose and maltodextrins from such countries are actually being imported into the United States. Clearly, any *Kitniyos* eaten on *Pesach* is subject to standard *Pesach* concerns of *Chometz*.

It is very important to recognize, however, that even according to the *Ashkenazim*, *Kitniyos* itself is definitely *not Chometz*. The *Rama* himself notes this distinction in several ways. One is allowed to own and derive benefit from *Kitniyos*, something that is prohibited with true *Chometz*. The *Mishnah B'rurah* (ibid., 7) also notes that people who are ill may eat *Kitniyos* even if their illness is not life threatening, and therefore most medicines that contain only *Kitniyos* may be used on *Pesach*. People may also keep *Kitniyos* in their house on *Pesach* without concern that it may be inadvertently eaten, and one may use it for any purpose except eating. Furthermore, if *Kitniyos* becomes inadvertently mixed into a food, it is *Batul b'Rov*

(as opposed to real *Chometz*, which under certain conditions may never become *Batul*) and the food may be eaten.

(Although this approach to the concept of *Kitniyos* is accepted by virtually all authorities as the normative *Halachic* basis for the custom, some authorities ascribe a more significant source to it. The *Chok Ya'akov* (ibid., s.k. 4) quotes a *Hasagos ha'Ra'avad* in the first chapter of *Hilchos Chometz u'Matzah* to the effect that although the *Rambam* rules that the “material” may not be true *Chometz*, it may nevertheless become *Chometz Noksheh*—“hard” *Chometz*, which is still prohibited as a *Lo Sa'aseh* (negative prohibition). Most editions of the *Yad ha'Chazakah* indicate the *Ra'avad's* remarks to refer to the *Rambam* in *Halacha 2*, in which he rules that flour mixed with fruit juice will never become *Chometz*, and the *Ra'avad* comments that it may nevertheless become *Chometz Noksheh*. The *Chok Ya'akov*, however, notes that in some editions, this *Ra'avad* is actually referring to the *first Halacha* in the *Rambam*, in which the *Rambam* writes that rice and other *Kitniyos* can never become *Chometz*. Were the *Ra'avad* to be referring to *this* part of the *Rambam*, he would seem to be indicating that *Kitniyos* may indeed pose a concern of *Chometz Noksheh* and be prohibited *m'D'oryssa (Biblically)*! (One may actually bring a slight proof to this position, based on *Tosafos P'sachim* [40b] noted previously, in which they seem to say that *Kitniyos* tend not to become *Chometz* “as much” [as true *Chometz*]. See *Maharsh" a*, however, who dismisses this proof.) In any event, although he makes this observation, the *Chok Yaakov* himself seems to accept the position of virtually all other authorities and bases the concerns of *Kitniyos* on other factors.

## Items Considered Kitniyos

As previously noted, however, the criteria for determining what is—and what is

not—*Kitniyos* are less clear than the actual custom. Rice and beans are certainly included. However, the *Poskim* discuss several types of seeds (for example, “anise” and “kimmel”) that seemingly were prone to being contaminated with kernels of wheat and for this reason were prohibited. Contemporary authorities question the exact translation of these items (again, the name is important), and for that reason many have the custom to avoid seeds such as caraway, cumin, or fennel that are similar to anise and kimmel. Similarly, authorities insist that coriander be carefully cleaned because finding grains of wheat or oats mixed into this spice is common. Mustard, according to the *Rama* (*O.C.* 164:1), should also not be eaten on *Pesach*. The reason for this custom is a bit more obscure, but the *Ta”Z* (*ibid.*, 153:1) explains that mustard is similar to beans in that they both grow in pods.

One must be careful, however, not to confuse the common name for a product with its true status. “Buckwheat”—*Fagopyrum esculentum*—(also known called *kashsa*) is not a grain at all, but a member of the Rhubarb family. Since it is commonly used as a grain, however, virtually all authorities consider it to be *Kitniyos* (see *Aruch ha’Shulchan O.C.* 453:3). Triticale, on the other hand, is a man-made hybrid of wheat and rye, deriving its name from the Latin *triticum* (wheat) and *secale* (rye). It is a true grain and becomes *Chometz*.

## Corn

The cornucopia of new foods from the New World brought new items—such as maize and potatoes—to the fore. Both quickly became staple foodstuffs in the Old World, and although clearly not technically legumes, the question arose as to whether they should nevertheless be included in the category of *Kitniyos*. As it turns out, maize is generally considered to be *Kitniyos*, whereas potatoes are not. Interestingly, the etymol-

ogy of the names of these foods may give us some insight into this dichotomy. Although the common name for maize (from the Tahino word *mahis*) is *corn*—and in the United States, this usage is quite clear—the origin of the word *corn* is something quite different. The word *corn* can be traced back to the ancient Indo-European word *grn*, which literally meant a small nugget. In German, this word became *korn* and in Latin it became *grain*, both of which include any edible grass seed. In practice, these terms refer to whatever the predominant grain happens to be in a given country. In the Americas, it referred to maize. In Scotland, it referred to oats, and in Germany to wheat or rye. Indeed, old English translations of Pharaoh’s insomniac premonitions refer to “seven sheaves of corn.” Columbus had not yet discovered America during the time of Pharaoh, so Pharaoh was clearly not dreaming of corn on the cob. The “corn” to which he referred was rather one of the five grains. Yiddish speakers are similarly prone to this confusion, because they often use the term “korn” to refer to grain. It seems, however, that the popularity of corn—and its resulting assumption of this sobriquet—was sufficient for the *Minhag* of *Kitniyos* to extend to this new “grain.” Potatoes, on the other hand, were never regarded by people as a grain and were therefore generally considered to have escaped the *Kitniyos* categorization. (Interestingly, the *Cha’ye Adam* believed that potatoes should indeed be considered *Kitniyos* because he felt that *any* starch staple could be confused with *Chometz*. Much to our general relief, however, this opinion was definitely not accepted.)

## Soybeans and Peanuts

The status of certain types of beans—and the distinctions made between them—is not quite as clear. The general custom is to consider soybeans to be *Kitniyos*, and we therefore do not use soybean oil for *Pesach*

(see the ensuing section concerning *Kitniyos* derivatives). Peanuts, on the other hand, are a source of controversy that goes to the heart of the *Kitniyos* itself. Rav Moshe Feinstein *zt"l* (*Igros Moshe, O.C. III:63*) believes that peanuts are not *Kitniyos*. He reasons that *Kitniyos* is not a *Halacha* (official law) but a *Minhag* (custom). Although *Minhagim* often have the force of *Halacha*, Rav Moshe argues that the *Minhag* cannot be extended beyond what was actually included in the custom. Because peanuts were not in common use in Europe when the *Minhag* of *Kitniyos* was instituted, no *Halachic* basis exists for extending it to new items, even if they are arguably identical to other *Kitniyos* in form and use. Indeed, some communities have the custom to eat peanuts (and Kosher *l'Pesach* peanut butter) on *Pesach*. Although this may not be the generally accepted approach of most people, ample grounds certainly exist on which to rely in this regard. Some contemporary authorities even carry this logic one step further.

### **Quinoa and Amaranth**

A type of grain called *quinoa* has recently become popular. It is peculiar to the Andes Mountains and had certainly never been considered *Kitniyos* because it had never been used by Jews before! Following the concept that new types of *Kitniyos* cannot be created, these authorities permit all manner of baked goods to be made out of this exotic cereal. (Kosher consumers should consult their *Halachic* authority before using quinoa, because other authorities do not sanction its use.) Amaranth is native to both the Himalayas and South America, and enjoyed popularity in both Inca and Aztec cultures. It should have the same *Halachic* status as quinoa.

### **Kitniyos Derivatives**

Concerns of *Kitniyos* are not limited to the grain itself. Many plants, such as soy, peanut,

and corn, are processed into oil, and much discussion occurs among the *Poskim* as to whether the *Minhag* of *Kitniyos* extended to its oil. For this reason, many who do not eat peanuts on *Pesach* will use peanut oil because of an additional reason to be lenient. Some authorities are also of the opinion that rapeseed oil (also known as canola oil) can similarly be permitted because rapeseeds are far removed from conventional *Kitniyos* in that they are not eaten and were not generally available in previous generations. On the other hand, others contend that because rapeseed is a member of the mustard family, it should be subject to the custom cited earlier concerning mustard. In addition, rapeseeds have been determined to be commonly contaminated with wheat kernels, thus meeting one of the classic definitions of *Kitniyos*.

### **Cottonseed Oil**

Some authorities carry concerns of *Kitniyos* oil to an even more stringent conclusion. The generally accepted custom in the United States (based on a *P'sak* of the *Tzelemer Rav*) is to permit the use of cottonseed oil. In addition to the general leniencies relating to oil, cottonseeds are not even edible and thus arguably not subject to being considered *Kitniyos* in the first place. However, the *Minchas Yitzchok* (III:138) and others marshal proofs that neither of these arguments is correct, and for this reason many people customarily avoid using cottonseed oil and content themselves with olive, walnut, or palm oil. (Note that the *Minhag* of the *Minchas Yitzchok*, which is followed by his *Talmidim* and the *B'datz Eida ha'Charedis of Yerushalyim*, has indeed prohibited cottonseed oil. However, the *Minchas Yitzchok* himself, in a subsequent *T'shuvah* [IV:114], seems to be less sanguine on the matter. He quotes the opinion of *Rav Meir Arik* in the *Minchas Pitim* [Introduction of *O.C. 153*] that would seem to permit this product; he therefore questions his original prohibition.)

## Corn Syrup

Another common use of *Kitniyos* is in the manufacture of glucose from cornstarch, which we call corn syrup. A starch molecule consists of a long chain of glucose molecules linked together, and glucose is obtained by cleaving individual glucose molecules from the starch using acids or enzymes. Although we noted that some allow the use of oil from *Kitniyos*, most authorities agree that corn syrup has the same *Halachic* status as the *Kitniyos* cornstarch itself rather than that of the oil expressed from it. Corn syrup and its specialized high-fructose version have long replaced sugar as the sweetener of choice for use in soda, which would pose a significant problem of *Kitniyos* on *Pesach*. Fortunately, this is the “*Pesach* generation,” and the major soft drink manufacturers make special productions of the world’s favorite beverages for *Pesach* (the *un-Kitniyos* drink) the old-fashioned way—they use liquid sugar (even though the label may state “Sugar and/or High-Fructose Corn Syrup”). (Some soft drink aficionados seek out the Passover version of the “Real Thing” because it follows the original formula by using sugar instead of corn syrup!)

## Kitniyos Fermentations— Kitniyos she’Nishtaneh

One final point concerning the application of the rules of *Kitniyos* should be noted. Corn syrup and its derivatives are often used as the starting point for making other food chemicals. Citric acid is used as a flavoring agent in candies, jams, and many other foods. Erythorbic acid is used to maintain the red color in pickled and cured meats, and xanthan gum is used as a thickener. Aspartame is used as an artificial sweetener, and enzymes are used to make fruit juice and cheese. All these products are routinely produced through fermentation of corn glucose and their *Pesach* status has been the subject of

much *Halachic* discussion. Rav Moshe Feinstein *zt”l* indeed ruled that the *Minhag* of *Kitniyos* never extended to such distant relations of cornstarch and thus permitted citric acid produced through the fermentation of corn glucose. Some organizations carry this approach one step further and approve polysorbates that are composed of *Kitniyos*-based sorbitol, arguing that the reaction that creates the polysorbate molecule has a similar *Halachic* status. Many *Kashrus* agencies rely on such approaches to permit one or more of the previously discussed products, and the consumer is responsible for verifying the standards of the certifying agency as regards these issues when purchasing products for *Pesach*. Clearly, issues relating to *Kitniyos* have burgeoned over the centuries.

Foods unknown when the concept of *Kitniyos* was instituted have now become staples, and modern food science has found a myriad of ways to incorporate them into our foods in unforeseen ways. The *Halachic* underpinnings of such *Kitniyos* issues are indeed fascinating and serve as interesting grist for the *Pesach* mill.

## The Bottom Line

- The consumption, deriving of benefit, or owning of *Chometz* by a Jew is prohibited on Passover. *Chometz* is defined as any of the give major species of “grain” (wheat, rye, oats, barley, and spelt) that have begun to germinate or ferment. The avoidance of *Chometz* and its derivatives is the basic premise of Kosher for Passover certification.
- *Kitniyos* (literally, “legumes”) refers to a custom that evolved among Jews in Europe (*Ashkenazim*) to avoid the consumption of products that were *similar* to *Chometz*. *Ashkenazim* therefore refrain from eating such products or their derivatives on Passover.

- The determination of which items are considered *Kitniyos* is subject to various customs:
  - Virtually all authorities consider rice, lentils, beans, peas, and maize to be *Kitniyos*, as are mustard and certain other spices.
  - There are differing customs relating to peanuts and sunflower seeds, and some authorities are more lenient regarding oil from these sources.
  - Most authorities accept potatoes as being free of *Kitniyos* concerns.
  - The status of quinoa and amaranth may be questionable according to some authorities.
  - Most authorities in the United States accept cottonseed oil, although many authorities in Israel do not.
- Jews in communities in Mediterranean areas (*S'phardim*) generally did not accept this custom and partake of these materials on Passover without compunction. Care must be taken that no *Chometz* is used in their manufacture.
- Most of the large Kosher-certifying agencies follow *Ashkenazic* customs and do not accept *Kitniyos* for Passover use.
- Although we may not eat *Kitniyos* on Passover, they are *not Chometz*. One may own and derive benefit from *Kitniyos* on Passover, and they may be eaten by children or those requiring it because of health concerns.
- The *Halachic* status of derivatives of *Kitniyos* is subject to differing interpretations. Soy and corn oil are generally considered *Kitniyos*, as well as glucose syrup derived from cornstarch (corn syrup). (Glucose syrup derived from *wheat* starch, however, is *Chometz*.)
- However, many products produced through the fermentation of *Kitniyos* are accepted as Kosher for Passover by many authorities. They include enzymes, aspartame, monosodium glutamate, citric acid, and ascorbic acid. (Alcohol derived from *Kitniyos*-based glucose is generally not considered acceptable.)

# The Story of Kosher Meat

## וזבחת ... ואכלת

דברים כ"ז ז'

### And You Shall *Shecht* . . . and You Shall Eat

*Deuteronomy 27:7*

*Kashrus* is a multifaceted commitment, a set of *Mitzvos* that has served to maintain the uniqueness of the Jewish people from the time of *Ma'tan Torah* (the giving of the law at Mount Sinai). By maintaining the *K'dushah* (holiness) of what Jews eat, they elevate their personal *K'dushah* (spirituality). Indeed, *Chaza"l* teach us that, by eating something that is not Kosher, one damages one's spiritual nature (*M'tamtem es ha'Lev*). The *Kashrus* of meat is one of the most basic elements of a Kosher diet, and its preparation is governed by some of the most complicated and sensitive *Halachos*. Maintaining the standards of the local *Sh'chitah* (Kosher slaughter) has always been one of the key responsibilities of the local *Rabbonim* in each Jewish community. Even the enemies of the Jews have recognized its importance; *Sh'chitah* was often one of the first religious activities that were banned when attempting to destroy a Jewish community.

In the days before refrigeration, fresh meat could not easily be stored or shipped and, historically, every Jewish community maintained a local *Sh'chitah* to meet its needs. Recognizing the critical and exacting nature of the laws of *Sh'chitah*, *Halacha* delegates special responsibilities to the local *Rabbonim* (Rabbis) to oversee the standards of the local *Sh'chitah*. Today, however, the meat industry has consolidated its operations so much that large slaughterhouses process meat far from where it is consumed, and many Jewish communities have therefore lost their local *Sh'chitah*.

Large Kosher slaughterhouses provide for the needs of many communities throughout the United States and Canada. In some cities, such as Montreal, the traditional concept of *Sh'chitah* has been maintained under the direct oversight of the local *Va'ad ho'Rabonim* (Council of Rabbis).

### *Kosher Species of Animals*

The processing of Kosher meat is an intricate process, and a basic understanding is important to appreciate its importance and sensitivity. Kosher meat must be derived from Kosher species of animals and birds. Kosher animals must be ruminants (those animals that chew their cud) and have split hooves. The most common sources of Kosher meat are beef and sheep, although goat, deer, and bison enjoy some popularity. Kosher birds are nonpredatory species for which we have a Kosher tradition; common examples include chicken, turkey, ducks, and geese. The fact that an animal or bird is "Kosher," however, is but the tip of the *Kashrus* iceberg.

### *Sh'chitah*

Every Kosher animal or bird must be slaughtered in the prescribed manner. The *Torah* states "*v'Zavachtah . . . Ka'asher Tzi'visicha*"—"and you shall slaughter . . . as I have commanded you" (*Deuteronomy 12:21*)—that is, the *Torah she'Ba'al Peh* (the Oral Law) is the repository for the

details of *Sh'chitah*. According to *Halacha*, each animal must be healthy and slaughtered by a *Sho'chet*, a G-d-fearing, *Shomer Shabbos* (Sabbath-observing) Jew specifically trained in the intricacies of *Sh'chitah*. The process of *Sh'chitah* involves the use of an incredibly sharp, perfectly smooth blade (known as a *Cha'lef*) to sever the trachea, esophagus, and neck arteries and veins of the animal as quickly and as smoothly as possible, thus ensuring that the animal does not suffer. Several factors can invalidate a *Sh'chitah*. First, the *Cha'lef* must be perfectly smooth and free of nicks, and is therefore checked by the *Sho'chet* immediately before and after the *Sh'chitah*. If a nick is found after the *Sh'chitah*, the animal is not considered Kosher. (In the case of poultry, checking the *Cha'lef* after each bird is impractical. The *Cha'lef* is generally checked after several birds—but if a nick is found, *all* the birds that had been slaughtered between the last check and the discovery of the nick are considered non-Kosher.) Second, if the animal moves its neck during the *Sh'chitah*, the animal is also rendered non-Kosher because the smooth cutting of the *Sh'chitah* has been compromised. (Indeed, if the animal moves its neck during *Sh'chitah*, it is classified as having *shechted* itself!) Ensuring the stability of the animal is not an easy task, because *Halacha* prohibits the “stunning” of the animal prior to slaughter, a practice common in non-Kosher slaughter. (Modern slaughter pens, in which the animal is restrained prior to slaughter, greatly alleviate this concern.) Because painstaking care is taken with each *Sh'chitah* to ensure that it is done properly, the processing line operates more slowly than non-Kosher kill, which typically involves stunning the animal with an electric shock or shooting it in the skull with a “captive bolt” gun.

The *Cheylev* of buffalo is questionable because a buffalo may be the *Koy* that *Chaza"l* consider a *Sa'fek* (questionable status) of *B'hemah* or *Cha'yah* (see *Bi'kurim*

2:8 and *Tif'eres Yisroel s.k.* 38). We are *Machmir* (stringent) to prohibit its *Cheylev* because it may be a *B'hemah*.

### **Ki'suy ha'Dam**

When slaughtering a *Chayah*—a wild animal (such as deer)—and poultry, there is the additional requirement of *Ki'suy ha'Dam* (the covering of the blood). *Ki'suy ha'Dam* is a *Mitzvah* that applies when slaughtering Kosher birds and wild animals. Before beginning the *Sh'chitah* of these species, the *Sho'chet* places a layer of earth or sawdust on the floor, onto which the blood spilled during the *Sh'chitah* collects. After the *Sh'chitah*, the *Sho'chet* covers the blood with another layer of earth or sawdust, thereby fulfilling the *Mitzvah*. This *Mitzvah* does not apply, however, to the *Sh'chitah* of a *B'heimah* (domesticated animal).

*Chaza"l* discuss an animal known as a *Koy* and rule that it is a *safek*—an unresolved question as whether it is a *Chayah* or a *B'heimah*. The *Tif'eres Yisroel (Bi'kurim 2:8 s.k.* 38) posits that buffalo is the *Talmudic Koy* and, as such, requires *Ki'suy ha'Dam* upon its *Sh'chitah*.

### **T'reifos**

Another critical requirement in the Kosher slaughter of an animal is ensuring that it is healthy. If certain internal organs are damaged, the animal is considered a *T'reifah* (plural, *T'reifos*) (literally, “torn”) and is not considered Kosher. The *Bo'dek* (inspector) therefore checks certain internal organs (for example, the lungs) of each animal after *Sh'chitah* before the animal can be considered Kosher, a process known as *B'dikah*. (The term “*T'reifah*” technically refers to an animal that had been damaged in certain ways. In common usage, however, the term “*treif*” means “non-Kosher” for any reason.) Because healthier, higher-quality animals are less prone to defects that would render

them *T'reifos*, higher-quality animals are often used for Kosher *Sh'chitah*. Although such animals are typically more expensive, their meat is of a much higher quality. Indeed, many non-Jewish people prefer Kosher meat for precisely this reason.

When inspecting an animal to ensure that it is not a *T'reifah*, most of the attention is focused on the status of the lungs, because they are the organs most commonly compromised. A punctured lung would render an animal not Kosher—(*treif*), a condition usually detected by the *Bo'dek* feeling the surface of the lungs while they are still inside the thoracic cavity. Generally, a puncture in the lung would cause a mucous lesion or scab to form that would temporarily occlude the hole, allowing the lungs to continue functioning for a period of time. *Halacha*, however, recognizes that such a “patch”—known as a *Sircha*—is only temporary and will eventually break down, causing the animal to sicken. *Halacha* therefore considers animals with these types of *sirchos* to be *T'reifos*, and they are not considered Kosher. The *Bo'dek* therefore feels the surface of each lobe of the lung to verify that it is “smooth” and free of major lesions, both while the lungs are in situ (*B'dikas P'nim*—inner inspection) and again after they are removed from the animal (*B'dikas Chutz*—external inspection). He then inflates the lungs to ensure that no tiny punctures remain undetected.

With beef, however, certain types of *Sirchos* might be acceptable according to the customs of the *Ashkenazim* but be considered objectionable to *S'phardim*. According to *Ashkenazic* custom, a lightly attached *sircha* that can be easily removed from the lung may not be indicative of a puncture at all. If the *Bo'dek* can remove such a *Sircha* without creating a hole in the lung (which is verified by inflating the lung and immersing it in water to check for escaping air), the animal may still be considered Kosher according to *Ashkenazic* tradition. It is not, however, considered “*Glatt*” (from

the German word for smooth), the default requirement according to *S'phardic* tradition. Animals that meet this more rigorous criteria are called “*Bais Yosef Glatt*,” referring to the opinion of the *Bais Yosef* (Rabbi Yosef Karo) who requires it. Note, however, that this *Ashkenazic* leniency applies only to beef—veal and lamb must meet a *Bais Yosef* requirement according to all opinions.

Regardless of the types of *Sirchos* involved, however, *B'dikos* are very rigorous inspections. Depending on the quality of the animals in a given lot, a *Sh'chitah* is generally considered very successful if only thirty to sixty. Some animals, such as milk-fed veal, are raised under conditions that tend to weaken their health, enough so that perhaps only 10 percent of the animals *shechted* actually pass inspection as Kosher! Those animals that cannot meet these demanding standards must be sold as non-Kosher, thus limiting the amount of Kosher meat available.

Interestingly, just as the original meaning of the word “*T'reifah*” has been expanded beyond its technical scope, another word relating to *Sh'chitah* has received far greater currency than its limited technical connotation. Today, the common use of the term “*Glatt* meat” connotes a product that meets a “high Kosher standard.” This usually means that, in the case of beef, any *Sirchos* that are found are small and limited in number (one or two), a standard that was accepted as “*Glatt*” by many *Poskim* in Europe. It does not, however, mean that the animal had a completely smooth lung! Although most major *Kashrus* organizations use only “*Glatt* Kosher meat,” the term is used to imply adherence to a very high standard rather than to the narrow definition of the word.

### **Cheylev and Gid ha'Nasheh**

Special requirements for Kosher meat do not end after *Sh'chitah* and *B'dikah*, however. Although the *Torah* permits the meat



from properly *Shechted* Kosher animals, it prohibits fats found on the flanks and certain internal organs (for example, the kidneys and intestines) of domesticated animals (for example, beef and lamb). Such fats are known as *Cheylev* and must be removed because their consumption is subject to one of the most severe Biblical prohibitions (*Ka'res*—an early death). In addition, the *Torah* prohibits the eating of the *Gid ha'Na'sheh* (the sciatic nerve) (*Genesis* 32:33), and one must therefore “porge” (remove) this nerve before eating the hind leg. Although we may not deal with the *Halachos* of *Gid ha'Na'sheh* on a regular basis, the faithfulness of the Jews of K'ai-Feng Fu, China, to the rules of *Gid ha'Na'sheh* earned them the sobriquet of “The Pluckers of the Sinew!”

The removal of *Cheylev* and the *Gid ha'Na'sheh*—known as *Nikkur* in Hebrew (*Treiboring* in *Yiddish*, derived from the Czech)—is complicated and tedious, and special training is required to be able to do it properly. Because the *Gid ha'Na'sheh* and most of the *Cheylev* are found only in the hindquarters of the animal, the custom developed in most Jewish communities outside Israel to eat meat obtained only from the front of the animal, thereby avoiding the concerns of ensuring that all forbidden fats and nerves in the hindquarter are properly removed. Such an arrangement is feasible in countries where a large non-Kosher market exists, especially because the non-Kosher market considers meat from the hindquarter more tender and desirable. Interesting to note is that Rabbi Yaakov Yosef *zt"l*, the first (and last) Chief Rabbi of New York City, instituted this custom in the United States in the late 1800s. Many of Rabbi Yosef's efforts to improve the standards of *Kashrus* in the New World were resisted by the established “Kosher” meat market and went unappreciated in his lifetime. Indeed, the aggravation and calumny to which he was subjected brought him to an early death. His

lasting achievement in this field, however, was the successful promulgation of the policy to avoid the use of the hindquarter, thus ensuring that issues of *Gid ha'Na'sheh* and most of the *Cheylev* in the animal would not pose a significant concern to the Kosher-observant community.

In Israel, where they do not enjoy the luxury of disposing of half of the animal to a non-Kosher clientele, specially trained *M'nakrim* (those trained in *Nikkur*) process the hindquarter for Kosher use. They can enjoy some of these better cuts of meat found only in the hindquarter. (The front section of the animal is still subject to a different type of *Nikkur* to remove the small amount of *Cheylev* that it contains as well as certain large blood vessels; see following text for a discussion of the requirement to remove blood from the meat.) Interestingly, the prohibition of *Cheylev* applies only to *domesticated* animals (*B'hemos*), such as beef and sheep. *Wild* species of Kosher animals (“*Cha'yos*”), such as deer, are not subject to the rules of *Cheylev*, although they are subject to the *Halachos* of *Gid ha'Na'sheh*. As regards buffalo, its *Safek* status, as noted earlier, requires us to be stringent and prohibit its *Cheylev*.

The next step in the processing of Kosher meat is the *Nikkur* of the *Cheylev* that is found in the front section of the animal (generally located on the ribs closest to the hindquarter, the diaphragm, and the liver) and the removal of free blood from the meat.

## **Blood and Kashering**

The *Torah* prohibits us from eating blood, and we therefore take two approaches to ensure that free blood no longer remains in the meat. The first step is to remove all the large arteries and veins, where the blood coagulates after slaughter, a process that is also referred to as *Nikkur*. (Bruised meat or other coagulated blood must also be removed.) The second step is to purge the

meat itself from extraneous blood. This is generally accomplished by a process commonly known as *Kashering*. This process involves soaking the *Treibored* meat in cool water for one half hour, covering it with coarse salt and letting it drain for one full hour, and then carefully rinsing it three times to remove all remaining salt. *Halacha* tells us that this process is sufficient to remove all prohibited blood, after which the meat can be cooked and eaten.

An important consideration is that this type of *Kashering* must be done within three days of slaughter. After that point, the blood is considered to have dried to the point of being too “set” in the meat to be removed through soaking and salting (see *Y.D.* 69:12). If meat needs to be kept for a longer period of time before *Kashering*, it may be soaked in water for half an hour *before* the three days have elapsed. This soaking of the meat serves to prevent the blood from setting, allowing for the three-day period to start again (a process that can be repeated, if necessary). Some authorities rule that, under certain circumstances, merely “washing” the meat is sufficient for this purpose (see *Ta”Z*, *ibid.*, *s.k.* 33 and *Aruch ha’Shulchan*, *ibid.*, *s.k.* 77). Most authorities, however, do not rely on this opinion and require a full soaking of the meat for half an hour. (The question of whether a three-day restriction on *frozen* meat exists is the subject of much discussion among *Poskim* [see *Aruch ha’Shulchan*, *ibid.*, *s.k.* 79, and *Igros Moshe Y.D.* II:42]. Most *Kashrus* authorities, however, require the soaking and salting to take place within three days even if the meat is to be frozen.)

An alternative method of *Kashering* involves *broiling* the meat, a process that is not subject to the three-day restriction. From a practical perspective, however, the mass broiling of meat is not an efficient means of distributing the product, and virtually all commercially processed meat is *Kashered* by soaking and salting. In addition, meat

that is *Kashered* by broiling after the three-day period may not be subsequently cooked. When health considerations proscribe the use of salt, special arrangements can be made to *Kasher* meat by broiling.

Broiling is, however, the only method by which liver can be *Kashered* because liver contains too much blood for soaking and salting to be efficacious. (The liver should be slightly salted before broiling, however. According to most opinions, broiled liver must be treated as broiled meat, and if not broiled within three days of *Sh’chitah* it may not be subsequently cooked.)

### Quality

The processing of Kosher meat involves many more considerations than those involved in the processing of non-Kosher meat, from the type of animal chosen for *Sh’chitah* to the inspections and processing until it reaches the consumer. Indeed, the quality of Kosher meat and the products manufactured from it is generally recognized as significantly higher than non-Kosher equivalents. Although the horrors evoked by Upton Sinclair in *The Jungle* are, thankfully, no longer found in modern meat-packing plants, many of the meat *trimmings* routinely used in non-Kosher sausage (for example, ears, cheeks, and esophagus linings) do not make their way into Kosher sausage because of the impracticality of maintaining their Kosher status in a Kosher meat plant. Kosher sausage and hot dogs contain only *skeletal* meat, and many non-Kosher consumers insist on Kosher product for this reason, despite its higher cost.

The *Torah* tells us “*Tizbach v’Achalta Ba’sar k’Virkas Hashem E’lokecha*”—“you shall slaughter and eat meat according to the blessing of Hashem” (*Deuteronomy* 12:15). By working to maintain the highest standards of *Kashrus* in the meat Jews eat, they ensure that it is indeed the source of blessing that *Hashem* has intended.

### The Bottom Line

- Kosher species of animals and poultry must be slaughtered in a prescribed manner, known as *Sh'chitah*. *Sh'chitah* must be done by a specially trained *Sho'chet*, who must be a G-d-fearing Jew, generally defined as a "*Shomer Shabbos*"—one who follows the rules relating to the *Sabbath*. The appointment of a *Sho'chet* and the monitoring of the local *Sh'chitah* have historically been one of the most important responsibilities of the local Rabbinical council of a city.
- *Sh'chitah* involves severing the trachea, esophagus, carotid arteries, and jugular veins by a specially trained *Sho'chet*, using an extremely sharp, perfectly smooth knife called a *Cha'lef*. Any imperfection in the *Cha'lef* renders the *Sh'chitah* invalid.
- The animal must be fully conscious at the time of *Sh'chitah*. No preslaughter stunning of the animal is permitted.
- The animal must also be healthy. Specific defects in the animal, as specified in *Halacha*, render an animal a *T'reifah*. A *T'reifah* is considered non-Kosher even if slaughtered in an otherwise Kosher manner.
- The most common of such defects involves lesions on the lung, which tend to indicate a puncture. Although the lesion, known as a *Sircha*, typically occludes such a puncture, it is not considered sufficient to ameliorate the condition and the animal is nevertheless considered a *T'reifah*. A hole in the lung therefore renders an animal a *T'reifah*, even if a lesion has grown over it.
- A trained inspector, known as a *Bo'dek*, inspects the lobes of lung both in situ and in vitro for such lesions.
- Based on the result of these examinations, the animal will be classified as either:
  - **T'reif** (non-Kosher): A lesion (*Sircha*) was discovered that covered a puncture, which invalidates the Kosher status of the animal.
  - **Kosher** (not *Glatt*): A relatively significant lesion, or series of lesions, was discovered, but was not determined to cover a puncture. According to *Ashkenazic* custom, the animal is Kosher. According to *S'phardic* custom, it is considered non-Kosher.
  - **Glatt Kosher**: According to *Ashkenazic* custom, a limited number of minor *Sirchos* (usually, only one or two) are discovered and verified that they indeed did not cover a puncture. This is the general standard for meat labeled "*Glatt*" Kosher.
  - **Bais Yosef Glatt**: No lesions of any sort were discovered. This meat is the only type acceptable for *S'phardim*. In addition, many *Ashkenazim* prefer meat of this standard.
- All animals other than beef (that is, lamb, veal, and deer) must meet a *Bais Yosef Glatt* standard for both *Ashkenazim* and *S'phardim* to be considered Kosher.
- The following parts of a Kosher animal may not be eaten (The process for removing them is called *Nikkur* [*Treiboring* in *Yiddish*]):
  - **Cheylev**: Certain types of fats found on the flanks and internal organs must be removed. The rule of *Cheylev* applies only to domesticated animals, such as beef and sheep. Wild animals, such as deer, are free of this concern. The status of buffalo is questionable, and we are stringent in the matter and consider such fats in buffalo to be prohibited.
  - **Gid ha'Na'sheh**: The sciatic nerve. This nerve must be removed from both hind legs of all animals.
  - **Blood**: Large blood vessels must be removed.
- The *Gid ha'Na'sheh*, as well as most *Cheylev*, is found only in the hindquarter of the animal. In most Western countries, the custom is to avoid eating this section

of the animal entirely, to avoid the difficult process of *Treiboring* these sections. All hindquarters, as well as the forequarters of animals that are deemed *T'reifos*, are sold as non-Kosher meat.

- In Israel, relegating all hindquarters to the non-Kosher market is not feasible. Trained *M'nakrim* remove the *Gid ha'Na'sheh* and *Cheylev* from the hindquarters.
- After *treiboring*, the meat must be "*Kashered*" to remove extraneous blood from the flesh. Typically, *Kashering* takes place by soaking the meat for half hour, coating it with salt and allowing the blood to drain freely for one hour, and then washing the meat three times to remove residual blood and salt.
- To prevent the blood from being fixed in the meat, soaking and salting must take place within three days of slaughter. If doing so is not possible, the meat may be soaked for half hour prior to the expiration of the three-day period, after which it may be kept for another three days. This process may be repeated as necessary. (Although some authorities permit washing the meat to allow for this extension, most *Kashrus* organizations follow the opinion that requires a full soaking.)
- Some authorities consider *frozen* meat to be exempt from the three-day requirement, ruling that, while frozen, the blood will not be fixed in the meat. Most authorities, however, rule that freezing will not suspend the computation of the three-day limit.
- Meat that has been stored for three days before *Kashering* may no longer be *Kashered* by soaking and salting.
- An alternative method of *Kashering* involves broiling the meat. Broiling may be used on meat even after the three-day period. In such cases, however, the meat may not subsequently be cooked. Due to logistical considerations, broiling is not generally used for *Kashering* purposes, although it may be indicated when a low-sodium diet is critical.
- Liver must be *Kashered* by the broiling method. It should also be lightly salted before broiling. If three days have elapsed from the time of *Sh'chitah* until broiling, most authorities rule that the liver should not subsequently be cooked.
- Virtually all meat used in Kosher sausage and other processed meats is skeletal meat. Harvesting and maintaining the Kosher status of cheeks, ears, and other offal that may be used in non-Kosher products is impractical.

# The Story of Kosher Poultry

## Fair is (the Kosher) Fowl

*The Bard*

Although not specifically mentioned in the Bible, the humble chicken has been the mainstay of a Jewish meal from at least the time of the *Talmud*. Chickens are easily raised, inexpensive, and the most efficient domestic terrestrial animal for conversion of feed grain into meat. For a family, chicken was “single serving”—it could be slaughtered near the house and eaten in one meal, a significant factor in the days before modern refrigeration. Although the Jews lived, in part, on *S’lov* (quail?) in the desert, they have lived on chicken ever since. The Kosher requirements for bringing a chicken from farm to pot have not changed, but the processing system certainly has. Consumers often wonder how Kosher differs from regular poultry processing, and the purpose of this essay is to illustrate the issues peculiar to large-scale Kosher chicken processing and to highlight some of the excellent *Hidurim* (*Halachic* stringencies) that have been implemented to ensure the highest standards of *Kashrus*.

Until recent times, virtually every Jewish wife knew how to raise, clean, and prepare a chicken. When she needed to cook a chicken, she took a chicken from her backyard or went to the market and purchased one, took it to the local *Sho’chet* (ritual slaughterer) for proper slaughter, and then took it home to clean, eviscerate, and cook. To assure the *Kashrus* of the chicken, however, she was well versed in the basic *Halachos* of *T’reifos*—the *Halachos* of *Kashrus* relating to verification that the internal organs of an animal are undamaged. When she opened the chicken, her trained eye was keen to

notice any abnormality, and if she detected one, the chicken would be quickly whisked away to the Rabbi for a *Halachic* ruling on its *Kashrus*. She would then know how to “*Kasher*” the chicken—the proper procedure for soaking and salting the meat to remove the blood, as well as the requirement for broiling the liver. Only after attending to all the requirements of *Kashrus* would she apply her equally consummate gastronomic skills to create a succulent meal for her family.

Today, of course, we are able to go to the store and purchase Kosher chicken without any of this bother. Not only are Kosher butcher shops stocked with cleaned and *Kashered* chicken ready for the pot, but many mainstream supermarkets are also replete with frozen—and sometimes even fresh—Kosher poultry. This newfound availability of Kosher chicken has also meant a change in the source of supply. Not too long ago, every city with a significant Jewish population had a local chicken-slaughtering facility. As with many aspects of modern food processing, however, virtually all these small operations have closed and been consolidated into large, efficient operations. Modern Kosher poultry-processing plants can process well over fifty thousand chickens a day—each demanding the same attention to detail and *Halachic* diligence as the single chicken prepared at home in the not-too-distant past.

Poultry is big business. More than nine billion chickens were slaughtered in the United States last year, giving new meaning to Hebert Hoover’s pledge for prosperity,

“A chicken in every pot.”\* The vast majority of these chickens, of course, were not processed as Kosher product, and the difference between a Kosher and a non-Kosher production facility is critical to understanding the *Kashrus* issues that must be addressed. A regular poultry-processing plant operates solely as a business. It must meet exacting sanitary standards and produce a quality product. A Kosher facility, even when adhering to the same sanitary standards and requirements for a quality product, functions on an entirely different plane. It is geared to helping people keep Kosher—a mission that underlies all aspects of its operation. To be successful, however, a Kosher plant must operate efficiently, and in today’s processing environment this means operating reasonably large operations to realize the economies of scale. The challenge is to merge the efficiencies of a modern operation with the scrupulous attention to *Kashrus*.

### **Preslaughter Handling**

Many *Halachos* govern the manner by which chickens must be handled to ensure that they are Kosher, even before they are actually slaughtered, and a basic understanding of the requirements for Kosher slaughter is invaluable in understanding the design and operation of a modern Kosher slaughterhouse. For a chicken to be considered Kosher, it must be healthy and free from certain physical deformities, a situation called *T'reifah*. This concern applies both before the chicken is

slaughtered and afterward. For example, the method by which the chickens receive inoculations must be monitored to ensure that the needles do not puncture vital organs, which would render it *T'reifah*. As the chickens are received in the slaughterhouse, the unloading system must be designed to ensure that the crates of chickens are not dropped as they are removed from the truck, a situation called *N'fulah* (dropped), which could also render them *T'reifah*. After slaughter, certain internal organs must be checked to ensure that they are not damaged to the point of rendering the chicken *T'reifah*.

### **Sh'chitah**

The most critical part of preparation of the chicken is the *Sh'chitah*—the actual act of slaughtering the bird. Each bird must be hand-slaughtered individually by a *Sho'chet*, a person who has spent years in the study of the complicated *Halachos* of *Sh'chitah* and has the training necessary to attain the proficiency necessary to master *Sh'chitah*. In establishing the criteria for a *Sho'chet*, the *Shulchan Aruch* first requires that he be a G-d-fearing person, for the validity of the *Sh'chitah* is ultimately dependent on his personal integrity. In addition to the personal integrity of the *Sho'chet*, he must often refer *Sh'eilos*—questions in *Halacha*—to a *Rav* for resolution. All Kosher slaughterhouses therefore have *Poskim* (Rabbinic decisor) available to answer various *Sh'eilos* that may come up, which can include questions concerning the *Cha'lef* (the knife used to slaughter the chicken), as well as issues relating to damaged internal organs. The *Cha'lef* must be perfectly smooth and sharp and is checked repeatedly during the day by the individual *Sho'chet* as well as a special *Mashgiach* assigned to check all *Cha'lafim* on a regular basis. If a *Cha'lef* is found to have a nick or imperfection, all birds that

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\*Hoover's promised largesse was not new to electioneering, however. Its use was first recorded in ancient Rome, and became famous by the declaration of the French King Henry IV, “*Si Dieu me prête vie, je ferai qu'il n'y aura point de laboureur en mon royaume qui n'ait les moyens d'avoir le dimanche une poule dans son pot*”—“G-d willing, every working man in my kingdom will have a chicken in the pot every Sunday, at the least!”

may have been slaughtered with it since it was last checked are considered non-Kosher.

### **Feather Removal**

Another difference between Kosher and non-Kosher processing relates to the method by which the feathers are removed. The most efficient way to remove feathers is to soak the slaughtered bird in hot water, after which the feathers are easier to pluck. Kosher concerns, however, do not allow for such processing, because cooking a chicken is forbidden until it has been soaked and salted to remove the blood—a procedure we call *Kashering*. Placing a non-*Kashered* bird in water above 120°F would render it non-Kosher, so chickens must be plucked using the same machines that operate with *cold* water. This process is much less efficient, requires additional feather pickers, and is more time consuming, but is *de rigueur* in all Kosher poultry plants.

### **Internal Inspection**

After the chickens have been cleaned on the outside, they must be opened and have their internal organs inspected. Kosher plants have a two-tiered inspection system: the government inspects the chickens for wholesomeness and the *Mashgiach* checks for *Kashrus*. Many chickens that pass government inspection are nevertheless rejected by the *Mashgiach* because an internal organ may be *Halachically* defective (*T'reifah*). Each chicken is inspected by a *Mashgiach* who is an expert in this field, and any chicken that is deemed questionable is immediately segregated for closer inspection or is rejected and sold as non-Kosher. After inspection and approval, the inside cavity of the chicken is cleaned to remove any remaining organs that may have remained. Many processing facilities also follow the *Chumrah* (*Halachic* stringency) of removing the kidneys before soaking and salting. (Each

piece of meat must be soaked and salted individually, and although the kidney is embedded in the flesh, some argue that it should nonetheless be considered a “separate” piece of meat subject to individual soaking and salting.)

### **Soaking and Salting—“Kashering”**

After removal of the head and feet, the large blood vessels on the neck are cut or removed, after which the chicken is ready to be soaked and salted, a process known as “*Kashering*.” The chickens must first be soaked in water for half an hour to remove surface blood and prepare the chicken for the salting process that absorbs internal blood. The salting process involves coating both the inside and the outside of the chicken with a layer of salt, after which the blood is allowed to drain for one hour. At the end of this period the birds must be carefully washed three times to remove all blood and salt. The salting process takes place under the watchful eye of another *Mashgiach*, who ensures that every part of the chicken is covered with the proper amount of salt. (A number of customs relate to the method by which chickens should be salted. Some allow the chicken to be *Kashered* whole, whereas others prefer it to be split to ensure a better salting.) This soaking and salting process is unique to Kosher production. In days gone by, the housewife would *Kasher* the chicken at home. Fortunately, today this tedious process is done at the factory so that we can go into the supermarket and buy chicken ready for the pot!

In the final analysis, one finds a world of difference between Kosher and non-Kosher poultry processing, and the added cost is a direct result of additional processing and supervision. The bottom line, however, is that modern Kosher poultry processing is more than a business—it is a means of ensuring that the integrity of *Halacha* and *Kashrus* that Jews have followed for

thousands of years continues in today's demanding food-processing environment.

### ***The Bottom Line***

- Kosher poultry must be individually slaughtered by a trained *Sho'chet*, using a specially sharpened blade called a *Cha'lef*. Any nick on the blade would render the slaughtered bird non-Kosher. In addition, the bird must be healthy and conscious at the time of slaughter—prestunning is not acceptable in Kosher slaughter.
- Birds may not be dropped prior to slaughter, lest they be damaged and rendered non-Kosher.
- The internal organs of Kosher poultry must be inspected to ensure that they are not damaged. Typically these include the gizzard, intestines, and knee joints, as well as any other organ that seems compromised.
- Certain types of damage or imperfections—even if considered insignificant by government inspectors—may serve to invalidate the Kosher status of the poultry.
- Kosher poultry may not be cooked before it is soaked and salted to remove blood (*Kashering*). Kosher birds may not be scalded to remove feathers because the scalding process would be tantamount to cooking the non-*Kashered* birds, rendering them non-Kosher. All Kosher poultry is therefore defeathered in cold water.
- Kosher poultry must be soaked for half an hour, covered in salt and allowed to drain for one hour, and then washed three times to remove the blood and salt.



## The Story of L-Cysteine

כהררין התלויין בשערה  
חגיגה א' ח'

**Like Mountains Hanging by a Hair**

*Chagigah* I:8

The *Mishnah* at the end of the first chapter of *Maseches Chagigah* (I:8) notes that the *Halachos* of *Shabbos*, *Chagigos* (sacrifices brought on the festivals), and *M'ilos* (prohibitions relating to benefiting from holy items) are like “mountains suspended by a hair” because their myriad of complicated *Halachos* is based on but few scriptural references. In the realm of food production, the determination of the Kosher status of many ingredients is often based on the analysis of specific intricate *Halachic* concepts. However, the determination of the Kosher status of one obscure chemical—known as L-cysteine—is virtually unique in the encyclopedic breadth of *Halachic* erudition that it commands. Seldom in the field of *Kashrus* has one ingredient been the subject of so many disparate and interesting *Sh'eilos* (questions to be asked of a Rabbinical decisor).

### **Amino Acids**

L-Cysteine is an amino acid, one of a category of organic acids that contain a nitrogen-bearing amino group. Of the more than one hundred distinct amino acids, only about twenty serve as the precursors of all proteins—the fundamental building blocks of life. Additionally, several individual amino acids have specific uses in the food industry. For example, two amino acids—L-phenylalanine and L-aspartic acid—can be combined and modified to produce aspar-

tame, which is used as a sugar replacer. Glutamic acid, often used in its salt form monosodium glutamate (MSG), serves as a flavor enhancer.

### **Uses of L-Cysteine**

L-Cysteine has two major food applications. The first is as a dough conditioner that, in some ways, is a modern manifestation of the *B'rachos* (blessings) conferred upon *B'nei Yisroel*. The *Torah* assures us that we will be so blessed with grain that we will eat only *aged grain*—*v'Achaltem Yoshon Noh'shon*—“and you shall eat very aged (grain).” *Chaza"l* tell us (*Baba Basra* 91b) that this verse teaches us that aged foods (aged flour but not aged bread) have superior qualities, and, indeed, the baking properties of flour improve when it is stored for some time after grinding. The characteristic elasticity of bread dough is attributable to two sulfur-rich proteins (gliadin and glutenin) present in wheat. As the dough is kneaded, the bonds between these two proteins are developed, forming gluten and creating a dough structure that allows the carbon dioxide produced by the yeast to be entrapped and the bread to rise. The strength of gluten must be controlled so that it is not too strong, and aging flour served this purpose by allowing for the oxidation of the protein by exposing it to the oxygen in the air. Today, however, flour is routinely used within one week after grinding, so it does not get enough

time to ripen and benefit from the *B'rachah* of *Yoshon Noh'shon*. To address this issue, food chemists have found *chemical* forms of the *B'rachah* that have the ability to effect “instant” aging. L-Cysteine is a sulfur-based amino acid that reacts with the wheat proteins to weaken their sulfur bonds, thus allowing for more efficient dough formation.

The other common food use of L-cysteine is as a component in savory (meaty) flavors produced through a *Maillard* reaction, the reaction of certain sugars with amino acids. By using L-cysteine in such reactions, food scientists have been able to produce a variety of chicken, beef, and other meat flavors that may be Kosher and Pareve.

### **Production of L-Cysteine**

Most amino acids used in the food industry are fermentation products, in which specific microorganisms produce the desired amino acid as part of their metabolic processes. In such cases, the Kosher status of the amino acid is generally a function of the material that is fermented. For example, if *Chometz* wheat glucose is fermented into glutamic acid, the resulting MSG is considered *Chometz*. L-Cysteine, however, has historically been extracted from feathers, pig bristles, and hair—human hair, to be specific. It is the *Halachic* status of these raw materials—and the *Kashrus* concerns peculiar to them—that has been the basis of questions that span the breadth of the *Shulchan Aruch*. Human hair is rich in two basic amino acid compounds, L-cysteine and L-tyrosine, with L-cysteine comprising up to 14 percent of the hair.

When hair is dissolved (hydrolyzed) in hydrochloric acid, these compounds can be separated and recovered. L-Cysteine actually comprises two L-cysteine amino acids that are joined together, and when this bond is broken using a hydrolysis reaction, L-cysteine is released. Human hair, although

not particularly appetizing, is Kosher but the *source* of the hair may pose a problem. Virtually all the hair used in the production of L-cysteine comes from Asian countries, where both an ample supply and an inexpensive means of collecting it exist.

### **Hair in Halacha**

When L-cysteine first came on the market, some concern was expressed that the hair was actually harvested from cadavers. The *Shulchan Aruch* (Y.D. 349:1) rules that one may not derive any benefit from a dead human body. Although some *Rishonim* (*Rambam* and *SMA*) permit the use of hair, the *Shulchan Aruch* (*Simon 2*) follows the position of the *Ramban* and the *Rashb" a* and extends the prohibition to this material as well. Fortunately, however, no one has ever been able to substantiate the use of hair from this source in the production of L-cysteine and the consensus is to discount this concern.

*Kashrus* issues relating to human hair are not limited to L-cysteine, however. *Halachic* norms of modesty dictate that married Jewish women must cover their hair in public, and this is commonly accomplished by wearing the proverbial *sheitl* (wig). Although Rav Moshe Sternbuch, in his *Das v'Halacha*, raises a number of questions regarding the appropriateness of using human hair for the *sheitl*, one of his concerns is applicable to L-cysteine as well. Indeed, the issue devolves unto the source of the term *amino acid* itself. In the eighth century, an Arabian alchemist named Musa Jabir Ibn Hayyan referred to strange saltlike crystals on the walls of the temple of the Egyptian deity Amon. He called this material *sal ammoniac*, or the “salt of Amon.” We now know that the source of this material was the soot from the camel dung that was burned in the desert temple, which, as opposed to wood, contains a substantial amount of biologically reactive nitrogen. Ammonia and its related

amine compounds (including amino acids) thus take their name from this pagan deity.

In our situation, concerns of idol worship stem from a pagan ritual common in some countries involving the sacrifice of one's hair to the deity. It seems that women would grow a full head of hair and then shave it off and offer it to the idol. Rav Sternbuch postulates that the priests attending these idols would subsequently remove the piles of proffered bouffant and surreptitiously sell them to wigmakers. Because such items would be considered *Takruvas Avodah Zarah* (offerings to idols), deriving any benefit from them would be prohibited (see *Y.D.* 139:1). *Halachically*, items offered to idols may be of greater concern than the idols themselves because a non-Jew may void the status of an idol (*Bitul*) that had never been owned by a Jew, but not the items that had been *offered* to it (*ibid.*, 2).

Were such a concern to exist with the hair used in the production of L-cysteine, its decomposition during processing would not mitigate the problem. On further analysis, however, it seems that L-cysteine should be immune to this concern. First, it turns out that the hair used in this process comes exclusively from local barber shops. A sophisticated collection system has been implemented in certain Asian countries, which is able to supply the needs of the L-cysteine industry without raiding the temples. Second, it has been argued that even if the hair were indeed donated to the idol, such an action would not be sufficient to cause the hair to be considered *Takruvas Avodah Zarah*. The *Shulchan Aruch* (*ibid.*, 3) stipulates a *Halachic distinction* between different types of materials offered to idols. Items that are similar to those offered (*l'Havdil*) on the *Mizbay'ach* (altar) in the *Bais ha'Mikdash* (*K'Ein P'nim*) become prohibited regardless of the method by which they are offered to an idol. Other items, however, must be *offered in a manner* similar to offerings in the *Bais ha'Mikdash*, such

as through slaughtering or sprinkling (as blood was sprinkled on the *Mizbay'ach*)—*Avodah K'Ein P'nim*. Because hair was never brought as an offering in the *Bais ha'Mikdash*, the mere act of *placing* it in front of the idol would not be sufficient to make it a prohibited item; such an act does not qualify as a “sprinkling” because the throwing does not break into small droplets or pieces (*Z'rika ha'Mishtaberes*—“a sprinkling that disperses”). (Interestingly, however, this argument would not resolve the concern were the hair actually *cut* in the service of the idol because the act of cutting would be considered similar to the act of slaughtering. Further, in the opinion of the *Rambam*, any item that is actually placed directly in front of the idol (*Lifnim min ha'Kiklin*—“within the curtain that veils the idol”) would be prohibited regardless of the manner in which it was offered.) Another notable point is based on the opinion of the *Maharsha"m* (III:116), who postulates that it may be safely assumed that any item that is sold was not used in the service of an idol because the pagan would not desecrate such items by selling them.

### **Feathers**

Hair, however, is not the only commercial source of L-cysteine. In their search for additional sources of L-cysteine, manufacturers took a lesson from the book of Daniel. Daniel prophesied (*Daniel* 4:30) that Nebuchadnezzar, as punishment for his misdeeds, would be turned into an animal whose “hair would sprout like eagle's feathers.” Following this example, poultry feathers were also noted to contain substantial amounts of L-cystine and could be processed in essentially the same manner as hair to recover it. Although seemingly free of esoteric concerns of *Avodah Zarah* and posthumous benefit, it has been argued that feathers pose a more conventional *Kashrus* concern. When processing poultry, the best way to loosen

feathers for easy removal is by dipping the slaughtered birds into boiling water. Such a process is not permitted for Kosher poultry because one may not cook a bird until it has been soaked and salted to remove the blood (*Y.D.* 68:10), and we must, therefore, often put up with more feathers on the Kosher birds purchased in the stores than we would prefer. Non-Kosher poultry plants, however, have no such restrictions and routinely scald their non-Kosher, bloody birds in boiling water before removing their feathers. Although we may have no interest in non-Kosher poultry, some have argued that we should be concerned with the *feathers* that have been cooked together with non-Kosher poultry and their blood. We may not eat feathers but we do make L-cysteine from them, thus raising a potential *Kashrus* concern.

Fortunately, however, given the manner in which the feathers are processed to produce L-cysteine, this matter poses no *Halachic* concern. The part of the feather from which the L-cysteine is derived is the spine, which is composed of essentially the same material as—and has the *Halacha* of—hooves and horns. Many *Rishonim* quote opinions to the effect that horns do not absorb *any* flavor, which would obviate our concerns in this case. Even those who assume that horns would absorb flavor agree that Kosherization with boiling water (*Hag'olah*) would be sufficient. In our situation, the feathers are boiled in hydrochloric acid as part of their processing, which would certainly be considered a *Hag'olah*. (Concerns that boiling water might damage such utensils and therefore deter one from boiling them properly are obviously not an issue when the purpose of the boiling is to dissolve them.) In truth, however, the issue is academic for two other reasons. First, the water in which the birds are boiled is putrid—the dirty feathers and chicken waste that permeate the boiling water certainly render such broths foul tasting—and it is a *Halachic* given that

foul-tasting flavors cannot compromise the Kosher status of either utensils or food. Second, because the feathers are dissolved in hydrochloric acid and are rendered entirely inedible, any non-Kosher flavor or blood that may have been absorbed into them is considered *Halachically* insignificant. Although many authorities do prohibit non-Kosher food that had been rendered inedible if it is subsequently returned to an edible state (for example, gelatin made from non-Kosher meat sources), this would not pose a concern in this situation. In our case, the feathers were always Kosher; the only concern is the possible absorption of blood and non-Kosher flavor into them. Because the subsequent recovery of feathers into an edible item is not concerned with the blood or the flavor, these remain *Halachically* insignificant (see *Igros Moshe* [*Y.D.* II:23] in his discussion of blood that may be found on Kosher hides that are processed into gelatin).

Pig bristles can also be hydrolyzed into L-cysteine, although this raw material is not commonly used today. *Halachic* authorities consider hair, bristles, and feather spines to have a status of *Etz B'Alma*—“like pieces of wood” (*Chullin* 121a and *Mishnah Acharona Taharos* I:1), and their derivation—even from otherwise non-Kosher sources—is of no *Halachic* import.

### **Synthetic L-Cysteine**

For those who find hair and feathers less than appetizing, food chemists have recently developed sources that may be more palatable. One company produces L-cysteine through the conversion of methyl acrylate into L-cysteine using an enzyme produced through fermentation. An even more recent advance involves recombinant technology, in which the genetic coding of a particular microorganism has been altered to allow it to produce L-cysteine. As noted previously, the Kosher status of fermentation products is based on the Kosher status of the ingredients

that are fermented, and both of these products are indeed Kosher certified.

### **Medicinal Properties**

Clearly, the issues relating to L-cysteine traverse the gamut of *Halachic* literature. But it may also be interesting to note one more unique property of L-cysteine that was recognized in the time of the *Talmud*. The *G'mara (Shabbos 145b)* relates that *Rav Abbah* had a special chicken recipe, which *Rashi* explains to be a chicken that he cooked and allowed to steep for several days in hot water until it dissolved, after which it was eaten for medicinal purposes. Although *Rashi* does not indicate for what ailment chicken soup was prescribed, the *Rambam* prescribed just such a chicken soup to treat the asthma of Prince Al-Afdal in the Court of Saladin. It seems that the L-cysteine naturally found in chicken feathers and skin is very similar to the mucus-thinning drug acetylcysteine, and chicken soup and its L-cysteine may indeed be just what the doctor ordered!

*Chaza"l* teach us that when the *Torah* was given at Mount Sinai, *Hashem* suspended the mountain above the Jewish people—*Kafa Aleihem Har k'Gigis (Shabbos 88a)*. He then offered them a choice to either accept the *Torah* or have the mountain dropped upon them. The merit of accepting every aspect of the study of *Torah*—including those intricacies that the *Mishnah* refers to as “hanging by a hair”—stayed the mountain from falling. The *Midrash (Tanchuma, Ki Savo)* notes that the *Torah* as being given *ha'Yom ha'Zeh*—“this day”—to teach us that we should look upon the *Torah* as if it were being given to us each day. Perhaps the merit of learning the complex laws relating to L-cysteine and the hair from which it is derived

will serve as one of the “hairs” that keeps Mount Sinai safely suspended above us each and every day.

### **The Bottom Line**

- In addition to being the building blocks of all proteins, distinct amino acids are used as food additives. They may be used as flavorings (for example, glutamic acid), sweeteners (for example, L-phenylalanine and aspartic acid), or for functional properties (for example, L-cysteine).
- L-Cysteine is used in the baking industry to condition dough by relaxing the bonds that form between gluten-producing proteins. As a flavoring, it takes part in a Maillard reaction with reducing sugars.
- Both hair and feathers contain significant amounts of cystine and cysteine and are the primary raw materials for its production.
- Human hair is the primary hair raw material, although pig bristles may be used. Both are considered inherently Kosher because they are considered inedible in their normal state.
- Human hair derived from cadavers is prohibited, as is hair that was used as part of a religious rite. Research has determined that such materials do *not* serve as the raw material for L-cysteine production.
- Although feathers are removed from dead chickens in the presence of hot water, any absorption of flavor from the non-Kosher chicken or blood is of no Kosher significance.
- L-Cysteine is also produced through the enzymatic conversion of petrochemical stock. Recent advances also allow the production of L-cysteine through fermentation using recombinant technology.

# The Story of Margarine

## חמאת בקר

דברים ל"ב י"ד

### The Butter of Cattle

*Deuteronomy 32:14*

It is said that we live in the age of “fake food,” a brave new world in which modern food scientists have mastered the art of crafting new foods that masquerade as others that are more familiar. Although we may be fascinated with the cutting-edge technology of genetic engineering that is used to imbue certain plants and animals with specific characteristics—and political controversy—a host of other “imitation” foods made by more conventional means have become quite commonplace. Indeed, some have become so ubiquitous that we scarcely give them a second thought; imitation ice cream (from soybeans), imitation shrimp and crab (from *surimi*, a fish paste), and even imitation bacon bits (from texturized vegetable protein) all come readily to mind. Such innovations have been a boon to the Kosher food industry. Many erstwhile prohibited foods—from pork to shellfish—may now appear on the Kosher menu, albeit with the aid of some creative food technologists. Although one may assume that such sleight of hand is of only recent vintage, such innovations have been around for hundreds of years. For example, butter has been known from the times of *Avrohom Avinu* (“our father Abraham”), but today we frequently use an alternative: margarine. The history—and the *Kashrus* issues—relating to margarine is indeed quite illuminating.

The story of margarine begins in 1869 during the reign of Napoleon III. The price for butter had increased dramatically and the emperor offered a prize to anyone who could

develop a suitable alternative to allow the peasants (and the army) to enjoy their *baguette et bierre* (bread with butter) at an economical price. A food chemist named Hippolyte Mège-Mouriéz won the prize by churning processed beef tallow with cream. Believing that the main component of the solid fat he used was margaric acid (so named by Eguène Chevreuil in 1813 because the white droplets of this fat reminded him of pearls—*margarite* in Greek), Hippolyte named his new creation *margarine*. Moreover, because the source of the fat was tallow, he combined the word *oleo* (from the Latin word for beef fat) and margarine and thus was born *oleomargarine*, the “modern” alternative to butter.

### Fats

Because margarine must remain solid at room temperature, the type of fat used in its production must be “hard.” Fats are a class of chemicals that generally contain three fatty acids attached to a glycerol molecule, and a fatty acid is basically a chain of carbon atoms with hydrogen atoms attached to each carbon atom along with an acid group (carboxylic acid) at one end that is used to chemically attach the fatty acid to the glycerol. The hardness of fats is determined by the degree of hydrogenation, that is, the number of hydrogen atoms attached to each carbon atom along a chain of carbon atoms. When the maximum number of hydrogen atoms is attached to each available site on

the carbon chain, the fat is said to be saturated. Saturated fatty acids are long, straight molecules that line up beside each other easily and therefore pack together easily to form fats that are solid at room temperature. Fats that are missing two hydrogen atoms, one each from two adjacent carbon atoms, are called monounsaturated, and those missing four or more hydrogen atoms (always in pairs at two adjacent carbon atoms) are called polyunsaturated fats. The molecules of unsaturated fats are too irregular in shape to line up easily and thus tend to remain liquid at room temperature. In nature, most vegetable oils are mainly monounsaturated or polyunsaturated, whereas animal fats (lard, tallow, and butter) are mainly saturated. For this reason, virtually all margarine—as well as shortening—was historically made from animal fats and was never considered a Kosher product. In the early 1900s, however, food scientists developed a means of putting back some of the missing hydrogen atoms into polyunsaturated fats. This process, called hydrogenation, involves the use of hydrogen gas and a metal catalyst and has successfully allowed the hardening of otherwise liquid vegetable oils. We can now use partially hydrogenated vegetable oil as a shortening and as the raw material for the production of margarine, allowing these products to be Kosher. Indeed, in the United States, vegetable fats have become the predominant type of fats used for these purposes. However, in some countries (for example, Australia), animal fats remain a major source of fat used in shortening and margarine, and fish oil is still used extensively in many places in Europe. Any potential Kosher status of margarine would obviously presume the use of Kosher vegetable or fish fat.

### **Production**

The production of margarine involves the creation of an emulsion of water in oil sim-

ilar to that in natural butter. Butter is about 80 percent fat and 15 percent water, with the balance being salt and milk proteins. Regular margarine contains 80–90 percent fat, with the balance being water, flavorings, and milk solids. (*Pareve* margarine, of course, contains no dairy solids and relies on various *Pareve* chemicals to give it a buttery flavor.) The art of making margarine is to find a way of mixing a hard fat with these other components to create a solid spread resembling natural butter. First, a suitable oil blend is prepared, into which fat-soluble ingredients such as emulsifiers, flavors, and vitamin A (or beta carotene) are added. A separate water base is also prepared that contains water, salt, and dairy solids, if appropriate. The two mixtures are then blended together and, with the aid of the emulsifiers (chemicals that permit oil and water to blend together), a stable emulsion is created. This oil/water emulsion is then cooled in a special device called a swept surface heat exchanger, which allows the product to crystallize into a uniform solid margarine.

### **Consumer Acceptance**

Over the past hundred years, the battle between margarine and butter for the loyalty of the consumer has gone through many phases. Although the butter industry had attempted to portray margarine as an “artificial” food, the marketplace eventually accepted margarine as a wholesome alternative to butter. Indeed, health perceptions in recent years have tended to extol the virtues of polyunsaturated vegetable oil and to exco-riate animal and butterfats, although the pendulum seems to be changing. Interestingly, the vagaries of food science often masquerade as scientific fact. The hydrogenation process, in addition to partially saturating the fat, also causes some of these carbon atoms to rearrange themselves on the carbon chain to create unsaturated bonds that are “trans,” whereas previously they were only in the

more common form of “cis” fats. (Both *cis* and *trans* refer to the three-dimensional configuration taken by these molecules.) Recent scientific research suggests that these trans fats are potentially far more dangerous to health than are saturated fats. We are now moving away from hydrogenated vegetable oil margarine back to mostly saturated—but nontrans—butterfat!

### ***Pareve Margarine***

From a Kosher perspective, however, the advantage of margarine is that companies have the ability to make a Pareve product. Most margarine produced today, however, contains whey and is preferred by the general consumer for its richer buttery taste. It is, however, dairy and thus offers no Kosher advantages over butter. *Pareve* margarine, on the other hand, is much sought after as a replacement for butter in a variety of Pareve foods in cooking, baking, and frying applications and relies on Kosher Pareve artificial butter flavor to make up for the lack of dairy ingredients. Unfortunately, virtually no all-Pareve margarine facilities are currently operating, and the Pareve margarine involves special production runs on equipment that has been specifically *Kashered*. In addition, margarine companies typically recover the oil from improperly packaged product by melting the margarine and recycling it, a process called “rework.” Because Pareve margarine may not contain rework from dairy margarine, this further complicates the production of Pareve margarine. For these reasons, the availability of Pareve margarine is limited.

### ***Reduced-Calorie Margarine***

Dairy concerns, however, are not the only issues in the production of margarine. Regular margarine is about 85 percent fat, and regardless of the source of the fat, it contains as many calories as butter. In an effort to

reduce the number of calories in margarine, scientists have created “light” or “diet” margarine. Some versions of these products merely increase the amount of water blended with the oil and rely on more chemical emulsifiers to maintain the stability of the emulsion. (These products are much more profitable for the manufacturer, of course, because water is much cheaper than oil, and although they may be successfully spread on bread, they cannot be used for baking, frying, or other processes involving heat because the oil and water easily separate.) Such products pose no special Kosher concerns. However, some companies have found that by adding gelatin to the emulsion, the amount of water that can be successfully incorporated into the margarine can be further increased, further lowering the calories (and cost).

These products are not Kosher because none of these companies is currently using an acceptable Kosher gelatin. This situation also creates significant *Kashrus* concerns in the factories in which these products are made because the equipment following such a production would be *T'reif* (non-Kosher).

### ***Mar'is Ayin***

One more *Halachic* point can be noted concerning Mssr. Mourièz's imitation butter. Margarine apparently was not the first fake dairy product to be dealt with in *Halacha*. The *Rama* (*Y.D.* 83:3) notes that imitation milk made from almonds was used in the preparation of meat dishes and that leaving a few almonds in the almond milk might be appropriate to avoid any questions about the propriety of such food being served. Although the *P'ri M'gadim* (*ibid.*, *s.k.* 10) notes that this is a concern only where such products are not commonly used, some caterers post a sign on the table indicating that the margarine being served during the meat meal is Pareve. The province of Quebec may have had this in mind when it formulated public policy. Historically, the butter



industry has been less than pleased with this challenge to its monopoly and over the years has tried a number of ways to limit the product's appeal. In some provinces and states, the sale of "colored margarine" was made illegal or heavily taxed, lest the unsuspecting public could confuse it with real butter. In most jurisdictions, such laws are now an anachronism, but the province of Quebec can claim credit for retaining this vestige of consumer protection and trade restraint. To this day, it is illegal to color margarine with a color that is ostensibly too close to natural butter, perhaps unwittingly hewing to the *Halachic* concerns of indicating the true status of the dairy substitute!

In his parting address to the Jewish people, Moses recounts the blessings that were bestowed upon them. Of his many allegorical references, the phrase "butter of cattle" (*Deuteronomy* 32:14) is curious, because the word *Ba'kar*—cattle—is generally used in the context of meat and not milk products. Although the *Tosafos ha'Rosh* interprets the phrase as referring to butter, both *Rashi* and the *Ibn Ezra* (*ibid.*) seem to be bothered by this metaphor and therefore explain the verse to indeed allude to an abundance of meat. As indicated previously, however, the fat of the meat itself has indeed been made into the likeness of butter, and the issues so raised have proved to be a blessing to our greater understanding of many interesting *Halachos*.

### ***The Bottom Line***

- The original margarine developed by Hippolyte Mège-Mouriéz in 1813 was based on tallow and cream. At that time, the only fat solid enough for use in margarine was animal based, and margarine could not be Kosher.
- The advent of the hydrogenation process to harden vegetable fat allowed the production of vegetable-based margarine, which could now be certified as Kosher.
- The production of margarine involves the emulsification of an aqueous phase and an oil phase, which can be blended into a stable emulsion with the aid of suitable emulsifiers. The emulsifiers may be Kosher or non-Kosher.
- Kosher margarine may be Pareve or Dairy, depending on the ingredients and the equipment on which it is produced. The greatest Kosher market for margarine is for a Pareve product.
- Diet margarine uses various types of ingredients to reduce the amount of oil and increase the amount of water in the product. Such ingredients (for example, gelatin) may be non-Kosher.
- Some authorities recommend that the Pareve status of margarine be advertised when used so as to avoid confusion with true (dairy) butter.

# The Story of *Matzah* (Unleavened Bread)

## מצה זו שאנו אוכלים

הגדה של פסח

### This *Matzah* That We Eat

*Passover Hagadah*

Although the Holiday of Passover is generally referred to as “*Pesach*” (literally, “*Passover*”), this name technically refers only to the fourteenth day of the Hebrew month of *Nissan*, the day that the *Korban Pesach* (*Paschal Sacrifice*) was brought. The main holiday, which begins on the fifteenth day of *Nissan*, is referred to in the Bible as *Chag ha’Matzos*—the “*Holiday of Matzos*”—because it is characterized during its entire seven days by observance of the requirements of *Chometz* and *Matzah*. Although the requirement to eat *Matzah* applies only during the *Seder*, the ritual meal on the first night of Passover (there are two *Seders*, one on each of the first two nights of Passover celebrated outside of Israel) in which the story of the *Exodus* of the Children of Israel from Egypt is recounted, a Jew is prohibited from eating *Chometz* during the entire holiday. In addition, many authorities rule that although a Jew is not *obligated* to eat *Matzah* during the rest of *Pesach*, one actually *fulfills* the *Mitzvah* of *Matzah* every time it is eaten during *Pesach* (*Gr”a*). There are a number of different types of *Matzah*, and knowing their *Halachic* distinctions is important for being able to approach the fulfillment of the *Mitzvos* of *Chometz* and *Matzah* in the most appropriate manner.

### Chometz and Matzah

Both *Chometz* and *Matzah* are made from the same ingredients—flour and water—and understanding one without the other

is impossible. *Chaza”l* teach us that the grains wheat, rye, oats, barley, and spelt can ferment with water to become *Chometz*. This fermentation may be from the spontaneous fermentation that can occur when the grain becomes wet for even a brief period (as little as eighteen minutes), even without the addition of yeasts or other leavening agents. *Matzah* is defined as bread made from any of these grains, which are susceptible to becoming *Chometz* but are mixed with water and baked in such a way that guarantees that it does not ferment and become *Chometz*. One must therefore be very careful when making *Matzah* because the difference between *Chometz* and *Matzah* can be very slight indeed.

Although other “grains,” such as corn (maize) and rice, may ferment, such fermentation is classified as “*Sirchon*” (literally, “rot”) and not *Chometz*. (Many of these materials are classified as *Kitniyos*, whose use is also restricted during Passover according to *Ashkenazic* custom.) Bread made from these sources cannot be considered *Matzah*. Similarly, *Matzah* made with flour from one of the five grains but using liquids other than water—such as fruit juices or eggs—will also not create *Chometz*, but neither can it be considered true *Matzah*.

### “Guarding” the Matzah

The *Torah* teaches that one must “guard the *Matzos*” (*Exodus* 12:17). *Chaza”l* interpret this injunction in two ways. First, one

must be extremely vigilant to ensure that the *Matzah* does not become *Chometz*. Second, one must bake the *Matzah* that is to be used to fulfill the *Mitzvah* of eating *Matzah* with that express purpose in mind (“*I’Shmah*”). The approaches used to satisfy these requirements present us with a variety of different types of *Matzah*.

### **Flour for Matzah**

The first concern with the preparation of *Matzah* is to ensure that the flour is free of *Chometz* concerns. The material from which *Matzah* is made must therefore be *guarded* (*Sh’murah*) to ensure that it does not come into contact with water and begin to ferment before the actual *Matzah* baking process. There are three opinions discussed in *Halacha* as to the level of guarding that is required:

- The most lenient opinion states that this requirement is satisfied as long as care is exercised from the time the flour is mixed with water to ensure that the *Matzah* is baked before it can become *Chometz*. This opinion should be followed only in cases of extreme necessity, and none of the *Matzah* sold today follows this approach. (Indeed, most flour today is soaked [tempered] in water before milling, which raises the concern that it may be true *Chometz*.)
- The second opinion holds that the grain must be guarded from the time it is milled into flour, because the time when it is most susceptible to fermentation is when it becomes wet. The grain is inspected before milling to ensure that it has not begun to sprout or exhibit other signs of *Chometz*, and by doing so we are assured that even if the whole grain had become wet, it had nevertheless not become *Chometz*. Most machine *Matzah* made today uses such flour, and

such *Matzah* is commonly referred to as *Matzah P’shutah*—“regular *Matzah*.”

- The third approach requires supervision of the grain from the time of its harvesting to ensure that it did not come into any contact with any water whatsoever until the actual baking of the *Matzah*. Such flour is used to bake all hand *Matzah* and some machine *Matzah*, and such *Matzah* is referred to as “*Sh’murah Matzah*” (“watched” *Matzah*).

### **I’Shmah**

The second concern involves the requirement that *Matzah* used to fulfill the *Mitzvah* of eating *Matzah* during the *Seder* be made with the intention that it be used for a *Mitzvah*—a concept known as “*I’Shmah*.” Until about two hundred years ago, all *Matzah* was made by hand. The process involved hand-mixing small batches of dough with water that had been allowed to cool overnight (“*Ma’yim she’Lanu*”), hand-rolling the dough into *Matzos*, and then using a hand-held tool to place the *Matzos* into the oven. Because each of these steps was done by a Jew with the intention of making *Matzah* for use as a *Mitzvah*, all the *Matzah* was considered *I’Shmah*.

### **Eighteen Minutes**

A third concern stems from the need to ensure that the *Matzah* dough does not become *Chometz* during the baking process itself. *Chaza"l* tell us that under average conditions, dough takes at least eighteen minutes to become *Chometz*. This time can change drastically, however, with changes in the surrounding environment. Heat significantly hastens the process; for this reason, the oven in a *Matzah* bakery is segregated from the area where the dough is handled. To avoid any possible concerns, hand-*Matzah* factories shut down their production

every eighteen minutes. At that time, the tables, mixing equipment, rolling pins, and all other equipment are thoroughly cleaned to remove every trace of dough from the previous batch. The workers even wash their hands carefully, and the *Mashgiach* checks everything before production is allowed to resume.

### **Machine Matzah**

With the advent of machines capable of mixing dough, rolling it into *Matzos*, and placing it into the oven, several new issues presented themselves. First, a machine obviously cannot make *Matzah l'Shmah*. However, does the intentional action of turning the machine *on* constitute an act sufficient to consider *Matzah* made *l'Shmah*? This question has been the subject of much *Halachic* discussion. Although many manufacturers of machine *Matzah* attempt to address the requirement of *l'Shmah* by having some direct human involvement in the production of the *Matzah* (such as in the mixing of the dough), many people insist that the *Matzah* used during the *Seder* be hand-baked to ensure a *l'Shmah* status. Worth noting, however, is that at least one specialty machine-*Matzah* baking company in Israel performs *all* critical steps (for example, the initial mixing of the flour and water, manual involvement in the sheeting of the dough, and the actual placing of the *Matzah* into the oven) by hand to ensure that their *Matzah* is indeed made *l'Shmah*.

As regards the concern that the mixture may become *Chometz* after eighteen minutes, some machine-*Matzah* production also follows the same approach as employed in hand-*Matzah* factories, and the equipment is designed to be dismantled and thoroughly cleaned every eighteen minutes. Such machine *Matzah* is called “eighteen-minute *Matzah*” and is made from both *Sh'murah* and regular *Matzah* flour. Such

*Matzah* is clearly labeled as “Eighteen-Minute *Matzah*.”

Most machine *Matzah*, however, is produced on equipment that is cleaned thoroughly at the beginning of a production cycle but not every eighteen minutes. The production of such *Matzos* is based on the following considerations, which are designed to achieve the same results as cleaning the equipment every eighteen minutes without shutting down production: First, *Chaza"l* tell us that the time before dough becomes *Chometz* can be extended for a much longer period if it is constantly being worked (for example, kneaded). These machine-*Matzah* factories therefore design their systems to attempt to keep the dough in a constant state of motion—special mixers and rollers are designed to constantly “work” the dough as it proceeds down the assembly line. Furthermore, the equipment is designed to prevent the dough from sticking to the equipment or otherwise remaining in the system for eighteen minutes. Because the speed of the *Matzah* production is such that every mixture of dough passes through the system into the oven well within eighteen minutes, all the *Matzah* can be assumed to have indeed been baked within eighteen minutes of the time it was first kneaded. Any minor amounts that might remain on the equipment would be *Halachically* insignificant (*Batul*).

### **Passover-Eve Matzah**

A special type of hand *Matzah* is discussed among the *Halachic* authorities especially for use at the *Seder*. As previously noted, the holiday of *Passover* actually begins on the afternoon of the fourteenth day of Nissan, when the *Korban Pesach* (*Paschal Sacrifice*) was offered in the *Beis ha'Mikdash* (*Holy Temple*). According to many authorities, one should ideally bake the *Matzah* to be used at the *Seder* that very afternoon (see *O.C.* 458). Indeed, many *G'dolim* (sages) have

insisted on baking their *Matzah* in this manner. However, such an enterprise requires great care, and the custom by most is to bake their *Matzos* in advance.

## Matzah A'shirah

Another type of *Matzah* is called “egg *Matzah*” (“*Matzah A'shirah*”—literally, “rich *Matzah*”). It is produced from Passover *Matzah* flour but uses eggs or fruit juices in place of water. In theory, such *Matzah* cannot become *Chometz* because it does not contain regular water. However, it does pose two significant issues.

First, one may definitely *not* use it to fulfill the *Mitzvah* of eating *Matzah* at the *Seder*. (*Halachic* authorities differ as to the reason for this *Halacha*. The *Shulchan Aruch* [O.C. 462:1] notes that because *Matzah A'shirah* has the *Halachic* status of “cake,” it does not qualify as “*Le'chem O'ni*”—“the Bread of Affliction”—to which *Matzah* is referred the Bible [*Deuteronomy* 16:3]. Others [*Ramban, Milchamos P'sachim* 10b] point out that although fruit juice may nurture fermentation, this fermentation is considered *Sirchon* [rot] and not *Chometz*. Just as grain from species other than the five major grains is precluded from use as *Matzah* because it cannot become *Chometz*, *Matzah* made with liquids other than water suffers from the same disability.)

Second, the *Rama* (O.C. 462:4) notes that the custom is to refrain from eating “egg *Matzah*” at all because some authorities rule that flour and fruit juice mixtures may become *Chometz* immediately under certain circumstances, such as in the presence of even a small amount of water together with the fruit juice (see *Mishnah B'rurah*, *ibid.*, *s.k.* 15). The *Rama* therefore permits such *Matzah* only for the elderly, infirm, and children, a point that is noted on each package by the manufacturers of this product. *S'phardim*, on the other hand, follow the opinion of the *Shulchan Aruch* that as long

as one is careful in the production of such *Matzah*, one need not abstain from it.

A third issue relating to the production of *Matzah A'shirah* involves the difficulty of separating *Challah* from it. In ancient times, a Jew is commanded to separate a portion from every batch of dough that he prepares and give it to the *Cohen* (priest). A special sanctity attaches to this dough, and it is permitted to be eaten only by a *Cohen* (or his family) and then only when the *Cohen* and the *Challah* are in a state of ritual purity (*Tahor*). *Challah* that became ritually impure (*Tamei*) is burned. Today, we still separate a small amount of dough as *Challah* but, since we are all considered *Tamei*—as is the *Challah*—the *Cohen* may not eat it and it is burned, a procedure that is followed when baking regular *Matzah*.

*Matzah* made without water (or one of another six liquids) does not become *Tamei* (since it had not been *Muchshar l'Kabel Tum'ah*), and the *Challah* taken from it is considered *Tahor* and thus may not be burned. Since eggs and most fruit juices are not one of these seven liquids, *Matzah* made with them creates a question as to how to dispose of *Challah*—it may not be burned, nor may it be eaten by a (*Tamei*) *Cohen*. Several solutions are suggested by the *Poskim*, including making only small amounts of such *Matzah* (very small batches of dough are exempt from the requirement of *Hafroshas Challah*) or using grape juice (which is one of the enumerated liquids) instead of eggs or apple juice, allowing the *Challah* to become *Tamei* (and subsequently burned). Alternatively, one may follow certain procedures that allow regular *Matzah* to be used as *Challah* for *Matzah A'shirah*.

## Gluten-Free Matzah

Our discussion of *Matzah* would not be complete without noting the special efforts made to meet the needs of those who cannot eat regular *Matzah* because of certain

health considerations. Although *Matzah* can be made from any of the five grains, wheat is the overwhelming source of *Matzah* baked today. Unfortunately, certain people are allergic to the proteins found in wheat (commonly referred to as gluten). To address this need, some *Matzah* bakeries prepare *Matzah* made from wheat flour from which the gluten has been removed. Others make special productions of spelt and oat *Matzah*, which do not contain the types of protein that cause the allergic reaction created by wheat gluten. Please note, however, that although these products may be Kosher for Passover, they may nevertheless pose special *Halachic* concerns for use in fulfilling the *Mitzvah* of *Matzah* at the *Seder*. Oats, for example, are typically heated before milling. Because toasted grain cannot become *Chometz* (*O.C.* 463:3), oats may suffer from the same disability as rice (see above) and cannot be considered true *Matzah*. One should therefore consult with a *Halachic* authority when one cannot eat regular *Matzah*.

## Gebrochts

One additional custom involving *Matzah* is called *Gebrochts*, which has become a significant factor in the production of Passover-approved foods. *Gebrochts*—literally, “broken” in *Yiddish*—refers to foods made from broken or ground *Matzah* (“*Matzah meal*”) that is mixed with water and baked or cooked. *Halacha* stipulates that after *Matzah* has been baked, it cannot become *Chometz* (*O.C.* 463:3). One is permitted to grind *Matzos* into flour, mix it with water to make a batter or dough, and make *K'neidlach* (*Matzah* dumplings), cookies, cakes, and so on. Indeed, manufacturers of Passover foods have been exceptionally creative in using this process to produce a wide array of “imitation *Chometz*” cooked and baked goods.

The *Sha'arei T'zion* (*O.C.* 460 *s.k.* 10), however, discusses a custom that originated several hundred years ago, when a

concern was raised that perhaps some of the flour used to knead the *Matzah* dough had not mixed with the water properly and remained as flour during the baking process. When such *Matzah* would subsequently become wet—“*Matzah Sh'ruyah*” (“soaked *Matzah*”)—the latent flour could become *Chometz*.

Another rationale for the custom was advanced by the *K'nesses ha'G'dolah*, who based it on a concern that products made from *Matzah meal* could easily be confused with *Chometz* items made from regular flour. He therefore argues that the concept of *Mar'is A'yin*—the requirement to abstain from engaging in activities that appear inappropriate—would auger for prohibiting such foods because they look like *Chometz*. A custom (known as *Gebrochts*) developed in many communities to avoid eating cooked or baked *Matzah* products, except on the eighth day of Passover (see *De'rech Pikude'cha Mitzvah* 12 for an explanation of this custom).

The custom of *Gebrochts* has become somewhat of a lightning rod among its adherents—and those who do not subscribe to it. The *Cha'cham T'zvi* (quoted by his son in *Sh'eilas Ya'avetz* II:65) strongly disapproves of the custom, arguing that it is not mentioned by any of the early *Halachic* authorities and prevents people from enjoying the holiday by proscribing baked delicacies using *Matzah meal*. Indeed, many eminent authorities have felt that the custom has no basis. On the other hand, many *Chasidic* authorities strongly promote the custom and refuse to eat any products made with *Gebrochts*. One should not feel sorry for those who follow the custom of *Gebrochts*, however. Manufacturers have perfected recipes to produce all manner of excellent baked goods *sans Matzah meal*, utilizing the potato (in the form of starch), which is ubiquitous in Passover cuisine. You will therefore often see a “*Non-Gebrochts*” *Hashgacha* on many Passover foods, indicating that these

products meet the requirements of those who do not eat *Gebrochts*.

The eating of *Matzah* at the *Seder* allows us to fulfill a *Mitzvah d'Oryssa*—a Biblical commandment. The Jewish people have historically gone to great lengths in the stringencies and care with which they baked their *Matzah* for this great *Mitzvah*, with many insisting that they personally bake and supervise its production. Many are careful to eat a piece of *Sh'murah Matzah* each day of the holiday because, according to some opinions, the *Mitzvah* of eating *Matzah* can be fulfilled throughout the holiday. An understanding of the intricacies involved in its production should give us a greater appreciation of this *Mitzvah* and its paramount importance for the holiday itself.

### **The Bottom Line**

- During the Holiday of Passover, fermented grain called *Chometz* is prohibited. *Chometz* is defined as any of the five major types of grain (wheat, rye, oats, barley, and spelt) that have come into contact with water and have begun to ferment.
- *Matzah*, or “unleavened bread,” may be eaten on Passover. Indeed, positive *Mitzvah* (requirement) is incumbent upon all Jews to eat *Matzah* on the first night of Passover.
- *Matzah* is defined as flour from any of the five grains that has been mixed with water and baked before fermentation takes place.
- Because the distinction between *Matzah* and *Chometz* is very slight, great care must be taken in the production of *Matzos* to ensure that they do not become *Chometz*. The production of *Matzah* must therefore be “guarded”—“*Sh'murah*.”
- Flour used to bake *Matzah* must be “guarded” to ensure that it did not become *Chometz*. *Matzah* produced from flour that had been “guarded” from the time of its harvest is called “*Sh'murah*.” It is available in both hand- and machine-baked versions.
- *Matzah* produced from flour that had been “guarded” only from the time of the milling is called “*P'shukah*.” It is less expensive and generally available only as a machine-baked product.
- One is not *required* to eat *Matzah* during most of Passover, as long as one does not eat *Chometz*. However, every Jew is *obligated* to eat *Matzah* the first night of Passover as part of the *Seder*. Such *Matzah* must be produced intentionally for the purpose of fulfilling this obligation (*I'Shmah*). Many people insist on eating *hand-baked Matzah* at the *Seder*, because the people who prepared the *Matzah* did so *I'Shmah*. Such *Matzah* is virtually always produced from *Sh'murah* flour and is referred to as *Hand Sh'murah Matzah*.
- Others accept *machine-made Matzah*, reasoning that the *act of turning on the machines* can also be considered an adequate act of *I'Shmah*. Such *Matzah* can be produced with *Sh'murah* flour, in which case it is referred to as *Machine Sh'murah Matzah*.
- Some “*machine Matzah*” bakeries use a system that involves minimum automation and relies on manual operations for the critical steps of the *Matzah* production—initial mixing, initial rolling, and placing the *Matzah* into the oven. In this way, the human element of *I'Shmah* is maintained by direct human involvement.
- Under average conditions, flour and water will not become *Chometz* for at least eighteen minutes from the time they are combined. All hand-*Matzah* bakeries stop their operation every eighteen minutes to clean all equipment before starting the next batch of dough. Some machine-*Matzah* bakeries also stop their machines every eighteen minutes for cleaning, and this *Matzah* is called “eighteen-minute

*Matzah*,” which is made in both *Sh'murah* and *P'shutah* varieties.

- Many machine-*Matzah* bakeries, however, clean their equipment only at the beginning of the day's production or after a long break.
- They rely on the assumption that the dough will not become *Chometz* while it is constantly being processed and that any small amounts that may become *Chometz* would be *Batul*.
- Although grains other than the enumerated five (for example, rice, corn, and beans) may ferment, such fermentation is not considered *Chometz* but *Sirchon* (rot) and is not prohibited on Passover. Such products, however, are subject to the custom of *Kitniyos*, which dictates that *Ashkenazic* Jews refrain from eating such grains and beans although most *S'phardim* accept them for Passover. Virtually all foods that are certified as “Kosher for Passover” are produced to satisfy *Ashkenazic* custom and do not contain *Kitniyos*.
- Liquids other than water (such as eggs and pure fruit juices) will also not support the creation of *Chometz*. *Matzah* made from flour and such liquids is commonly called “egg *Matzah*” and is not *Chometz*.
- Such a product is not true *Matzah*, however, and may not be eaten at the *Seder* to fulfill the requirement of eating *Matzah*. In addition, many authorities discourage the use of this type of *Matzah* at all other times and permit it only for children, the old, and the infirm, who otherwise have difficulty eating regular *Matzah*. For this reason, packages of egg *Matzah* bear a notification as to when their use is considered appropriate.
- Most *Matzah* produced today is made with wheat flour. However, wheat flour contains certain proteins (commonly referred to as *gluten*) that cause allergic reactions or other digestive problems for certain people. Special *Matzah* made from deglutenized wheat flour, or spelt or oat flour that does not pose the same health issues is available. Although Kosher for Passover, these types of *Matzah* may pose certain *Halachic* issues regarding their appropriateness for use at the *Seder*, and a *Halachic* authority should be consulted.
- After *Matzah* has been baked, it cannot become *Chometz* even if ground into a flour (*Matzah meal*) and made into a dough. However, many refrain from eating products made with *Matzah meal*, a custom known as *Gebrochts*. (Others disagree with this custom and consider it to be without merit.) Passover foods are often marked “non-*Gebrochts*” to indicate that they comply with this custom.



# The Story of Minerals

ארץ אשר אבניה ברזל  
דברים ח' ט'

## A Land Whose Mountains Are of Iron

*Deuteronomy 8:9*

The *Torah* ascribes tremendous bounty to *Eretz Yisroel*, bestowing upon it a generous measure of natural resources and agricultural lushness. The *Ramban* notes that although the qualities and resources ascribed to *Eretz Yisroel* do not seem to encompass everything that one would consider important, the *Torah* is also teaching us that everything that is truly important is indeed part of *Eretz Yisroel*. One of its endowments is iron, and the *Kashrus* issues relating to it and other minerals are the subject of this discussion.

### Iron

Iron plays a critical role in human physiology. The body uses the iron in the protein hemoglobin in the red blood cells as a means of conveying oxygen to cells in the body. As blood passes through the lungs, oxygen attaches itself to this iron, forming oxygenated iron hemoglobin. As this oxygenated blood is pumped to cells throughout the body, the oxygen needed by the cells is adsorbed using another iron-binding protein (myoglobin) and the oxygen molecule on the hemoglobin is replaced with carbon dioxide. This blood is then returned to the lungs, through which the carbon dioxide is expelled and replaced with fresh oxygen. An adequate amount of iron in the body is essential for this critical cycle to function properly and must, therefore, constantly be replenished through the food we eat. Various types of anemia, a disease whereby this oxygen transfer is disrupted, have been noted.

Some types of anemia are caused by an inadequate amount of iron in the blood and can be treated by adding iron to the diet.

Early physicians prescribed liver to treat anemia, and including liver in one's diet indeed addresses this form of the disease. Nutritionists note, however, that inorganic iron is most readily absorbed when it is reacted with an acid into a salt, so eating some type of citrus fruit or tomato with chopped liver is a good idea because doing so aids in the absorption of this iron-rich food. When preparing mineral supplements, however, desiccated (dried) liver is commonly used as a source of iron. Such material poses significant *Kashrus* issues and should be taken only in consultation with a *Rav*.

Other compounds based on metallic iron, however, are often suitable to treat this condition and pose no *Kashrus* concerns. Ferrous fumarate and ferrous sulfate are commonly used iron supplements and are routinely added to a variety of fortified foods, such as breakfast cereals. They are made by reacting metallic iron with an acid (for example, fumaric acid or sulfuric acid) to create an iron salt. Neither of these poses an inherent *Kashrus* concern.

However, such iron compounds do not have a pleasant taste and tend to impart an objectionable taste to foods. To resolve this concern, the iron particles can be encapsulated in gelatin, oil, or gums that allow it to be swallowed before the coating falls off. The *Kashrus* of these coatings is what must be verified to ensure a Kosher product.

(Please note that not all types of anemia can be treated by simple iron fortification. A specific type called pernicious anemia requires the use of a special source of vitamin B<sub>12</sub> called the *intrinsic factor*, which can be found only in humans and pigs. Generally, this disease is life threatening, and the use of otherwise forbidden items would be a *Mitzvah* in such cases.)

### **Chelation**

The process of binding a metal ion with certain types of organic chemicals is called *chelation* and is used to prepare many minerals necessary for proper human nutrition. Trace minerals, such as zinc and copper, are often chelated with gluconic acid to produce zinc and copper gluconates, respectively. The potential *Kashrus* concern with these products stems from the fact that, after being reacted in a liquid state, they are spray-dried into a powder. The spray dryers, as these pieces of equipment are called, can also be used to process dairy and non-Kosher products, and ensuring that Kosher mineral preparations are processed on Kosher equipment is important.

### **Calcium Phosphates and Carbonates**

Another interesting *Kashrus* issue involves a new source of dietary calcium phosphates. Whey, a by-product of cheese manufacture, contains protein, lactose, and minerals. Often, the protein is concentrated to produce a product called whey protein concentrate, after which the lactose is also recovered. The remaining minerals—primarily tricalcium phosphate—are then dried and sold for use in a variety of applications. Tricalcium phosphate had historically been derived from mined mineral deposits and was considered free of *Kashrus* concerns. Whey requires a reliable Kosher certification, and the availability of tricalcium phosphate derived from whey raises both dairy and *Kashrus* con-

cerns with respect to this mineral complex. We may now indeed encounter tricalcium phosphate that requires a *Hashgacha*—and is dairy!

Calcium is a mineral that has been the subject of several other *Kashrus* concerns. The recent medical interest in the role of calcium supplements and osteoporosis has created a large market for calcium supplements, which use various types of calcium salts as their active ingredients. Calcium carbonate is the active ingredient in many antacid products and as a mined mineral poses no significant *Kashrus* issues. Calcium citrate is produced by reacting calcium carbonate with citric acid and is more easily absorbed into the body. The *Kashrus* status of this product also depends on the status of the citric acid, an organic acid that requires Kosher certification because it is typically produced through fermentation.

Calcium carbonate, however, may also be derived from oyster shells, raising the question of its *Kashrus* status. Many authorities have concluded that despite the fact that oysters are not Kosher, the hard shell that encases them is not forbidden. (*Halacha* recognizes a distinction between flesh and hard bones and shells.)

### **Chitin**

Note, however, that permissibility of hard shells might not extend to substances derived from other types of shells. Chitin, a polysaccharide that is found in abundance in the soft shells of lobster, shrimp, crabs, and other shellfish, is used in popular diet preparations because of its claimed ability to prevent the absorption of dietary fat. When the chemical called glucosamine is extracted from the shell, it is used as a treatment for arthritis. Although these products do indeed come from a “shell,” not all shells are created equal. In contrast to an oyster shell, soft shells are actually exoskeletons and may indeed exhibit the flavor of the non-Kosher

fish and may often be eaten (for example, soft-shell crab and crayfish).

### **Excipients**

Note that *Kashrus* concerns for any mineral preparation are not limited to the active ingredient. For example, calcium carbonate tablets are often used as an antacid and a calcium supplement. Although the active ingredient may pose no concern, the pill may also include excipients such as lactose, magnesium stearate, and flavorings as inactive ingredients, all of which require reliable Kosher certification.

King David (*Psalms* 102:15) gives voice to the tragedy of the destruction of the *Bais ha'Mikdash* (*Holy Temple*) that is commemorated on the fast day of *Tish'ah b'Av*. Yet, although David laments all that has been lost, he takes solace in the observation “For your servants have cherished its stones, and favored her dust.” Although we have clearly seen that many of the stones and their minerals are of great physical benefit to us, our fervent prayer is that we should merit the spiritual nourishment inherent in the Jewish homeland with our imminent redemption in *Eretz Yisroel*.

### **The Bottom Line**

- Minerals derived from the earth are inherently Kosher.
- Most sources of iron supplements are composed of salts of metallic iron and pose no *Kashrus* concerns. The use of non-Kosher desiccated liver, however, may be indicated for certain medical conditions, and a competent *Halachic* authority should be consulted before using this material.
- Iron supplements tend to have a disagreeable taste and are often encapsulated before being added to foods. Various gums, oil, or gelatin may be used for this process and their Kosher status must be verified.
- Certain minerals are reacted with various chemicals to produce chelates, which are then spray-dried into powders. The Kosher status of these chemicals and the spray-drying equipment must be ensured.
- Tricalcium phosphate is nominally a Kosher material. However, this material may also be obtained as a by-product of the dairy industry, and such a material would pose a potential Kosher concern.
- Calcium derived from oyster shells is considered Kosher by many authorities. However, chitins (and its extractive glucosamine) are derived from shellfish and are generally not considered Kosher.
- Although the minerals in various supplements may be Kosher, the excipients used in their blends may pose Kosher concerns.

# The Story of Mushrooms

כמה לך בשרי – ככמהין הללו שהן מצפין למים

בראשית רבה ס"ט

## A Longing Like a Mushroom

*B'reishis Rabba* 69

### A Fungible Feast—Mushrooms in *Halacha*

One category of food seems to defy classification. It is neither fruit nor vegetable nor animal, yet exhibits the characteristics of them all. As every child studies the laws of *B'rachos* (*blessings*), he quickly learns that there are two basic blessings for plants. The *B'rachah* for foods that grow on trees is generally *Bo'rei P'ri ha'Etz* (Blessed . . . the Creator of the fruit of the tree) whereas that for foods that grow on the ground is *Bo'rei P'ri ha'Adamah* (Blessed . . . the Creator of the fruit of the ground). One quickly learns the seeming incongruities associated with these *B'rachos* (a banana is considered the fruit of the ground, whereas a raspberry or blackberry may be considered a fruit of the tree), but one food—the mushroom—seems to defy conventional classification. The *Talmud* (*B'rachos* 40b) states that although mushrooms grow on the ground, the proper *B'rachah* is nonetheless *she'Hakol*, the general *B'rachah* for foods that are *not* plants. The *Talmud* explains that although mushrooms do indeed grow on the ground, they are exceptional in that they do not derive their primary nutrition from the soil, as do other plants. Interestingly, the *Aruch ha'Shulchan* (204:5), among others, holds that if one made a mistake and recited *ha'Adamah* on mushrooms, it would be acceptable because the *Talmud* does consider mushrooms to be *Gid-*

*ulei Karka* (growths of the ground), although they do not derive their sustenance from it. The unique status of mushrooms is not limited to their *B'rachah*, however. Once reserved to Egyptian royalty, mushrooms have become a popular food with interesting *Halachic* ramifications.

Before we can discuss the *Halachic* applications of mushrooms as a food, we must first establish what they are. The mushroom is actually only a small, visible part of a much larger fungus. Unlike plants that rely on photosynthesis to produce their food, fungi act as *saprophytes*, deriving their nutrition from decaying organic material. Although we see mushrooms popping up from the ground, they are but the tip of the fungal iceberg. The main part of the fungus is under the ground in the form of a white mycelia, which can grow into a huge organism. (One huge fungus growing underground in Oregon reputedly covers 2,200 acres and is thought to be the largest known single living organism in the world!) The mushroom that we observe—and eat—is actually the “fruiting body” of the fungus, which the fungus sprouts as spore-producing appendages to spread its spores; the “vegetative” portion of the fungus remains underground. The most common mushroom of this type grown commercially is the species called *Agaricus bisporus*, which produces the white

button mushroom. The popular portabello mushroom, with a stronger meaty flavor, is actually the same mushroom picked at its fully mature stage. Interestingly, until about ten years ago these overgrown mushrooms were considered a troublesome waste until someone realized that they served as an excellent meat substitute. This use for mushrooms, however, was actually presaged in the *Midrash Alpha Beisa*, which notes that *Hashem* has provided Kosher alternatives for non-Kosher foods: “I have prohibited *N’veilos* and *T’reifos* (carrion and diseased animals), but I have permitted *K’mehin* and *Pitrios* (mushrooms)” (see *Midrash Tanchuma [Parshas Sh’mini]* for a similar analysis of other non-Kosher foods).

### **Mushroom Production**

The use of wild mushrooms as food, however, is quite ancient and poses no inherent *Kashrus* concern either for year-round use or for *Pesach*. Commercial production, however, is of rather recent vintage, beginning in France in the early 1700s and making its way to the United States in 1880. The key to successful mushroom production is finding an ample supply of decaying material (compost) to be used as the mushroom bedding and finding a way to inoculate this bedding with the desired fungal spores. The compost used in mushroom production is generally made by mixing a variety of less-than-savory ingredients—horse manure, wheat or rye straw, peat moss, used horse bedding straw, chicken manure, cottonseed or canola meal, grape crushings from wineries, soybean meal, potash, gypsum, urea, ammonium nitrate, and lime. The composting process ensures that these materials are hygienic and safe, and because all this material is—by definition—decomposed, it poses no *Kashrus* concerns.

The next step involves the inoculation of the bedding with *spawn*—the fungal spores that actually begin the growth of the fun-

gus in the bedding. As is the case with the commercial propagation of other microorganisms, a culture of spores (*spawn*) is prepared and grown under specially controlled conditions to ensure that just the right strain of fungus is isolated. As the *spawn* develops, it is allowed to colonize kernels of moist rye or millet, which are then seeded into the bedding to begin the growth of the main fungus.

Moist rye, one of the five major grains, would most certainly pose a concern of *Chometz*, and some have therefore cautioned against using such mushrooms on *Pesach*. On the other hand, most authorities do not consider this to be a problem. First, the grain is not actually the seed for the mushroom but merely a carrier of the *spawn*. Second, the grain itself decomposes and is rendered inedible. In addition, one should note that *all* grain comes from sprouted seeds that are *Chometz*, yet the resulting new grain is certainly not considered *Chometz* when it is grown before *Pesach*. (A question indeed arises about the status of grain that grew from *Chometz* seeds that were planted *on Pesach* [see *Chasam Sofer O.C.* 104]. No question exists, however, about grain that was grown before *Pesach*.)

Other types of mushroom-producing fungi grow in decaying wood. Shitake mushrooms (from the Japanese *shi* [oak] and *take* [mushroom]) were originally grown on oak logs but today are grown on oak sawdust. The flavor of these types of mushrooms depends on the type of wood on which they grow.

### **Truffles**

Not all edible fungal fruiting bodies, however, mushroom from the ground. One of the most prized items in the gastronomic world, the truffle grows underground and feeds on nutrients supplied by the roots of trees. These pungent and flavorful bits of fungus were noted at the times of the *Talmud*, when edible fungi were referred to as *K’mehin* and

*Pitriyos*. *Rabbeinu Yonah* explains *K'meiHin* to mean those types that grow underground (truffles), whereas *Pitriyos* are the mushrooms that often grow on wood (and presumably on the ground). (The truffle was indeed so valued that a chocolate confection was named after it. The chocolate truffle actually contains no real truffle. Its shape—a round ball of chocolate dusted with cocoa—was designed to look like a dug-up truffle, evoking the aura of the delectable fungus for which it was named.)

### **Insect Infestation**

Another *Kashrus* issue that has been the subject of discussion is the possible need to check mushrooms for insect infestation. Rav Moshe Feinstein *zt"l* (*Igros Moshe Y.D.* II:25) notes that, in Europe, mushrooms were known to be infested and were therefore required to be checked. He argues that in North America, however, such infestation is not common and mushrooms are not considered to be the subject of a significant concern in this regard. Rav Moshe does suggest that one should still check mushrooms to ensure that the situation has not changed, and it is interesting to observe that his prescient injunction has recently been vindicated. Much of the canned mushrooms sold around the world are currently produced in China, and productions of mushrooms under otherwise reliable *Hashgacha* apparently were found to be heavily infested.

### **Bishul Akum**

Disparities of eating habits among different countries also mushroom into another area of *Halacha*. When certain foods are cooked, *Halacha* requires that a Jew be involved in the cooking, a rule called *Bishul Akum*. Only foods that are not eaten raw are subject to this requirement, and the status of mushrooms remains the subject of discussion in this regard. The *Sha"Ch* (*Y.D.* 113 *s.k.* 2)

assumes that mushrooms are indeed subject to the rules of *Bishul Akum* because, in his days, mushrooms were eaten only cooked, which seems to be the current custom in *Eretz Yisroel*. Most *Hashgachos* in Israel require that canned mushrooms be *Bishul Yisroel* (cooked by a Jew). In North America, however, it is obvious that mushrooms are readily eaten raw (just look at any salad bar!), and the consensus of most *Poskim* is that the status of what is eaten raw is based on the custom in each country. Most *Hashgachos* in North America accept canned mushrooms without *Bishul Yisroel*. Note, however, that *wild* mushrooms must always be cooked to neutralize certain toxins that exist in otherwise edible varieties. Such mushrooms would certainly be subject to *Bishul Akum* concerns.

### **Quorn®**

The realization of the divine blessing bestowed upon mushrooms as a meat alternative has recently taken a giant leap in the form of *Quorn*®. As part of a project to develop a novel food source, a British company identified a fungus called *Fusarium venenatum* in a local meadow. After much research, they determined that this fungus produces a food that is high in protein and other nutrients, low in fat, and can be processed into products that reportedly really taste good. They called this new class of foods mycoprotein—from the Greek *mykes* (fungus)—and it has become the base for one of the most popular meat alternatives in Europe. Although the manufacturers of Quorn claim that it is “mushroom in origin,” detractors claim that even though it is indeed a fungus, it is nonetheless not a true mushroom and should thus require further testing. Labeling and regulatory issues aside, the product was currently poised to make a big splash on this side of the Atlantic. In contrast to mushrooms, however, this fungus is grown in large fermentation vessels, and its

Kosher status depends on the nutrients that are used in the fermentor, as well as the other ingredients that are part of the final product. If it does indeed obtain a Kosher certification, it should serve as a boon to the Kosher vegetarian gastronome.

The *Talmud* (*Shabbos* 30b) relates that *Rabban Gamliel* was teaching his students about the wondrous events that would take place at the time of redemption. In one example, he notes that the Land of Israel will produce fresh cakes every morning, basing this on the verse in *Psalms* (72:16): “May there be abundant grain on the earth of the mountaintops.” When one of his disciples expressed skepticism on the feasibility of such a miracle, *Rabban Gamliel* merely told him to look at the mushrooms that sprout from the ground overnight. The *Avnei Nezer* (*O.C.* 111) explains that the allusion to mushrooms was more than just a convenient example. From the time of Adam, the earth was cursed and man was condemned to work for his food: “By the sweat of your brow thou shalt eat bread” (*Genesis* 3:19). Clearly, mushrooms differ from conventional vegetation in that they do not grow from the ground and, therefore, according to the *Avnei Nezer*, are considered a source of blessing untainted by the curse bestowed upon the earth. Mushrooms come from the ground “ready to eat” without the need for further

processing, unlike grains, and he explains the *B'rachah* of *Rabban Gamliel* to mean that, in the future, all grain will be similarly blessed. The *Halachos* of mushrooms, therefore, should serve as a tantalizing moral in our understanding of *Halacha* and *Kashrus*.

### ***The Bottom Line***

- Mushrooms and truffles are the fruiting body of specific types of fungus. Mushrooms are inherently Kosher and Kosher for Passover, regardless of the compost on which they are grown or the material on which the spawn are propagated.
- Mushrooms may suffer from significant levels of insect infestation.
- Wherever such infestation is significant, mushrooms must be checked for contamination. When mushrooms are usually not infested, they need not be checked.
- Although mushrooms were historically eaten as a cooked dish—and thus subject to concerns of *Bishul Akum*—most authorities in North America recognize domestic mushrooms to be readily eaten raw and thus not subject to this concern. The custom of most authorities in Israel, however, is to consider mushrooms to be a food that requires cooking. Wild mushrooms definitely do require cooking and are subject to *Bishul Akum*.

# The Story of Noodles

לא תסור מן הדבר אשר יגידו לך ימין ושמאל

דברים י"ז י"א

## Do Not Deviate—Left or Right

*Deuteronomy 17:11*

The purported exotic provenance of many familiar foods has been enshrined in our gastronomic mythology. For example, every schoolchild learns that Marco Polo brought spaghetti to Italy, thereby inaugurating the great culinary masterpiece so closely identified with the Apennine peninsula. The truth, however, may be a bit far from the fable—and moored more closely to *Kashrus* issues than first apparent. While noodle-type foods may be found in virtually all cultures, Marco Polo probably did not introduce spaghetti to Italy. The first written reference to noodles as we know them is in the *Talmud Yesrushalmi*, where the *Gemara* discusses the *Halachos* of drying *Itriyos* (noodles) on *Yom Tov* (*Maseches Beiza*) and the rules of *Challah* involved in their preparation (*Maseches Challah*). In all probability, these *Itriyos* traveled with the Saracens in their invasion of Sicily and thence spread throughout Italy. As we shall see, pasta and noodles raise a number of *Kashrus* issues, both ancient and modern.

Whether called noodles or macaroni, pasta is prepared from dough composed of two basic ingredients—milled grain and water—which is formed into a particular shape. In Western countries, pasta is made from a type of high-gluten spring wheat called *durum* that is milled into coarse, granular *semolina*. After being rolled or extruded and cut into a desired shape, the fresh, raw pasta may be boiled and eaten. Such fresh pasta may be made at home or sold as a

refrigerated product. Indeed, this is the type of *Itriyos* that the *Talmud Yerushalmi* (*Beitza* I:9) states may be made on *Yom Tov*. Fresh pasta, however, has a very limited shelf life, since it tends to ferment and spoil after a short time. Pasta makers quickly learned, however, that their product may be *dried*, in which form it may be kept for years before being boiled and eaten. According to the *Yerushalmi*, one may not produce this type of pasta on *Yom Tov*, since it involves preparing foods for use after the *Yom Tov*.

## Bishul Akum

Indeed, part of the art of making good pasta is the method by which it is dried. If it dries too quickly, it will crack and too slowly, it may develop mold. Traditionally, pasta was air-dried by draping long-cut pasta over wood dowels or spreading small-cut pasta over mesh trays, a time-consuming process that may still be followed when preparing dried pasta at home. Modern commercial production of pasta involves passing the pasta through hot-air ovens, where the drying process is significantly sped up. Although such pasta may have the *Halachic* status of being “cooked” or “baked,” it poses no concerns of *Bishul Akum* since the dried pasta is not considered an edible product after the drying. It is the *boiling* of the dried pasta that makes it edible. In some situations, however, a factory may produce “pre-cooked” pasta, where the pasta is indeed



boiled into an edible product. In such situations, a *Mashgiach* must be involved in the cooking process to ensure the Kosher status of the product.

### **Flavored Pasta**

The modern process of heat-drying pasta may create a *Kashrus* concern, however, in situations where *flavored* noodles are produced. Some factories have been known to produce shrimp-flavored pasta, where non-Kosher shrimp is actually added to the pasta dough. In such cases, the equipment on which such pasta is dried becomes non-Kosher, and the Kosher status of any other pasta produced on the same equipment becomes compromised.

### **Instant Noodles**

“Instant noodles” combine the drying and cooking process in one step. Instead of drying them with hot air, they are fried in oil to both evaporate the water within them and cook them at the same time. Although instant noodles are often included in “cup-of-soup” and “cup-of-noodle” products that are designed to be mixed with hot water, the noodles themselves are eminently edible without the addition of any water whatsoever and are often eaten by themselves as a snack. Most authorities have concluded, however, that such noodles are not subject to *Bishul Akum* concerns because snacks are not considered *O’leh al Shulchan M’lachim*—eaten as part of an important meal. These products require a reliable *Hashgacha*, however, to ensure that the oil in which they are fried is Kosher, as well as to ensure that the non-Kosher flavors are not used in any products fried in the same oil.

### **Oils and Fats**

Given the traditional method of preserving pasta through drying, it may be called the first *convenience food*. Dried pasta may be stored and transported for long periods

without spoiling, and can be prepared with nothing more than a pot of boiling water. (Bread, on the other hand, was perishable, and its preparation required kneading, letting it rise, and a suitable oven.) This spirit of utility has carried over to our day. Have you ever noticed that cafeteria cuisine and airline meals typically feature pasta as a mainstay? The reason is that cooked pasta is virtually indestructible. It can be kept warm in a serving tray for long periods without spoiling, and can be refrigerated or frozen and then reheated and still be appetizing. Such hardiness is not perfect, however, since cooked pasta tends to become sticky—and quickly becomes a less-than-appealing clump. To avoid this problem, the homemaker may add a small amount of oil or margarine to the water in which the pasta is boiled, thereby making the pasta more slippery and less prone to clumping together. Some industrial pasta is sprayed with mono- and diglycerides for the same purpose. Such chemicals may be derived from either animal or vegetable fat, and require a reliable *Hechsher*.

### **Chodosh**

The choice of durum as the grain of choice in Western countries is due to the high level of gluten protein it contains. Just as gluten in bread dough gives it the strength and elasticity to be kneaded and to rise properly, pasta is similarly produced from high-gluten flour to provide firmness and strength in the product. This preference is significant from a *Kashrus* perspective in that durum is *spring wheat* and thus subject to the restrictions of *Chodosh*. People who are concerned with *Chodosh* must therefore ensure that all pasta eaten after the summer until *Pesach* be produced from the previous year’s harvest.

### **Exotic Noodles**

Although durum is the grain of choice for the production of pasta in Western countries, many Asian types of noodles are produced from other types of starches. Rice noodles,

known as *mein*, are standard fare in Chinese cooking, as are noodles made from mung bean flour. Other types of starches, such as buckwheat, are also used in some cultures. In general, these products contain nothing more than flour and water, and have traditionally posed little *Kashrus* concern.

### Egg Noodles

This distinction between noodles and macaroni is essentially based on their shape, with noodles traditionally taking on an elongated, ribbonlike form. In many countries, however, *macaroni* and *noodles* are generally differentiated by the absence or inclusion of eggs. Macaroni generally contains only semolina and water, with the distinction between products—such as *spaghetti* (little strings) and *vermicelli* (little worms) (see *Rabbeinu Yonah B'rachos* 27a in the *R"if*)—based solely on their shape. Noodle products—commonly called “egg noodles”—also contain whole eggs, which gives them their bright-yellow color as well as a distinctive flavor. Either liquid or powdered eggs may be used, both of which require a reliable *Hashgacha*. “Cholesterol-free” noodles typically contain only egg whites and yellow food color.

### Colored Pasta

Other types of colored pasta rely on various types of vegetables. Green pasta generally contains spinach powder, and the color of red pasta derives from the use of tomato or beet powder. Such colored pasta enhances the appeal of pasta products, but also requires a reliable *Hashgacha* to ensure that the vegetable powders comply with Kosher requirements.

### Challah

One more *Halachic* point should be noted regarding noodles. When making dough products—whether at home or in a Jewish-owned factory—one must generally fulfill

the *Mitzvah* of *Challah*. This *Mitzvah* involves separating a small portion of the dough, as a remembrance of the dough that was given to the *Kohanim* (priests) every time a person baked bread. (Since *Kohanim* may not eat *Challah* today, we must burn it.) In general, the requirement of *Challah* applies to “bread”—its application to cakes and other dough products being the subject of much *Halachic* discussion. Indeed, the *Talmud Yerushalmi* (*Challah* 1:4) discusses the *Halachic* status of noodles with regard to *Challah*, since noodles are “cooked” and not “baked” like bread. Most authorities rule that noodles are exempt from the requirement of *Challah*, although *Rabbeinu Tam* contends (based on the above *Gemarah*) that *Challah* should nevertheless be separated. Given the intricacies of this rule, however, one should consult a *Halachic* authority when preparing homemade noodles.

One of the great *Shoftim* (judges) that led *B'nei Yisroel* after *Yehoshua* was *Ehud ben Gerah*. The *Pasuk* applies to him the sobriquet “*Iter Yad*”—a term commonly translated as a “lefty.” In truth, however, most commentaries suggest that the word “*Iter*” refers to a limitation of the *right* hand as opposed to the dominance of the left. *Rashi* quotes the *Targum Yonasan*, who translates the word as “*Gamid*”—withered and dried. It may well be that the term for noodles—*Itriyos*—is based on the drying process that is the hallmark of its preparation. When we deal with noodles, as with all foods, we should remember that their *Kashrus* depends on following the guidance of our *Gedolim*. Perhaps the next time we eat *Itriyos*—with its “left-handed” connotation—we should be reminded of the concept of not deviating from their words either to the left or to the right.

### The Bottom Line

- Dried pasta is not subject to concerns of *Bishul Akum*. Precooked pasta, however, may pose a concern in this regard.

- Conventional, unflavored pasta poses few *Kashrus* concerns. Pasta products containing flavorings, colorings, or other additives require a reliable Kosher certification.
- Instant noodles are generally fried in oil, and require a reliable Kosher certification.
- Pasta products are generally produced from durum wheat, which poses a *Chodosh* concern.
- According to some authorities, *Challah* must be separated from the dough of pasta products.

# The Story of Nuts

## סימנא מילתא היא

הוריות י"ב ע"א

### A Sign of the Times

Horyus 12a

Many famous customs relating to *Rosh Hashanah*, the Jewish New Year, involve food. Some are based on the attribute of the food itself, such as symbolizing the hope for a sweet year by eating an apple dipped in honey. One also eats a pomegranate, using the abundance of its seeds to symbolize the hope for an abundance of merit on this auspicious day. Other foods are eaten based on a mnemonic consideration, such as carrots, which in *Yiddish* is called *Merren*, and recalls the *Yiddish* word *mehr* that means more (and abundance). One also customarily avoids eating other foods on *Rosh ha'Shanah*. One does not eat sour foods because these may be construed as a symbol for a sour or bitter year. Another custom, mentioned in the *Rama* (*O.C.* 583:2), involves avoiding nuts. Two reasons are given for this custom. The first is based on a concern that the nut particles may lodge in the throat, thereby causing people to cough repeatedly to dislodge them, and it was felt that this coughing might cause people to miss hearing some of the *Sho'far* (ram's horn) blasts during the holiday services. Another reason advanced for this custom is based on the *G'matria* (numeric value) of the letters in the Hebrew word *E'goz* (nut), which is supposedly the same as the value of the letters in *Chet* (sin), and eating such a food on *Rosh ha'Shanah* would be inappropriate. (Unfortunately, the *G'matria* of *E'goz* is 17, whereas that of *Chet* is 18! Two solutions to this question have been offered. The first is that, as a general rule,

a *G'matria* is considered valid even if it is off by 1 (*Os ha'Kollel*). The second solution is that the final *Aleph* on the word *Chet* (which has a value of 1) is silent and is therefore not counted.) However we count it, nuts are clearly undesirable on *Rosh ha'Shanah*. From a *Kashrus* perspective, they also pose a number of interesting *Halachic* and practical considerations, and the purpose of this essay is to review some of these issues.

### Roasted Nuts

The term "nut" refers to the fruit of certain trees that is protected by a hard or leathery shell. Examples of common nuts are walnuts, pecans, pistachios, hazelnuts, and cashews. Most nuts can be eaten raw, and in that state pose no *Kashrus* concern. However, nuts are often processed, and these processes can give rise to *Kashrus* issues. The most common process used for nuts is roasting. Contrary to the common household use of this term, the roasting of shelled nuts usually involves frying them in oil. The purpose of roasting nuts is to deactivate the naturally occurring enzymes found in their tissue, which would tend to cause the nuts to spoil more quickly. These enzymes are very susceptible to heat, and by heat-treating the nuts, the enzymes are no longer active. In addition, the taste of roasted nuts is preferred by many consumers. Note that although nuts are important sources of specialty oils, such oils are generally not used for roasting. For this purpose, regular (and less expensive)

vegetable oil is used, and even animal fats are suitable for this purpose. A reliable Kosher certification is required for oil-roasted nuts.

Another *Kashrus* concern stems from a popular type of roasted nut called *honey roasted*, which involves coating the nut with a sugary glaze and then frying it. The coating that has been developed for this glaze often contains *lactose* because this type of sugar tends to be less soluble than other types. Lactose, however, is milk sugar, and poses a number of *Kashrus* concerns. Lactose is dairy and non-*Cholov Yisroel*, and because it is derived from whey, it may pose additional concerns relating to the cheese from which the lactose was derived. In addition, the fryer used to produce honey-roasted nuts may be used to produce regular nuts, often without changing the oil, thus raising additional *Kashrus* concerns for regular oil-roasted varieties.

Nuts can also be processed by a process known as dry roasting. In this process, hot air is used to heat the nut, thus avoiding the concerns (and additional calories) associated with oil roasting. This process, however, raises its own *Kashrus* concerns. Seasonings are often applied to roasted nuts, the most common seasoning being salt. However, many seasonings do not adhere to a dry nut, a problem avoided in oil roasting because the oil on the surface provides for good adhesion of the powdered seasonings. To resolve this problem, gelatin is often added to the powdered seasoning, which allows it to stick to the dry nuts. Non-Kosher gelatin would clearly make such nuts non-Kosher. However, the problem is compounded by the fact that the *dryer* used to heat the nuts is coated with gelatin, and all nuts processed on such a system must now be considered non-Kosher. This is indeed the problem faced by one of the major nut companies. It enjoys the reliable certification of one of the major *Hashgachos* on its *oil-roasted* line of nuts, but cannot obtain this *Hashgacha* for any of its dry-roasted pro-

ducts because some products produced on the dry-roasted line use non-Kosher gelatin.

### **Buttered Pecans**

Another concern stems from a particular type of processed pecans called buttered pecans. It seems that the flavor of pecans is enhanced by coating them with melted butter; although they are not actually fried in butter, the hot liquid butter is applied to the nuts immediately on their removal from the fryer. Often, the hot butter is applied while the nuts are still atop the fryer, contaminating the fryer with butter drippings.

### **Drupes**

Some nuts technically fall into a category of fruit called a drupe. These include almonds, cashews, and pistachios, along with other common fruit such as cherries, plums, apricots, and peaches. A drupe is defined as a fruit whose seed is contained in a hard pit, which is surrounded by a fruity flesh. This relationship is of more than mere botanical interest. Almond paste is much prized as the main ingredient in a confection known as marzipan, traditionally made by grinding almonds and mixing it with sugar. Because of the high cost of almonds, however, companies have now taken to substituting the paste of the seed of another drupe—the apricot—for this purpose. Although the actual drupe seed used poses no *Kashrus* concern, all forms of commercial marzipan often contain emulsifiers to maintain the stability and preserve the paste and therefore require a reliable Kosher certification.

### **Pistachios**

Pistachios also pose interesting *Kashrus* concerns as well as curiosities. Pistachios are actually the seed inside the pistachio fruit. After harvesting, the outer fruit is discarded and only the pit (which we call the shell)—with its seed inside—is sold commercially.

The shell actually begins to open as the fruit ripens on the tree, which makes for easier eating. Although pistachios are dry roasted, the equipment used is generally dedicated to that product.

Interestingly, the practice of coloring pistachios with a red color poses no *Kashrus* concern; the dye is invariably synthetic. The practice originated because early pistachios were soaked in brine before their fruit cover was removed, a method that tended to give them a pink cast. In an attempt to emulate this natural coloring, manufacturers began adding synthetic red dye. They noticed, however, that the more dye they added, the more noticeable the product was, so they began adding the dark-red color to which we are accustomed. The salt that we often find on the inside nut is applied as a liquid brine, which is dried as part of the roasting process.

### Nut Oils

Another important use of nuts is in the manufacture of cooking oil. Nuts, such as walnuts and almonds, have a very high fat content and are used to produce specialty oils, which impart particular flavors. They are, however, much more expensive than conventional vegetable oils, such as corn, soy, and cottonseed, and would not be of much significance to us as a general household food oil were it not for concerns relating to *Pesach*. *Ashkenazic* Jews customarily refrain from using rice, corn, beans, and other legumes on *Pesach*, a restriction that is known as *Kitniyos*.

According to many authorities, this restriction also applies to oils derived from *Kitniyos*, which means that many vegetable oils (for example, soy, canola, and corn oils; peanuts are discussed separately below) may not be used during *Pesach*. (Cottonseed oil is generally considered acceptable for *Pesach*, although significant opinion exists that indeed considers such oil also subject

to the restrictions of *Kitniyos*.) One of the criteria for determining which vegetables are considered *Kitniyos* is that they must be *P'ri ha'Adamah* (fruit of the ground), and because nuts grow on trees, they are, by definition, not subject to this restriction. For this reason, many *Pesach* foods now use walnut oil. Interestingly, however, the use of walnut oil may raise another concern. Walnut oil is sometimes refined on the same equipment as wheat germ oil, which is *Chometz*. One must therefore be careful not to cause problems with true *Chometz* in the quest to find a non-*Kitniyos* vegetable oil, and a reliable *Hashgacha* is therefore essential.

### Peanuts

Peanuts, however, are not nuts at all. They are legumes, members of the pea family, and are called *groundnuts* in many parts of the world. In dealing with the *Halachic* issues relating to peanuts, two points should be noted. First, unlike true nuts, the proper *B'rachah* for peanuts is *Bo'rei P'ri ha'Adama*. Second, peanuts are native to the New World and were not part of the European diet until fairly recently. These two considerations serve to create another interesting *Halachic* discussion concerning *Pesach*. Until recently, peanut oil was popularly used for *Pesach* foods, a policy based on two considerations. First, many authorities permit the use of oil derived from *Kitniyos* because the custom prohibiting these foods applied only to whole or ground beans that were similar to grain. In addition, some authorities maintain that peanuts—having never been available when the custom of *Kitniyos* was promulgated—are not subject to the restriction in the first place. Indeed, Rav Moshe Feinstein *zt"l* held that one could eat peanuts on *Pesach* for this reason. Although the general custom in North America is to avoid eating peanuts, peanut oil had generally been accepted. With the current availability of less controversial

alternatives, however, most *Kashrus* authorities today avoid using it.

Although the use of peanuts to make oil is of interest for *Pesach*, peanut butter is ubiquitous. Natural peanut butter is made by grinding roasted peanuts into a paste, and inherently poses no *Kashrus* concerns as long as a dedicated grinder is used. Commercial peanut butter, however, uses emulsifiers and additional peanut oil, both of which require a reliable *Hashgacha*.

### ***Insect Infestation***

One major *Halachic* concern, however, permeates all types of nuts. The nutritious nature of nuts makes them an ideal habitat for many types of worms, and it has historically been important to check nuts before eating. Although such infestation is less of a concern in North America, one should be aware of the potential for the problem.

The *Kotzker Rebbe*, with his typical piercing insight, once commented about the *Minhag* to avoid eating nuts on *Rosh ha'Shanah*. He noted the good intentions that surround this custom but cautioned that one should not lose sight of the underlying message of the custom. A real “*Chet*” (sin), he noted, “also has the same *G'mmatria* as *Chet*.” The same *Zehirus* (care) that a person exhibits in avoiding eating nuts should most certainly be exerted to avoid the actual *Chet* (sinning) that is the source of the custom!

### ***The Bottom Line***

- Fresh nuts pose no *Kashrus* concern. Most nuts, however, are “roasted” to deactivate enzymes in the nut that would otherwise hasten spoilage.
- Oil roasting involves frying the nuts in oil. The source of the oil used for such purposes is generally something other than the nut oil itself, and the Kosher status of the oil is critical to the Kosher status of the nuts. Buttered nuts, such as pecans, are often seasoned with butter as part of the frying process, according both the nuts and the equipment a Dairy status.
- Dry roasting involves heating nuts in an oven or by forced hot air.
- Although oils are generally not used in this process, other Kosher-sensitive ingredients—such as gelatin, cheese, and other flavorings—may be added. The use of non-Kosher ingredients would compromise the Kosher status not only of the flavored nut but also of the equipment.
- Honey-roasted nuts often use lactose as a binding sugar, which would accord both the nut and the equipment in which it was fried a Dairy status.
- The red dye used to color pistachios poses no *Kashrus* concern.
- Nut oils, although somewhat expensive, offer flavor and health advantages. In addition, tree nuts (as opposed to peanuts) are free from concerns of *Kitniyos*.
- Peanuts are actually members of the bean family and are not true nuts. The general custom is to consider them *Kitniyos*.
- Commercial peanut butter generally contains emulsifiers, which require a reliable Kosher certification. *Natural* peanut butter is often made by grinding peanuts without any additional ingredients.
- Nuts may be subject to issues of insect infestation. Although not a significant concern in North America, nuts from many parts of the world must be inspected to ensure that they are insect free.

# The Story of Olives

## החדלתי את דשני

שופטים ט' ט'

### Have I Ceased My Richness?

Judges 9:9

Styles and tastes seem to come in cycles. Foods that have been with us for centuries wax and wane in their popularity, emerging from relative obscurity of yesterday to become the epicurean's delight of today. Olives were once the food for all seasons, serving as source of food, cooking fat, illumination—even as a depilatory (see *Mo'ed Katan* 9b). The olive is deeply rooted in history. Olive oil served to lighten the way of *Torah* during the time of the second *Beis ha'Mikdash* (Temple) with the miracle of *Chanukah*, which is exemplified in the *Proverbs* (6:23): “For the commandment is a lamp and the *Torah* is Light.” *Rashi*, in explaining the *Talmud* (*Shabbos* 23b), teaches us that based on this verse, one who is scrupulous in lighting *Shabbos* and *Chanukah* candles will merit having sons learned in *Torah*. Indeed, the olive permeates virtually every aspect of fulfilling *Mitzvos* (commandments) because the olive is the building block for determining many of the measurements that are critical to their proper performance (*Sukkah* 6a). However, just as ancient foods reappear on the gastronomic forefront, new *Kashrus* issues that relate to them can be similarly intriguing. The purpose of this article is to explore the *Kashrus* concerns this age-old food can present.

### Types of Olives

Olives are sold in many forms—green, black, stuffed with pimento, and pickled in vinegar. Each can pose distinct *Kashrus* con-

cerns. However, to understand these issues, we must first understand something about the olive itself. Both green and black olives are the same fruit; the difference is based on their level of ripeness when they are picked. Green olives are essentially unripe fruit, their higher acidity giving them their characteristic piquant flavor. Black olives are allowed to mature on the tree and have a more mellow flavor. Green olives are grown in many parts of the world, such as California, Greece, Italy, or *Eretz Yisroel* (Israel). Olives from *Eretz Yisroel* pose special concerns of *T'rumos u'Ma'asros* (tithes) and *Sh'mitah* (the Sabbatical Year). However, even olives from other countries can raise *Kashrus* concerns. Olives are generally not eaten as a fresh fruit; they are usually sold in jars or cans.

### Brining

To preserve the fruit until eaten, various chemicals are added to the olives. Green olives are usually packed in brine, which can be made with salt, acetic acid, or vinegar. Vinegar has historically been made from non-Kosher wine and is sometimes used in the production of olives to impart a specific flavor. In some countries, low-grade wine vinegar is preferred because it is far cheaper than other chemicals. In addition, a number of specialty olives have recently gained popularity, generally known by the locale from whence they hail. Kalamata olives, for example, come from a particular area



in Greece and are often packed in vinegar. Unfortunately, much of the vinegar used in Greece is wine vinegar, and even white vinegar may be produced from wine alcohol, creating significant *Kashrus* concerns.

Even white vinegar can pose a problem because in many parts of the world the ethanol from which the vinegar is produced can be derived from wine (not Kosher) or, in more recent years, lactose (dairy). Acetic acid may also suffer from the same concern. Although acetic acid is the active component in vinegar (vinegar is defined as acetic acid derived through fermentation), when acetic acid is used as an ingredient it *generally* refers to *glacial* acetic acid that is derived from petroleum. This distinction is not universal, however, and an ingredient declaration of acetic acid does not guarantee that it is actually not vinegar. To compound the concern, olives imported from other countries are shipped in brine blended overseas, which is then replaced with different brine when subsequently packaged. Ensuring that the initial brine, not just the brine to make the finished product, is Kosher is critical.

### **Additives**

Several other ingredients may also be used in the processing of olives. *Lactic acid* is often added to green olives. Etymological connotations notwithstanding, this ingredient is produced through the fermentation of sugar or corn syrup and is generally of concern only for *Pesach*. (One commercial attempt in the United States to produce lactic acid from lactose was a technological success but failed in the marketplace, in no small measure because of the fact that the food industry did not need a dairy lactic acid!) Ferrous gluconate is an iron salt of gluconic acid and is added to black olives to maintain their firmness and color. Gluconic acid is produced by the fermentation of sugars and requires a Kosher certification.

### **Stuffed Olives**

Olives, however, are not just “green” and “black.” Green olives are often stuffed with pimento. The word *pimento* is Spanish for pepper and was generally a small piece of a particular type of red pepper. Today, this condiment is often prepared from minced pimento, to which a gelling agent is added to form a solid stuffing. Although this ingredient may be an alginate derived from seaweed, it may also be non-Kosher gelatin.

### **Olive Oil**

The versatility of olives is not limited to the fruit itself. Indeed, its use to produce olive *oil* has historically been one of its most important applications. In the era before today’s common vegetable oils (such as soybean, canola, and corn) were available, olive oil served as the primary Kosher oil. Olive oil, however, differs significantly from other cooking oils. Although other cooking oils are designed to have as little flavor as possible, high-quality olive oil is prized for a particular flavor. In that respect, olive oil is treated somewhat as a fruit juice instead of a source of fat, which is why olive oil is divided into three major grades—extra virgin, virgin, and pomace. Extra-virgin olive oil comes from the first pressing of the olive, contains the lowest level of free fatty acids, and has the lightest color and flavor. Virgin oil comes from additional pressings of the olives but has a higher level of free fatty acids and thus a stronger taste. Both of these types of oil are generally not refined. Pomace oil is extracted from the olive “cake” that is left after the initial pressings. The oil is removed from the cake by pressing or with petroleum solvents, and is the lowest quality olive oil. Because of the impurities and flavors inherent in this grade, it is generally refined. Refining, a process used in the production of most vegetable, marine, and animal oils, involves heating and filtering

the oil to purify and standardize it. Unfortunately, vegetable oils (including olive oil) are often refined in the same equipment as non-Kosher animal and marine oils, rendering otherwise Kosher vegetable oils to be non-Kosher.

Today, olive oil has enjoyed a resurgence in the market, owing both to its perceived health value as a highly monounsaturated oil and to its unique flavor profile. This newfound popularity—and higher price—has not been without its pitfalls. Although it had been assumed that all extra-virgin olive oil was free of refining and contamination concerns, recent research has indicated that olive oil—including extra-virgin—is susceptible to adulteration. The outlying areas in the many countries where it is produced further complicates our ability to monitor the purity of the product. Extreme vigilance is therefore required of the *Kashrus* organizations to ensure that Kosher olive oil is indeed exactly that.

### **Passover**

Olive oil has always enjoyed a special place in *Pesach* foods. It has historically been the vegetable oil universally accepted as being free of any concerns of *Kitniyos*. (Many otherwise Kosher oils, such as soy, canola, and corn, are avoided by *Ashkenazic* Jews during Passover.) In addition to concerns of possible adulteration with less expensive non-Passover oils, modern technology has created complications for this erstwhile paradigm of Kosher for Passover oils. Olives (as do many fruit) yield the greatest amount of juice when they overripe. During the ripening process, certain enzymes are produced naturally that break down the pulp of the olive, allowing the oil that is entrapped to come out more easily during pressing. In the times of the *Talmud*, olives were placed in barrels and allowed to partially decompose (see *Mishnah, Mo'ed Katan* 11b), releasing the enzymes necessary to soften the fruit for

pressing. Today, these enzymes (cellulases and pectinases) are produced commercially and added to ground olives, allowing olives to be pressed without such a delay. Many of these enzymes may be considered *Chometz*. Verifying that any enzymes used are indeed Kosher for Passover is therefore important. Another *Pesach* concern involves the use of citric acid. Minute amounts of metal ions occur naturally in all vegetable oils, which can affect the color and flavor of the oil. Citric acid is often added to bind to these ions and render them harmless (chelation), and the Passover status of the citric acid must be verified if it is used. It has also been reported that chlorophyll preparations have been added to fortify an “olive green” color, the Kosher status of which should also be verified.

Advances in food technology are an ever-present challenge to Kosher food. Even products that have been with us for thousands of years can and do change. With the care that is exhibited in the adherence to all the rules of *Kashrus*, may Jews speedily merit the kindling of the *Menorah* (candelabra) in the *Beis ha'Mikdash* (Holy Temple in Jerusalem) with the purest (and most Kosher) olive oil.

### **The Bottom Line**

- Black and green olives are essentially the same fruit, differing only in their level of ripeness.
- Olives, as well as all other produce, grown in Israel are subject to special laws unique to the Holy Land. *Unprocessed* olives from all other countries are inherently Kosher.
- Most olives, however, are soaked in a *brine* to preserve them. This brine may contain vinegar or acetic acid. Vinegar may be produced from non-Kosher wine and must therefore be carefully monitored.
- Even if a product lists acetic acid as an ingredient, it may first be soaked in

non-Kosher vinegar and then in acetic acid. Lactic acid is often added to green olives, and may pose a Passover concern. Ferrous gluconate is often added to black olives to maintain their firmness.

- As with all fermentation products, the gluconic acid used in its production requires a reliable Kosher certification.
- Green olives are often stuffed with *pimento*. Although the original version of this material was a strip of red pepper, this product is now generally prepared from minced pimento and a gelling agent.
- Although this gelling agent often used is carrageenan, it may also be non-Kosher gelatin.
- Olives are also the source of olive oil, one of the most ancient sources of oil for both food and fuel. Olive oil is prized for its flavor and is graded for quality according to the freshness of its taste. Extra-virgin and

virgin oil refer to oil that is squeezed from ripe fruit. This grade of olive oil is typically processed without refining or other heat treatment, and many authorities permit its use without certification.

- However, concerns of adulteration or storage with non-Kosher oils remain a concern. Pomace grade refers to oil that is extracted from squeezed olives, in much the same manner as oil is extracted from soybeans. Such oil is typically refined and may be processed on equipment that is also used for non-Kosher oils. Kosher certification of this grade of oil is certainly required.
- Olive oil is acceptable for use on Passover according to all opinions.
- However, *Chometz* pectinase and cellulase enzymes are often added to increase the yield during pressing. Citric acid may also be added to olive, all of which may pose a Passover concern.

# The Story of Potatoes

## ורֵיחַ אֶפְךָ כִּתְפוּחִים

שִׁיר הַשִּׁירִים ז' ט'

### Like the Fragrance of Apples

*Song of Songs 7:9*

As Jews sit down to their first meal of the year on the evening of *Rosh ha'Shanah* (the Jewish New Year), Jews throughout the world follow the centuries-old custom of dipping an apple into honey to signify their wish for a sweet year. Apples have a long-standing place in Jewish life. Although the apple was not the Fruit of Knowledge that was Adam's undoing (see *Sanhedrin* 70b), its mystical connotations in the phrase *S'dei Ta'puchin* are cited by authorities as the basis for dipping this particular fruit in honey at the onset of *Rosh ha'Shanah* (see *Ta''Z O.C.* 583 *s.k.* 2). Interestingly, the Hebrew word for apple—*Tapu'ach*—is not based on a horticultural root, but rather derives from the concept of something round and inflated, such as when dough rises into a ball or as a name for the round pile of ashes on the *Mizbay'ach* (Holy Altar). Indeed, the *Imrei No'am* argues that the eating of the apple on *Rosh ha'Shanah* is an allusion to the pile of ashes of the *Akeida*, the sacrifice brought by Abraham in place of his son Isaac. Even in the botanical sphere, the word *Tapu'ach* has been grafted onto many fruits other than the conventional apple. *Tosafos* (*Shabbos* 88a) quotes the *Targum* on the above verse from *Shir ha'Shirim* (*Song of Songs*) that the word “*tapuchim*” refers to the *Esrog* (citron). (Interestingly, the *Targum* that we have uses the phrase *k'Reicha d'Tapuchin d'Gan Ayden*—like the fragrance of the “apples” of the Garden of Eden—which is, perhaps, the source of the fable that it was indeed an apple!) The *golden apple*—*Tapu'ach Za'hav*

or *Tapu''z*—is the modern Hebrew word for an orange. Similarly, many languages (including Hebrew) have taken the phrase “earth apple” to refer to a potato (*pomme de terre* (French), *Erdapfel* (German), and *Tapu'ach A'damah* (Hebrew)).

Although the classic apple can be traced back to the time when the Children of Israel were slaves in Egypt (see *Sotah* 11b), the inclusion of the potato in the European diet began only after its discovery in South America by European explorers. Despite its late start, the potato has managed to gain an astounding ascendancy in our nutritional regimen. The *Tif'eres Yisroel* (*Avos* 3 *Bo'az* 1) so valued Sir Francis Drake's introduction of the potato to Europe, thus staving off famine, that he placed him on a par with Gutenberg and his printing press and Jenner and his smallpox vaccine in their contributions to mankind. The lowly spud is perhaps the only vegetable that has had the power to effect the depopulation of a country and the derision of an American vice president and has been adopted by an untold number of countries as its own. “French” fries vie with “Belgian” fries to form the nexus of the fast-food culture, and no self-respecting Jewish celebration would be replete without a potato *kugel* (pudding). On *Pesach* we press the potato into every conceivable (or inconceivable) service, and whether they are called “chips” (US) or “crisps” (UK), they follow us everywhere between meals. Although the potato itself may be only a humble vegetable, the methods by which it is processed lead to a

number of interesting *Kashrus* and *Halachic* issues.

Because potatoes were new to the Old World, their acceptance was far from secure. In some areas, ecclesiastical authorities banned the potato as the “devil’s apples” because its lack of obvious seeds was deemed unnatural. In addition, people worried that potatoes, as a member of the nightshade family, were as poisonous as many of its cousins. (Potato plant *leaves* are indeed toxic.) Its nutritional advantages, however, overcame such reticence, but not without some high-powered royal persuasion. In the 1620s, Frederick, the Great of Prussia, decreed that his subjects plant and eat potatoes as a deterrent to the ever-present famine, but success was assured only when he threatened to cut off the nose and ears of those who refused. The French, on the other hand, resorted to a high-powered marketing campaign. Antoine Augustin Parmentier, a chemist and friend of King Louis XVI, made it his mission to popularize the potato after surviving as a Prussian prisoner in the Seven Years’ War on a diet of potatoes. He prevailed upon the king to serve potatoes at royal feasts, and for Marie Antoinette to adorn her hair with potato flowers. His fidelity to the potato was reciprocated with the famous *Potage Parmentier* (potato leek soup) named in his honor.

## **B’rachah**

The lack of familiarity with the potato may also have played a role in determining its *B’rachah*. Most *Halachic* authorities concur that the *B’rachah* (blessing recited before eating) is *ha’Adamah* (“the fruit of the ground”) because the potato grows in the ground. The *Ropsitcher Rov*, however, felt that the appropriate *B’rachah* was *she’Hakol* (general blessing for nonagricultural products), and several rationales are given for this opinion. The *Imrei Moshe* posits that the *Ropsitcher* felt that potatoes were more akin to *K’mehin*, those mushrooms that

grow underground (truffles), for which a *she’Hakol* is indeed said. This argument was seemingly buttressed by the observation that potatoes do tend to continue growing “from the air” even after they have been removed from the ground. The association between truffles and potatoes is indeed borne out by the use of the name *tartuffo* in some Italian dialects to mean potato, derived from the Latin *terrae tuber* or “tuber of the earth.” This etymological relationship even carries through to the famous German/Yiddish word *kartoffel*, which is a corruption of an old German dialect word *tartoffel* (potato).

The *Shinnover Rov*, however, rejects this approach and explains the opinion of the *Ropsitcher* from an entirely different perspective. *Chaza"l* recognize that certain foods are particularly satisfying—*Da’var ha’Mayzin*—and may serve as the mainstay of a diet even if they are not one of the five major grains. The *Shulchan Aruch* (*O.C.* 208:7), following the opinion of the *Rif* and the *Rambam*, rules that we therefore make a *M’zonos* (blessing for grain) on rice even though it is not one of the five major grains because it is similar to grain in that it is a satisfying food. *Rabbeinu Yonah*, quoting the opinion of one of the *G’onim*, extends this concept to millet and other foods that are also satisfying. The *Shinnover Rov* therefore argues that because potatoes exhibit particularly satisfying attributes, they should, by right, also deserve a *M’zonos* according to this opinion. To avoid a question as to its appropriate *B’rachah*, the *Ropshitzer* advised making a *she’Hakol* on potatoes, which is valid for all foods. Many *Chassidim* follow the *Minhag* (custom) of the *Ropshitzer*—*except* on *Pesach*, when they use potatoes for *Karpas* and make a *Ha’Adamah*!

## **Bishul Akum**

Aside from the appropriate *B’rachah*, the manner in which potatoes are processed raises several significant *Kashrus* concerns.

One such issue relates to the rules of *Bishul Akum*, the *Halacha* that requires a Jewish involvement in the cooking of many types of foods. In general, a Jew must participate in the cooking of *important* foods that are not edible raw—otherwise, such food would be considered non-Kosher. The criterion of an *important* food—something that is *Oleh al Shulchan M'lachim* (literally, “served on a royal table”)—is somewhat subjective and depends on the current eating habits in any given locale. Given the aforementioned disdain previously accorded potatoes, many authorities (for example, *Aruch ha'Shulchan* 113:18) ruled that they were “peasant food” and therefore not subject to the strictures of *Bishul Akum*. The *Chochmas Adam* (66:4), however, felt that potatoes were indeed an important food (“served at a royal table”) and subject to this concern. Today, most authorities recognize potatoes to be a food eminently suited for the fanciest of feasts, and have therefore ruled that they indeed are subject to this *Halachic* requirement.

### **Instant Mashed Potatoes**

Instant mashed potatoes pose an interesting twist to *Bishul Akum* and potatoes. Potato flakes are produced by cooking potatoes, mashing them, mixing them with an emulsifier, and then drying the mashed potatoes by spreading them on the surface of a large, heated steel drum. This thin layer of dried potato is then removed from the drum surface and chopped into flakes, and when mixed with water can be reconstituted into “instant” mashed potatoes. A reliable Kosher certification is certainly required because of the use of the emulsifier, but what about concerns of *Bishul Akum*? To address this issue, many *Hashgachos* rely on an opinion of the *Avkas Rochel*. The *Avkas Rochel* posits that even if a food were rendered non-Kosher by dint of *Bishul Akum*, if the food were subsequently rendered “uncooked”—that is, requiring additional cooking—and therefore inedible, it would lose its status as

a cooked food as regards the strictures of *Bishul Akum*. Because dry, instant mashed potatoes are not considered edible in that state and require the addition of hot water to become palatable, some argue that they fit the parameters of the *Avkas Rochel* and lose their status of *Bishul Akum*. This position is questionable, however, in that the rehydration of the instant potatoes can be done with *cold* water and thus does not require any additional cooking. In addition, merely pouring hot water into a product would, at best, only be *Iruy*. (*Cooking* typically requires *immersing* in hot water—merely *pouring* hot water over a product [*Iruy*] does not have the same *Halachic* status and is not considered a full-fledged cooking.) A more cogent rationale for approving potato flakes is that the potatoes are generally cooked with steam and not hot water. In general, foods that are *smoked* are not considered subject to concerns of *Bishul Akum*, and a number of authorities consider steaming to have the same *Halachic* status as smoking in this regard.

### **Potato Chips**

Potato chips may be subject to a different leniency as regards *Bishul Akum*. Conventional chips are made by frying thin slices of potato in oil or shortening until they are crisp. This food is the quintessential snack, designed to be eaten on the run and, by definition, the antithesis of a stately meal. Many authorities rule that although a particular food may generally be considered important, the manner in which it is prepared must also be taken into account in determining its susceptibility to *Bishul Akum*. The generally accepted approach is to recognize that chips are not primarily intended to be eaten as part of a meal, even if sometimes served as part of one. This form of potato would be considered free of concerns of *Bishul Akum*. On the other hand, Rav Yaakov Kaminetzky *zt”l* is quoted (in *Emes l'Yaakov Y.D.* 113:9, endnote 42) as holding that potato chips are

indeed subject to concerns of *Bishul Akum*. He, among others, argues that because potatoes *as a species* are an important food, the fact that potato *chips* are not important is insufficient to obviate the concern of *Bishul Akum*. This is also the position of Rav Moshe Feinstein *zt"l* (*Igros Moshe Y.D.* IV:48:5). Most *Hashgachos*, however, follow the former approach.

Although potato chips may not have a concern of *Bishul Akum*, they are still subject to many other significant *Kashrus* concerns. First, the oil used to produce them must be Kosher, and although most companies today use vegetable oil, this is by no means universal. Indeed, one U.S. potato chip manufacturer actually prides itself on frying its “Homestyle” potato chips in *lard*. Although many of this company’s other potato chip products are Kosher certified, one must be exceedingly diligent in checking for the Kosher symbol.

Even if a product states that it uses only vegetable oil, a reliable *Hashgacha* would still be required to ensure that the oil comes from a Kosher refinery and that the fryer is not used with other types of oils. In some cases, oil that is used to fry pork rinds is recycled and used to fry “100% Vegetable Oil” potato chips! Second, potato chips are not limited to salted and unsalted varieties. Today, people expect a variety of flavors, the *Kashrus* of which must be reliably ascertained. Some flavors, such as “Sour Cream” and “Cheese,” would obviously raise concerns of *Kashrus* and *Cholov Yisroel*, although many are indeed Kosher.

*Kashrus* issues relating to other flavors, such as “Salt & Vinegar,” however, may not be as obvious. In the beginning, all chips are created equal; they are nothing more than simple fried potato. As they leave the fryer, however, salt or other flavor powders are sprinkled onto the chip. These flavoring powders contain a number of ingredients, many of which are designed to dilute and disperse the actual spices or flavors. Often,

lactose (milk sugar) is used in these blends because it does not absorb as much moisture as other sugars and thus does not cake as readily. For this reason, you will often see such flavors as “Salt & Vinegar” bearing a “Dairy” designation. (On the other hand, “Crab Flavor,” “Steak Flavor,” and even “Bacon Flavor” chips have all been produced as Kosher Pareve products by various companies!) The method by which these seasonings are applied also raises several *Kashrus* concerns. Potato-crisp manufacturers generally produce a variety of seasoned products on the same production line, often changing seasonings every few hours. Even if the seasonings are applied at room temperature, it is imperative that equipment used to dispense and apply these seasonings be adequately cleaned between non-Kosher and Kosher seasonings, as well as between dairy and Pareve ones. In addition, some companies apply their seasonings as the chips exit the fryer, that is, while they are still quite hot. In such situations, the equipment handling the hot, seasoned chips must be *Kashered* between significant seasoning changeovers.

### ***Extruded Potato Chips***

The venerable potato crisp had changed little over the years, with its innovations being limited mainly to the ripple cut and exotic seasonings. This all changed about thirty years ago with the advent of Pringles<sup>®</sup>, the trade name of a new kind of potato “chip” (technically known as “crisps”). Instead of being made from random-sized slices of fresh potatoes, these chips are created by forcing a potato paste into a uniform shape before they are fried. This potato paste is made from potato flour, but this flour, instead of being merely ground potatoes, is actually instant mashed potato flakes (discussed previously) that have been milled into a powder. The *Kashrus* issues discussed above regarding potato flakes may be of concern. In an additional twist, Pringles<sup>®</sup> causes the issue

of the appropriate *B'rachah* to return to the fore. In general, the appropriate *B'rachah* for products made from flour that is not of the five major grains is *she'Hakol*. For example, we make a *she'Hakol* on *Pesach* cakes made from potato starch. Most authorities concur that conventional chips are nothing more than pieces of a potato—and hence require a *ha'Adamah*. Pringles<sup>®</sup>, however, are made from *ground* potatoes, and many authorities therefore rule that their appropriate *B'rachah* is *she'Hakol*.

### **Olean<sup>®</sup>**

A recent twist on the crisp has been the introduction of Olean<sup>®</sup> (also known as Olestra<sup>®</sup>), a “synthetic” fat replacement developed by Proctor & Gamble. This material can be used to fry chips in much the same way as ordinary oil, but because it passes through the body unchanged, it does not contribute any calories to the product. Concern has been expressed about certain health issues regarding this product, but it is indeed Kosher certified.

### **French Fries**

The ubiquity of the potato is not limited to the crisp. Although the French may rue the conquest of the world by American fast food, they may nonetheless take some solace in the fact that one of its mainstays is the *French* fry. (Interestingly, it is known as *les Pommes Anglaise* in France.) Most frozen vegetables pose little *Kashrus* concern, apart from possible concerns of insect infestation in certain species. However, frozen potatoes—in the form of frozen French fries—differ from conventional frozen vegetables in that they are *fried* before being frozen. A reliable Kosher certification is therefore critical for frozen French fries to ensure that the factory does not process tallow-based products on the same equipment. Interestingly, however, this product does *not* pose a significant

issue of *Bishul Akum* because the fries are only partially fried in the factory and require additional frying or baking at home to render them edible.

Frozen French fries, however, have been the subject of an interesting ingredient controversy with significant *Kashrus* implications. French fries are often fried in tallow (beef fat), both because of its lower cost and the flavor that it imparts. Indeed, one major fast-food chain touted the exceptional flavor of its fries, which it attributed to the animal/vegetable fat blend used in their processing. With consumer acceptance of products fried in animal fat becoming an issue, however, the company developed a vegetable-based oil with the same flavor characteristics and proudly announced that its product was now fried in “100% Vegetable Oil.”

Only it was not. While the oil itself was soy (and Kosher!), the flavoring was derived from tallow. While those maintaining a Kosher diet would probably have avoided the product regardless of its claimed nonanimal status, other religious groups—with a severe sensitivity to cattle-based foods—had assumed that the product was indeed all-vegetable and took the opportunity of enjoying this newly permitted treat. When the tallow component became known, however, the fast-food company was forced to pay millions of dollars in damages for the oversight.

### **Chanukah**

Although potatoes do not figure prominently on *Rosh ha'Shanah*, they do so on two other holidays. *Chanukah* is known as the “Festival of Lights” because it commemorates the rededication of the Second Temple in *Hasmonean* times (second century BCE). According to tradition, only enough pure oil could be found in the temple to light the candelabra one night. A miracle occurred, however, and the candelabra remained lit for eight days—enough time to prepare fresh



oil. To commemorate this miracle, we light candles for the eight days of *Chanukah*. In addition, many people have a custom to eat foods prepared with oil during this holiday as a reminder of that miraculous oil. In Europe, the custom was to eat latkes—potato pancakes—fried in oil.

### **Passover**

The second holiday in which potatoes figure prominently is Passover. Potatoes enjoy the distinction of being the only significant domestic source of starch that—according to most opinions—is considered free from concerns of *Kitniyos*. Potato starch has become a staple in *Pesach* cooking and baking, and is used to produce Passover glucose for use in candies. Despite the inherent suitability of these potato products, their processing for *Pesach* requires extra vigilance. Potato starch is often the by-product of other potato processes, and special attention must be paid to the antifoams in the starch slurry and the steam used to peel potatoes to ensure that they pose no *Kashrus* concerns. In addition, the emulsifiers used in *Pesach* potato flakes must similarly be approved for *Pesach*. Even simple peeled, fresh potatoes are not immune to *Pesach* concerns because companies that peel fresh potatoes often wash the peeled product with citric acid and other chemicals (which require Passover certification) to prevent the potatoes from changing color.

Clearly, the potato has become quite pervasive in our culture in the four hundred years since it was introduced to the Western world. Even on *Rosh ha'Shanah*, when the “apple” is dipped in honey, the lowly potato may indeed have greater relevance than one might think. The *Eliyahu Rabbah* (583:2) and the *Gilyon Rav Akiva Eiger* (*O.C.* 225)

quote the custom of the *Mahari*’*l* to eat “*erd appel*” on the first night of *Rosh ha'Shanah*, at which time he made a *she'Hechiyanu* (special blessing for important occasions) on the new “fruit.” Although the appropriateness of making a *she'Hechiyanu* on a potato may not be universally accepted (see *Mishnah B'rurah* 225 *s.k.* 18), it may nevertheless be well to remember this other *Tapu'ach* and the beneficence with which *Hashem* has granted both enjoyment and sustenance over the years.

### **The Bottom Line**

- Potatoes may be subject to concerns of *Bishul Akum*, depending on the method by which they are prepared.
  - Many authorities consider instant mashed potatoes to be free of this concern because the potatoes are *steamed*, which may be considered similar to smoking and thus not subject to the strictures of *Bishul Akum*.
  - Many authorities consider potato chips to be free of this concern because they are not an “important” food.
- Potato chips do require reliable Kosher certification for many other reasons, including Kosher concerns for the oil in which they are fried and the seasoning added to them.
- Frozen French fries are partially fried before freezing. Although the level of such cooking is not sufficient to create a concern of *Bishul Akum*, Kosher certification is imperative because of the oil in which it is fried. Indeed, some “all-vegetable oil” contains non-Kosher animal flavorings.
- Normative Kosher standards allow for the use of potatoes on Passover.

# The Story of Preservatives

## סילוקו כסידורו

מנחות צ"ו ע"ב

### As Fresh As the Day It Was Baked

*M'nachos* 96b

One of the services performed in the *Bais ha'Mikdash* (Holy Temple) involved the offering of the *Le'chem ha'Panim* (the *Shewbread*), which were placed on the *Shulchan* (the Holy Table) every week. The *Talmud* (*M'nachos* 96b), in discussing the manner in which they were prepared and handled, notes that although the twelve loaves of bread remained on the *Shulchan* for more than seven days, they were nevertheless as fresh on the day they were eaten as when first placed on the *Shulchan*. Although the ability of the *Le'chem ha'Panim* to retain its freshness was clearly caused by divine intervention, food scientists have developed a myriad of chemical agents to maintain the freshness of the foods we consume today. The preservation of food has been humankind's goal from the beginning of recorded history. Joseph's success in staving off starvation in ancient Egypt stemmed from his ability to store the grain from the seven good years by adding an ingredient, whose identity has been lost, to prevent its spoilage (see *Rashi Genesis* 41:48).

Although Joseph's secret preservative may have been lost, we have many others today. Most food spoilage occurs when certain types of microorganisms, such as bacteria and mold, grow in food. As they grow, these microorganisms produce various chemicals that may give an objectionable odor or flavor to the food or may even be pathogenic. One method of preventing such spoilage is to destroy the microorganism, such as by heating or irradiating the food.

Another is to put the microorganism into a dormant state by freezing because microorganisms, while frozen, do not produce these chemicals. A third approach is to add certain chemicals to the food that tend to inhibit the growth of the offensive microorganisms. The Kosher status of these various agents is the subject of our discussion.

### Cultures as Preservatives

One of the earliest recorded methods of food preservation, ironically, was through the use of microorganisms themselves. It was noted long ago that when foods were allowed to ferment under appropriate conditions, the bacteria or mold that was part of the fermentation would do two things. First, it would often improve the flavor of the food or give it different beneficial characteristics, and second, it would allow for the storage of the food without further deterioration. Milk was fermented into cheese and yogurt, fruit juice into wine, and vegetables and meat into pickled foods. The fermentation process allows for the growth of desirable microorganisms in food and preserves it by two mechanisms. First, certain strains of bacteria are more robust than other strains, and when both types of organisms compete for the same food source, the stronger bacteria dominate. In this manner, the growth of stronger, more desirable bacteria can inhibit the growth of those that would otherwise cause food to spoil. Second, the desirable bacteria produce certain

chemicals that tend to inhibit other microbes from growing. For example, the fermentation of fruit juice with yeast produces alcohol, which tends to inhibit the growth of organisms that would otherwise cause the food to spoil. The bacteria used to ferment many other products, including vegetables, dairy products, and meat, produce lactic acid, which also has the propensity to inhibit undesirable bacterial growth. Although the exact process by which these fermentations preserved foods was not understood until recently, people have nonetheless enjoyed the fruits of these processes for thousands of years.

Modern food technology has allowed us to isolate desirable microorganisms for use in these fermentations. These are called microbial *cultures*. Cultures are merely concentrations of desirable bacteria, yeasts, or molds that have been isolated from natural sources or have been modified (either through genetic engineering or through a more conventional process called *mutagenesis*). The *Halachic* status of cultures, however, raises several interesting points. We do not live in a sterile environment, and innumerable bacteria, molds, and yeasts are found on and even in virtually every food we eat. When microscopes were perfected several hundred years ago, it was discovered that these *microorganisms* were indeed living organisms and had shapes and behavior similar to the larger animals that are called *Sh'ratzim*. The term *Sh'ratzim* encompasses many creatures, including small insects that are not Kosher, and the question arose that perhaps microorganisms had the same *Halachic* status as these prohibited creatures. *Halachic* authorities were quick to note that such a comparison was clearly not tenable. For example, vinegar is replete with such microorganisms, yet the *Torah* enjoins only a *Na'zir* (*Nazarite*) from drinking wine vinegar—leaving it permissible for everyone else. The *Chochmas Adam* (*Binas Adam* 38:49) dealt with this question and con-

cluded that the *Torah* required us to be concerned only with animals that are visible to the naked eye. Organisms that are too small to be visible without the use of a magnifying glass are of no consequence in *Halacha*, and this position has been accepted by virtually every subsequent *Halachic* authority.

The *Kashrus* of microbial cultures does, however, pose a concern for the following reason: When cultures are manufactured, a single colony of bacteria, for example, is placed in a fermentor containing a food source appropriate for the growth and propagation of those bacteria. This food source is called a growth media, and as the bacteria grow and reproduce, tremendous amounts of the desired bacteria are formed that are then concentrated and sold as cultures. Often, the media most favored by the bacteria is either dairy or not Kosher, and the *Halachic* status of the culture is directly tied to the Kosher status of the media on which it is grown. Care must therefore be taken that cultures used in the production of salami or pickles are grown on Kosher media that do not contain any dairy components (and in Pareve equipment) and that cultures used to produce *Cholov Yisroel* dairy products are grown only on *Cholov Yisroel* media.

### **Chemical Preservatives**

Other systems of food preservation rely on the use of various chemicals to inhibit the growth of offensive microorganisms. Salt (sodium chloride) has been used for thousands of years because it inhibits bacterial growth and provides flavor to food. Benzoates, sorbates, nitrates, and nitrites are also commonly used and pose no *Kashrus* concern. Lactic acid (produced through the fermentation of various types of sugar) and its salts sodium and potassium lactate are added to a variety of foods as a preservative. Although there is a linguistic relationship between lactic acid and lactose (milk sugar) and lactic acid can be made from that

sugar, virtually all lactic acid produced today is fermented from corn or cane sugar and is therefore Pareve. Vinegar has been used as a preservative for thousands of years because of the properties of the acetic acid, that is its active ingredient. Acetic acid can be produced from petroleum derivatives (petrochemicals) or from alcohol derived from fermentation. Some sources of such alcohol are wine and lactose, and a reliable *Hashgacha* is required to ensure that the source of the acetic acid is indeed Kosher and, preferably, Pareve.

Propionic acid and its salts sodium and calcium propionate are also used extensively to control the growth of a particular bread mold, known as rope. Generally, propionic acid is produced from petrochemicals and poses no *Kashrus* issues. However, consumer preference for “all-natural” ingredients, a status that petrochemical propionic acid does not enjoy, does raise a *Kashrus* concern. Natural propionates can be produced through fermentation and the classic media for this process is whey, a by-product of cheese production. Although the *Kashrus* issues relating to whey are not the subject of this discussion, whey does require a reliable Kosher certification. In addition, the use of any dairy ingredient in bread poses an additional *Kashrus* concern. *Chaza"l* recognized that bread was eaten with every meal and therefore required that regular bread must always be Pareve. In this way, people could be assured that a loaf of bread was appropriate for use as part of either meat or dairy meals, and the *Halacha* states that regular bread that was baked with milk (or meat fat) is not Kosher (see *Y.D.* 97). (Please note that this rule has several important caveats. For example, bread baked in an uncommon shape, as well as single-serving loaves, may be exempt from this restriction.) What is clear, however, is that natural propionates made through the fermentation of dairy whey would pose a significant *Kashrus* concern, and special Pareve fermentations

using corn syrup are indeed done to produce a natural propionate appropriate for use in Kosher bread.

Food spoilage can also take place through oxidation, in which fats and other components of a food react with the oxygen in the air and cause the food to deteriorate. Many chemicals are added to foods to prevent these chemical reactions. BHA and BHT are chemicals obtained from petroleum derivatives and have been used for years. They pose no innate *Kashrus* concerns, although the oils into which they are mixed do require a *Hashgacha*. Ascorbic acid (vitamin C) and tocopherol (vitamin E) are classified as antioxidants. Ascorbic acid is often added to fruit products to prevent them from turning brown and tocopherol to fat-based products to prevent them from turning rancid. Both require a Kosher certification.

### Da'var ha'Ma'mid

The importance of preservatives is such that there is a *Halachic* discussion as to whether they would be considered a “*Da'var ha'Ma'mid*.” *Halacha* recognizes that when an insignificant amount of non-Kosher ingredient becomes mixed into otherwise Kosher food, it may—under certain circumstances—be considered *Batul* (nullified) and not render the food non-Kosher. One of the criteria that governs this rule is that the offending material must not contribute significantly to the final product. For example, non-Kosher rennet used to curdle milk into cheese cannot be considered *Batul* because the cheese is in fact created by the use of the rennet and therefore cannot be considered insignificant. This concept is known as *Da'var ha'Ma'mid*, and *Halachic* authorities discuss whether a preservative, without which a food would spoil, falls into this category (see *Minchas Yitzchok* VI:71, who rules leniently on the matter). The issue of *Da'var ha'Ma'mid*

notwithstanding, preservatives are indeed of great significance in the food we eat.

### **Smoking**

Smoking foods is also an ancient method of food preservation, inhibiting microbial growth by reducing the moisture level of the food and adding chemicals such as creosotes. In addition to acting as a preservative, smoking imparts a desirable flavor and obviates a particular *Kashrus* concern. According to *Halacha*, “important” foods that are inedible in their raw state must have some Jewish involvement in their cooking to be considered Kosher—a rule known as *Bishul Akum*. Smoking, however, is not considered “cooking” for purposes of *Bishul Akum*, and foods prepared by smoking may be considered Kosher without Jewish involvement in the process.

The *Talmud* (ibid.) relates that when the Jews would ascend to *Yerushalayim* (Jerusalem) on each of the festivals, they would witness a great miracle. The *Kohanim* (priests) would lift up the *Shulchan* to show the miracle of the *Le’chem ha’Panim* and declare, “Behold the Divine affection with which you are regarded by the Almighty—it is as fresh on the day it was removed from the *Shulchan* as the day it was baked.” The *Talmud* (*M’nachos* 96b) quotes a verse from *Samuel* (21:7): “. . . to place warm bread (as on) the day it was removed,” to show that the bread was still warm on the day it was removed from the *Shulchan*. The *Tosafos* indeed question how it could have been warm when placed on the *Shulchan* because according to some opinions the bread was baked on Friday (and not placed on the *Shulchan* until *Shabbos*). Various answers are given to resolve this question. The *Tosafos* (ibid.) explain that the term *warm* merely alluded to its freshness, whereas the *Tosafos* (*Chagigah* 26b) explain that the bread was kept in the oven (on a

*blech*) overnight to keep it warm. What is clear, however, is that the freshness of the bread was maintained for up to eleven days through divine intervention. (The *Talmud* also notes that, despite the miracles attendant the *Le’chem ha’Panim*, part of the functioning of the *Shulchan* involved the use of special rods to separate the loaves from one another, allowing fresh air to circulate between them to prevent mold.) Although we also use a variety of preservatives to keep our food fresh, we eagerly await the spiritual preservatives that we will find in the rebuilt *Bais ha’Mikdash*.

### **The Bottom Line**

- Food spoilage is primarily caused by the growth of microorganisms that secrete chemicals that may give an objectionable odor or flavor to the food, or may even be pathogenic. Such spoilage may be prevented through various chemical and physical treatments.
- Many foods, such as cheese, wine, and pickles, owe their existence to the method by which their raw materials were preserved. In these cases, the foods were inoculated with microorganisms—known as *cultures*—with desirable characteristics, which in turn inhibited the growth of other, undesirable strains. In addition, the cultures may produce chemicals that inhibit other bacterial growth.
- Cultures are grown on nutrient media, ingredients of which may often be non-Kosher. A reliable Kosher certification is therefore necessary to ensure that Kosher cultures are grown on Kosher media.
- Chemical preservatives derived from mineral or petrochemical sources, such as benzoic, sorbic, acetic, and propionic acid and their salts, as well as sodium and potassium salts, pose no *Kashrus* concerns.

- Organic acids, such as lactic, citric, natural propionic, and acetic acid (vinegar) are produced through fermentation and require reliable Kosher certification.
- Smoking, in addition to preserving food, may be used to prepare food without restrictions of *Bishul Akum*.
- BHA and BHT are inherently Kosher. However, the oil used as a carrier for these chemicals requires Kosher certification.
- Natural vitamin E is derived from the by-product of vegetable oil distillation and requires reliable Kosher certification.

## The Story of Release Agents

### ושמן מחלמיש צור

דברים ל"ב י"ג

#### And Oil from Flint Rock

*Deuteronomy 32:13*

The *Mishnah* in *Yoma* (III:11) relates that the family of priests known as *Bais Gormo*, having perfected the art of baking the *Le'chem ha'Panim* (the *Shewbread* that was offered on the Holy Table in the temple), maintained a monopoly on that skill. Although the *Talmud* (*Yoma* 36a) explains that their motives were altruistic, *Chaza"l* nevertheless felt that their reticence to divulge this secret was inappropriate and included them in the group always referred to *l'Gnai*—in an uncomplimentary manner. As to the nature of the “secret,” *Rashi* explains that the intricately shaped *Le'chem ha'Panim* were baked in molds located on the inside walls of the oven, and it was exceedingly difficult to remove the loaves without breaking them. It was the skill of removing the bread without pieces of it sticking to the walls that *Bais Gormo* had mastered and refused to share. The problem of food sticking to cooking surfaces has bedeviled cooks and bakers ever since. Food scientists have worked assiduously on unraveling a “non-stick” secret. These products can raise some sticky *Kashrus* concerns.

#### **Animal Fats**

Edible fats have long been used as lubricants and nonstick agents, and their historical derivation from animals has had interesting ramifications. In 1857, the British managed to foment the Sepoy Rebellion in India with the introduction of the Enfield rifle, the bul-

lets for which were lubricated in a mixture of beef tallow and lard. To load the rifle, the soldier was obliged to bite off the tip of the fat-encrusted paper bullet casing, thus eating both tallow sacred to the Hindu and lard considered abominable to the Muslims—a sure-fire recipe for mutiny. As regards the Kosher status of animal fats and marine oils, those derived from non-Kosher species (for example, swine and whales) are clearly non-Kosher. Even animal fats derived from inherently Kosher species (for example, cattle and sheep) could be considered Kosher only if the animals were slaughtered and inspected in accordance with Kosher law and then only if the acceptable fat were soaked and salted to remove the blood. Much of the fat found on the internal organs of Kosher animals is considered *Cheylev* and is prohibited under all circumstances. As regards marine oils, the fish from which the oil is made must be monitored to ensure that they meet Kosher requirements (that is, have removable scales and fins). The level of inspection that would thus be required generally precludes the use of bulk loads of fish or offal, both of which are common raw materials for fish oil processing. From a practical perspective, it is impossible to collect, process, and render Kosher animal fats on an industrial scale, and the production of Kosher marine oil poses significant challenges. Both are therefore usually assumed to be non-Kosher.

The baker's need to prevent bread from sticking was not limited to the *Bais*

*ha'Mikdash*, and the use of animal fats for this purpose has historically created major problems in ensuring the Kosher status of the proverbial Staff of Life. The *Talmud* (*P'sachim* 30b) quotes a *B'raissa* (*Talmudic* addenda) that one should not bake bread on an oven surface that had been smeared with Kosher animal fat because the fat would render the bread *Fleishig*, thus violating the injunction that all bread must be Pareve. Non-Kosher fats, of course, would certainly render the bread unacceptable, and their use has historically been one of the greatest obstacles to Kosher certification.

### **"Processing Aids"**

To complicate matters, such "release agents," as they are known industrially, are not technically considered "ingredients" under U.S. food law because they are not integral to the product itself. Rather, they are considered "processing aids," which need not be listed on the ingredient declaration. These processing aids, however, permeate all stages of the baking process. After mixing, a large batch of dough is typically placed in a large trough where it can be stored or left to rise. To prevent the dough from sticking to the trough, "trough grease" is used. When the time comes to separate the dough into loaf-sized portions, a machine called a "divider" is used and to prevent the dough from sticking, "divider oil" is applied directly to the dough. In many cases, the bread is baked in a loaf pan, which is first coated with a "panning oil" to prevent the dough from sticking to it. When baking cookies, they are normally placed on papers permeated with various types of oils to prevent sticking and to keep the pans clean. Although the industry may not consider this torrent of oil to be an ingredient, *Kashrus* certainly does, and the source of the oil used is critical.

One solution to this problem is to use a vegetable fat, and indeed this is often

the case. Vegetable fats, however, tend to oxidize quickly (that is, become rancid) and create a film buildup on the equipment. Other lubricants, perhaps presaged in the verse "And oil from a flint," have come to the rescue. Petroleum (literally, oil from rocks—from the Latin/Greek *petros* [rock] and *oleum* [oil]) is an inherently Kosher product, and one of the highly refined petroleum derivatives is known as mineral oil. Mineral oil is tasteless and very stable, and is often used as the divider or pan oil. (Interestingly, although pure mineral oil is inherently Kosher and contains no *Chometz*, its use on *Pesach* may be compromised by antioxidants routinely added to maintain its freshness. Often, vitamin E [tocopherol] derived from soybeans is added for this purpose, raising the issue of *Kitniyos*. Fortunately, the level of this ingredient in mineral oil is infinitesimal and poses no *Halachic* issue.) Trough grease, however, poses a thicker problem. Historically, the word *grease* implied animal fat (from the Latin *crassus*—fat; in Danish, *gris* means pig), as opposed to *oil*, which implies a vegetable product (from the Greek *elaion*—olive). Some petroleum-based greases indeed derive their solid consistency from the lard added to them. Fortunately, Kosher blends of petroleum and vegetable fats have been developed and can be used as trough grease.

### **Machine Lubrication**

The use of grease in food preparation is not limited to release agents, however. Machinery used in food production requires lubrication, and such grease often comes in contact with the product. Government regulations recognize that such grease—even if not declared as an ingredient—mixes with the food and thus requires that "food-grade lubricants" be used. Kosher concerns are certainly no less cogent, and it is therefore incumbent for Kosher productions to



require the use of Kosher grease for these purposes.

### **Silicone**

Another approach to creating Kosher release agents and lubricants takes the concept of “rock oil” one step further. Animal fats, vegetable oil, and petroleum are all members of a group of carbon-based compounds called organic chemicals. Silicon, the second most common element in the earth’s crust, is found in sand and rocks and occupies a space directly below carbon in the periodic table of chemical elements. Many of the characteristics of silicon are very similar to those of carbon, and scientists have succeeded in creating a series of silicon-based synthetic compounds that mimic those based on carbon. These polysiloxane (or silicone) compounds have lubricating properties similar to organic fats and yet are much more stable and serve as the base for many Kosher synthetic release agents as well as for machinery grease. Nevertheless, although silicone oil may itself be inherently Kosher, finished products that contain it may contain non-Kosher fats and thus require a reliable Kosher certification. (The use of “rocks” in food is not limited to release agents. Silica gel, a highly refined form of glass, is used as a desiccant, a substance that absorbs moisture. This “gel” is actually very porous sand and, when added to food powders such as spices, prevents those powders from caking. It poses no *Kashrus* concerns.)

### **Treated Papers**

Another means of addressing these sticky issues is to bake products on a special nonstick paper or pan liner, such as “vegetable parchment paper” or “Quilon® paper.” Parchment paper is produced by treating conventional papers with a strong acid, which causes the paper fibers to swell and partially dissolve into a gel. The acid is then

removed and the gel pressed back into a solid paper form, creating a material that resists oil and water. Its appellation of “parchment” stems from its similarity to true parchment in strength and durability, but is not animal based. Quilon® is a registered trademark of the Dupont Company and refers to paper that is treated with a mixture of chromium and various fatty acids. Many of the original Quilon® papers contained non-Kosher stearic acid, and for that reason, ensuring that only baking papers with reliable Kosher certification are used is important. Fortunately, a number of Kosher versions of nonstick papers are available on the market, although they are often referred to as “quilon” by habit, even though they are not manufactured by Dupont. The most durable—and expensive—nonstick paper is coated with silicone. Although silicone may pose no *Kashrus* concerns, such papers may contain vegetable oils that do require a Kosher certification and raise concerns of *Kitniyos* for *Pesach*. Even the oldest nonstick film—the venerable wax paper invented by Thomas Edison—originally contained a mixture of paraffin and animal fats. Today, most wax paper uses only paraffin (a petroleum derivative), but some versions may still contain objectionable ingredients or be made on equipment used for a non-Kosher product. One must therefore ensure that wax paper bears a reliable Kosher certification.

### **Aluminum Foil**

Our slippery problem goes beyond baking and bakeries, however. The third most common element in the earth’s crust—aluminum—has become a staple in the kitchen. Drawing on its ductile qualities, this metal is formed into disposable baking pans and rolled into thin sheets to create aluminum foil. During the extrusion of aluminum foil, oils are used to lubricate the metal. These oils are generally mineral based, and in most cases the oil is annealed,

that is, burnt off the metal during processing. For this reason, regular aluminum foil does not feel “greasy.” Although most major brands of aluminum foil bear a Kosher certification, the heat of the annealing process should be sufficient to “*Kasher*” the foil from any suspect oils. In the case of disposable aluminum pans, however, the issue is a bit more significant. More copious amounts of oil are used as the metal is pressed, and the pans are not subject to an annealing process. Although animal fats are generally not used for such productions, both mineral and vegetable oils may be used. For this reason, some authorities recommend washing disposable aluminum pans before *Pesach* to remove any possible *Kitniyos* oil residue. The issue of lubricants and nonstick surfaces do come together, however, in the new Reynold’s Release<sup>®</sup> brand of “nonstick” aluminum foil. This product is coated with a proprietary blend of chemicals that prevents food from sticking to it, and the argument for Kosher certification for this product is much more cogent. Fortunately, the product does indeed bear a Kosher certification, although its approval for *Pesach* is pending. (Please note that the criteria used by many *Kashrus* organizations to determine the Kosher status of “nonfood” lubricants, such as those used in the production of aluminum foil and plastic wraps, may differ from those used for actual food. Because of several *Halachic* considerations, they may not be subject to the most rigorous review of their source or minute amounts of questionable ingredients may be allowed. As in all aspects of *Kashrus*, any questions should be directed to the *Kashrus* authority behind the certification.)

### **Molding**

The need to maintain a nonstick surface even extends to the ubiquitous styrofoam cup. These indispensable disposables are produced by “puffing” small plastic beads in

a mold, causing them to expand into that shape. To prevent the cup from sticking to the sides of the mold, a small amount of a very slippery stearic acid compound (usually zinc stearate) is added to the plastic before processing. As its name implies, stearic acid was originally derived from tallow (steer fat), which continues to be one of its major sources. Some *Kashrus* authorities have argued that using styrofoam products made with Kosher (vegetable-based) stearates is important. The consensus of most authorities, however, is that incorporation of the stearate into plastic, especially in such small amounts, is *Halachically* insignificant. Stearates pose a much greater *Kashrus* concern, however, when used as release agents in the production of many types of tablets, including medicines, candies, and sweeteners. These tablets are made by compressing a powder blend in a mold, and small amounts of calcium or magnesium stearate are typically added to the powder to ensure that the fine particles bind together into a solid and that the tablet does not stick to the die. In such a case, the release agent is actually added to the food itself as opposed to being applied to the equipment surface, thus making a reliable Kosher certification a far more pressing issue.

### **PAM<sup>®</sup>**

Attempts to create a nonstick coating are not limited to the factory and food plant. The classic nonstick solution, of course, is a luxurious pat of butter or shortening melting in the skillet. However, in an effort to reduce the calories attendant to such a liberal use of fat, food scientists have developed a product that allows one to enjoy the nonstick properties of oil but without adding a significant number of calories. PAM<sup>®</sup> (International Home Products), as well as its competing versions, is a blend of oil, alcohol, and lecithin that is sprayed on the cooking surface. After being sprayed onto the cooking surface, the

alcohol in it evaporates, allowing a very thin layer of lubricating oil to remain. The success of these products has bred flavored versions, some of which contain dairy ingredients. Clearly, all such products require a reliable Kosher certification because of the oils and flavors they contain.

Incidentally, the advent of PAM® may have inadvertently led to a different *Halachic* concern. There are two basic methods of *Kashering* equipment, *Hag'olah* (boiling) and *Libun* (burning). *Hag'olah* operates under the theory that when boiling a pot in water, all of the flavor that had been absorbed into the pot will travel into the water, thereby purging the pot of any non-Kosher flavor and rendering it Kosher. *Libun*, on the other hand, renders the pot Kosher by incinerating the absorbed flavor. As a general rule, a pot used to cook food in liquids may be *Kashered* with *Hag'olah*, although those in which the food is cooked directly on its surface (such as a spit on which meat is broiled) must be subjected to *Libun*. The method required to *Kasher* a frying pan is the subject of much discussion. The *Shulchan Aruch* (*O.C.* 451:12) rules that *Hag'olah* is sufficient, and the *Poskim* (see *Mishnah B'rurah s.k.* 63, 65) explain this ruling based on the fact that the oil (or fat) that is normally used in frying is considered a liquid for this purpose. Thus, this food is considered “cooked in liquid.” The *Mishnah B'rurah* does note (*s.k.* 65), however, that when the oil or fat is but a mere coating on the pan surface, one cannot consider such cooking to be “with liquid” and the pan would require *Libun*. It would seem, therefore, that the introduction of PAM® into the marketplace may change the way we need to *Kasher* a frying pan and require *Libun*. (Please note that many other factors come into play when determining the method by which a frying pan should be *Kashered*, and a *Sh'eilah* should be asked in each case—and be sure to indicate to the Rav if a release agent was used at any point.)

## Seasoning

The oldest “nonstick” coating is as old as cast-iron cooking implements themselves. Iron is notorious for oxidizing (rusting) in the presence of water, and it was long known that coating iron with a layer of grease would inhibit such rust. It was also noted that by heating an iron utensil after it had been coated with fat, some of the fat would be absorbed into and react with the metal to give it its classic black patina. A pan so treated would continue to repel water even after being washed and, by the same token, resist food’s sticking to it. This process, known as “seasoning a pan,” is still used today to treat cast-iron pots and skillets and is a practical example of *B'lios*, the *Halachic* concept of the absorption of food into metal. Although the seasoning of a new cast-iron pot has been *de rigueur* since time immemorial, one modern producer of such kitchenware sells a “preseasoned” product. The company uses a proprietary blend of oils to treat its product, and although it claims that this blend is vegetable based, its exact composition has not been divulged. The Kosher user may well be advised to avoid such a product. (Woks, although not cast iron, are also made of a type of metal that must be seasoned.)

## Teflon®

The quintessential *modern* nonstick surface is, of course, Teflon®, the trademark of the Dupont Corporation for its brand of polytetrafluoroethylene that was developed about sixty years ago. It is one of the most slippery substances known, and through interesting scientific legerdemain it has been successfully bonded to cooking surfaces. Teflon® poses no inherent *Kashrus* concerns, but it does raise the question of the appropriate method by which Teflon-coated pots can be *Kashered*. Many authorities consider plastic to be subject to *Kashering* just as any other material (other than ceramics and, according

to many opinions, glass), but this is not universally accepted. An interesting note is that although Rav Moshe Feinstein *z"l* was reticent about *Kashering* plastics in general, he does specifically allow for the *Kashering* of Teflon® (see *Igros Moshe, Even ha'Ezer* IV:7).

In addition to solving a number of sticky issues, rocks have played an important part in Jewish history. The *Midrash (Yalkut Shimon Chukas 763)* notes that a rock was the source of great miracles, wondrously exuding fire (*Judges* 6:21), honey (*Deuteronomy* 32:13), oil (*ibid.*), and water (*ibid.*, 8:15), even implying that the very same rock appeared in all four cases (see *Zays Ra'anan, ibid.*). As we have seen, modern science has allowed us to glimpse further into the miracles of rocks, to recognize their *Kashrus* implications, and to incorporate these benefits into our daily life. After Jews light *Chanukah* lights, the custom is to recite the *Ma'oz Tzur*. *Hashem* is referred to as our “rock” (*Deuteronomy* 32:4), in whose strength we place our trust and the ultimate source of all these miracles.

### **The Bottom Line**

- From a practical perspective, all industrial sources of animal and most marine oils are considered non-Kosher.
- Petroleum- and silicone-based lubricants are inherently Kosher. However, non-Kosher grease may be added to them, so verification of their Kosher status is required.
- Lubricants and release agents are used in many aspects of food production.
- In the baking industry, they are used in the handling of the dough and in actual baking. Candy production also relies on nonstick coating to prevent material from sticking to processing equipment.
- Mineral salts of stearic acid (“stearates”) are added directly to powders and pills to prevent caking and to aid in the tableting process.
- Stearic acid can be derived from both animal (non-Kosher) and vegetable (Kosher) sources and requires Kosher certification.
- Various types of lubricant-treated papers are used in the food industry.
- Only those papers treated with Kosher ingredients may be used for Kosher products.
- Although aluminum foil is processed with lubricating oils, these are generally removed through the annealing process. A new nonstick aluminum foil is treated with a nonstick film and is Kosher certified.
- Spray nonstick coatings, such as PAM®, require reliable Kosher certification.
- Preseasoned cast-iron implements require Kosher verification.

## The Story of Spices

### טבא חדא פלפלתא חריפתא

מגילה ז' ע"א

#### One Strong Pepper

*M'gillah 7a*

The use of spices in preparing food—and the demand for them—has played a role in history wholly inordinate to their nutritional value. A ransom that Alaric, the Goth, paid including three thousand pounds of pepper delayed the sacking of Rome for two years, and the discovery of the New World was caused in great part by the search for spices.

*Chaza"l* tell (*Sofrim* 15:8) that the *Torah* (the Written Law) is compared to salt and the *Mishnah* (the Oral Law) to pepper—*Pilpel* in Hebrew. Indeed, the term *Pilpel* is also used as the Hebrew word for “exegesis,” and the *Kashrus* issues related to salt and pepper, as well as other spices, serve to provide us with an interesting “*Pilpul*”—scholarly analysis.

#### Salt

The king of spices, ironically, is salt, and its importance transcends its use as a flavor enhancer. Salt is a necessary component in human nutrition, although excess consumption can pose a problem for some individuals. Its importance is even reflected in terms we use. Roman soldiers received part of their pay in salt—*sal* in Latin—from which we derive the word *salary*. Salt is a natural mineral (sodium chloride) and is “mined” from underground deposits or obtained by evaporating salty water. Although salt used to melt snow and ice may continue to be dug from the “salt mines”—the fabled destination for the politically undesirable—most such salt contains too many impurities for general

food use. Most of the salt we eat is called evaporative salt and is removed from the ground by pumping hot water into an underground salt deposit and collecting the liquid brine that is formed as the salt is dissolved into the water. This brine is then heated and concentrated, evaporating the water and allowing the salt to crystallize. These crystals can be grown to many different sizes. For example, the term “corned” beef comes from the use of very large salt crystals that are used to coat and preserve the meat. The size of the crystal is determined by the manner in which it is allowed to crystallize. “Kosher” salt is merely salt that is crystallized into larger particles, which are particularly suited for salting of meat to remove blood (see *Y.D.* 69:3). Some culinary experts prefer to use Kosher salt because it generally contains no additives, and the large salt crystal may disperse its flavor in a particular fashion. Chemically, however, it is identical to all other forms of salt.

The fact that our table salt is produced in this manner has an interesting *Halachic* ramification. The *Shulchan Aruch* (*O.C.* 318:9) discusses whether one is allowed to put salt into hot food on *Shabbos*, because such heat may cook the salt. (Cooking raw food on *Shabbos* is prohibited.) The *Mishnah B'rurah* (*s.k.* 71) notes, however, that this concern applies only to salt that is mined from the ground. Salt produced through boiling (that is, evaporating) is considered to have been already cooked and may therefore

be reheated on *Shabbos*. Sea salt, however, is generally produced by solar evaporation. Heat from the sun has a different *Halachic* status than does heat produced by combustion, and such salt may indeed not be heated to a temperature that is considered cooking. Solar-evaporated salt may remain subject to the original concerns of cooking on *Shabbos*.

Like all materials, salt is not entirely pure. For example, salt has been used as a means of delivering a necessary, but unrelated, nutrient. Goiter, a disease of the thyroid gland, develops because of a deficiency of iodine in the diet. About fifty years ago, nutrition experts developed iodized salt, and today most table salt contains this nutrient, added in the form of potassium iodide. Potassium iodide, however, tends to degrade in the presence of moisture, and to protect the iodine, a small amount of dextrose is often added to the salt to prevent oxidation. Although not generally a *Kashrus* concern, dextrose is derived from cornstarch (and sometimes wheat starch) and therefore poses an issue for Passover. Ironically, the preservative—and not the iodine itself—is what poses the problem. Other ingredients, such as calcium silicate or yellow prussiate of soda, are added to table salt to ensure that they pour even in humid conditions; these pose no *Kashrus* concerns. However, certain salts used in industrial applications, such as glycerated salts (which contain glycerin) and some large-crystal salts (which may contain polysorbates) do indeed pose *Kashrus* concerns. Sea salt contains numerous trace minerals found in seawater and tends to impart a slightly different flavor because of these elements. From a *Kashrus* perspective, however, they are not significant.

## Pepper

Perhaps the second most popular spice is pepper. The term “pepper,” however, has suf-

fered from the same historical error as that perpetrated upon the American “Indian.” When Columbus mistook the West Indies for the East Indies—and so misnamed its hapless inhabitants—he also confused the spices he found in the New World with those he had sought in the Old. Classic peppers are the fruit of the vine *Piper nigrum*, which grows in long pods of small berries called peppercorns. When Columbus landed in the West Indies, however, he found Chile plants that looked similar to the clusters of peppercorns that he was seeking. These pungent vegetables were very popular with the explorers because their flavor could mask the rancid taste of the ship’s stores that were the lot of the seafarer. (In *Halacha*, this concept is referred to as *Mechalya Ley l’Shvach* [see *Avodah Zarah* 39a], whereby a pungent spice can overcome an otherwise objectionable flavor.) Columbus quickly named these *peppers*, and this source of confusion has been with us ever since. Indeed, one can learn the *G’mara* (*P’sachim* 42a) properly only with this distinction in mind. The *G’mara* discusses “*Pilpeli Arichta*” (long peppers), which actually refer to the long pods of *peppercorns* and not long garden peppers that are common today.

This linguistic confusion extends to the fruit of the *Piper nigrum* itself, as well as the “peppers” of the Chile family. When the immature fruit from the classic pepper vine is harvested and dried in the sun, it turns black and is called *black* pepper. When the fruit is allowed to mature on the vine and then dried it remains white, and is called *white* pepper. *Green* peppercorns are prepared from unripe berries that are preserved in brine. On the other hand, *cayenne* pepper (also known as red pepper) is actually a variety of Chile noted for its pungent taste. Paprika is similarly a variety of Chile adopted by the Hungarians, which they guarded so jealously that they prohibited

whole seeds from being exported lest their spice jewel be grown elsewhere.

### ***Insect Infestation***

Pure spices are botanicals, parts of plants that are naturally Kosher, although fresh herbs and spices must be inspected to ensure that they do not harbor insects. However, spices are often dried as a means of preservation, and the method by which they are dried may pose significant *Kashrus* considerations. Most spices dried in the country of origin are dried either in the sun or with hot air on equipment generally reserved for those products, and pose little *Kashrus* concern. Indeed, *dried* spices have a distinct *Kashrus* advantage over fresh botanicals. Although insects are a major *Kashrus* concern in many types of vegetables, the *Halacha* stipulates that insects that have been thoroughly dried are considered mere dirt and no longer a prohibited insect.

### ***Freeze Drying***

*Freeze-dried* spices, however, pose special *Kashrus* concerns. In the freeze-drying process, the vegetable is first frozen and then subjected to a vacuum, causing the moisture to be drawn from the food through sublimation. The advantage is that the vegetables are not subjected to significant heat and tend to retain more fresh flavor and texture. The problem is that the equipment used for this process is often used to process meat, fish, and other non-Kosher products. A reliable *Hashgacha* is therefore required whenever freeze-dried spices are used.

### ***Spices from Israel***

An additional *Kashrus* concern stems from the issue of the country where it was grown. Produce from Israel is subject to the special sanctity of the land and must be handled in accordance with many rules regarding agri-

culture in the Holy Land. Indeed, every seventh year is a *Sh'mitah* year—the Sabbatical Year—and produce grown in Israel is subject to these rules. Israel has become a major supplier of certain spices and herbs, and one must exercise special care to ensure that all relevant *Halachos* are followed.

### ***Anticaking Agents***

When spices are ground, chemicals are sometimes added to prevent them from caking or otherwise deteriorating. *Stearates* are often used for this purpose and pose significant *Kashrus* concerns in that they are often derived from animal fats. Although other innocuous additives can be used for this purpose, one must ensure that garlic and onion powders, for example, contain only Kosher anticaking agents. Additional concerns with powdered spices are based on the fact that they are often blended or packaged in equipment used for non-Kosher products. For example, soup blends containing powdered chicken or beef can be blended and packaged on the same equipment as that used for pure spices. The cleaning procedures at such factories are not necessarily sufficient to ensure that no cross contamination takes place and it is therefore imperative that a reliable *Hashgacha* be in place. This is all the more a concern for *Pesach* because wheat flour is a common ingredient in some spice blends.

### ***Oleoresins***

Our zeal for using spices to enhance the flavor of our foods is not limited to their powdered form. *Oleoresins*, for example, are extracts of pure spices and are commonly used as ingredients in manufactured foods. *Oleoresins*, however, may contain additional oils and emulsifiers that require reliable Kosher certification. Other solvents used to extract flavors from spices, such as alcohol, also require reliable Kosher certification.

The *Talmud* (*Yoma* 75a) explains the verse in *Isaiah* (65:25) “. . . the bread of the serpent is dust” to mean that the serpent lacks the sense of taste, and all food that it eats tastes like dust to it. The curse bestowed upon the serpent in the Garden of Eden was that it would be incapable of deriving the satisfaction of tasting the food it ate. People, on the other hand, have the ability to appreciate the flavor of food and have found numerous ways of enhancing its taste. The *Torah* itself is called *Tavlin*—spice (*Kiddushin* 30b)—and spices and other flavorings add an important dimension to both our food and the *Halachos* relating to its *Kashrus*.

### **The Bottom Line**

- Plain salt poses no *Kashrus* concerns. The term “Kosher” salt refers to the size of the crystals. (Large-sized crystals are necessary for the salting of fresh meat to remove blood.)
- Iodized salt may contain dextrose, which is not acceptable for Passover use.
- Glycerated salt contains glycerin and requires a reliable Kosher certification.
- Certain large crystal forms of salt may use polysorbates in their processing, which require reliable Kosher certification.
- Ingredients used to prevent the caking of salt, such as calcium silicate and yellow prussiate of soda, pose no *Kashrus* concerns.
- Sea salt poses no *Kashrus* concerns.
- Pure spices are inherently Kosher. Spices from Israel require special Kosher certification.
- Air- or sun-dried spices generally pose no Kosher concern because the equipment used for these processes—especially in their country of origin—are generally dedicated for such use.
- Dried spices are also free of concerns of insect infestation because the drying process renders any insects in the spices *Halachically* insignificant.
- Freeze-dried spices, however, may be processed on equipment that is also used to dry non-Kosher products and a reliable Kosher certification is therefore required.
- Oleoresins of spices may contain oils and emulsifiers that require reliable Kosher certification. Other spice extracts may use alcohol or other solvents that also require reliable Kosher certification.



## The Story of Starch

### עמלים בתורה

רש"י, ויקרא כ"ז ג'

#### *Amylum b'Torah*

*Rashi, Leviticus 27:3*

Despite the persecutions and pogroms through which the Jewish people have suffered, *Hashem* has ensured its survival and ultimate redemption. Often, He has brought miracles to save His people, many of which are recounted by *Chaza"l* in the *M'gillas Ta'anis*. However, only two—*Chanukah* and *Purim*—were considered sufficiently significant to be commemorated as formal holidays. As we say in the *Al ha'Nisim* (the special prayer inserted for these two holidays), the miracle of *Chanukah* is multifaceted—it represents the triumph of the few over the many, the holy over the defiled, the righteous over the wicked, and *Torah* over paganism. Indeed, *Chaza"l* teach us that the essence of the miracle of *Chanukah* is the primacy of *Chanukah*—*Torah Ohr*—the *Chanukah* is light. *Chaza"l* emphasize that this adherence to *Chanukah* is not achieved by merely following the commandments, but rather through constant effort to increase our commitment to *Chanukah*—*Amaylim b'Torah* (engaging in *Torah*) (*Rashi, Leviticus 27:3*). One avenue by which we constantly affirm this commitment is through our scrupulous adherence to the laws of *Kashrus*, concerning ourselves with the primary ingredients that are used to produce the foods we eat. This article discusses one of the most basic of these raw materials.

#### **Native Starches**

Starch (*amylum* in Latin; *amylon* in Hebrew and Greek) is a classic ingredient used in

many foods. Starch is a complex carbohydrate, a major component of cereals and some vegetables. Commercial starch is produced from corn, wheat, rice, potato, and tapioca. These crops have a very high starch content, which is physically separated from the plant in large manufacturing facilities dedicated to these products. The predominant source of food starch in North America is corn. Corn is ground and mixed with water, after which the starch is separated from the other components of the kernel (bran, protein, and germ) and dried in large systems designed specifically for starch. At this point, no *Kashrus* concerns are apparent, and starch was generally considered to be of little *Kashrus* concern. Recent industry trends, however, have compromised this assumption. First, companies have developed specialty spray-dried starch products. Spray drying is a process whereby a liquid is sprayed in a fine mist into a hot air chamber, causing the moisture in the spray to evaporate and leaving a dried powder. The type of spray drier needed for this process is often not available in the starch plant and such material is therefore shipped to companies that specialize in this type of processing. Unfortunately, these custom spray-drying companies process many products on the same equipment, including dairy and non-Kosher items, which would compromise the otherwise Kosher Pareve status of the starch. Second, a salvage business has developed in the starch industry. At times, shipments of starch may deteriorate

or otherwise fall below the required specifications for use, usually because the product has become wet. Salvage companies buy this distressed material, grind and sift it (or spray-dry it), and sell it for food use. The regrinding process involves significant heat (above 120°F) and the source of the starch is often unknown. For both of these reasons, all starches must bear a reliable Kosher certification. An even more interesting problem that was discovered involved potato starch. Peeling potatoes by hand is tedious work, and in large factories a process called steam peeling does this work. Potatoes are placed in a large pressure cooker, which is pressurized with steam. The steam forces itself under the potato peel, and when the pressure is suddenly released the peel pops off the potato. The concern noted was that the steam was also used to heat the animal fat used in the plant to fry French fries, the condensate from which returned to the boiler and was used to peel the potatoes. Such a system compromised the potato starch made from these potatoes, again pointing to the need for a reliable Kosher certification for the product.

### **Processed Starches**

We often see starch referred to by different, perhaps confusing, names. *Modified* starch means that the starch has been treated with chemicals to affect the way it functions as a food additive. Generally, these chemicals are inherently Kosher phosphates or other chemicals, and pose no *Kashrus* concerns. *Gelatinized* starch—notwithstanding the fears the word *gelatin* elicits in the minds of the Kosher consumer—actually poses no *Kashrus* concern. The term refers to pre-cooked starch, not the addition of gelatin. One of important uses of starch is as a thickener of foods. As the starch molecule is heated in the presence of water, it absorbs the water and creates a thick slurry. One sees this when cooking pudding—you stir

the liquid mixture of starch, milk, and sugar over a flame and suddenly it becomes very thick! Many a houseperson, however, prefers instant pudding, which is made by using starch that has already been cooked and then dried into a powder. When a liquid is added to this pregelatinized starch, it resumes the thick consistency of a cooked starch. And in one of the quirks of the food industry, this potential linguistic confusion comes full circle. Starches have now been processed in such a way so that they can actually serve as gelatin and fat *replacers*. Indeed, yogurt manufacturers have explored the use of certain starches to replace the gelatin in their products.

### **Passover**

Another significant area of *Kashrus* concern with starch centers around *Pesach*. Corn is considered *Kitniyos* (legumes), which according to the custom of the *S'phardim* poses no concern. And although *Ashkenazic* custom dictates that such starch may not be eaten on *Pesach*, it may nevertheless be owned and used on *Pesach* even by *Ashkenazim*.

All starches are created equal, however. Cornstarch is the predominant starch in North America, but this is not the case in many other parts of the world. In Europe, about half of the starch used is derived from wheat, which is clearly *Chometz*, and any product manufactured in such countries that contains food starch is clearly of concern. In addition, many pharmaceuticals are made overseas, and starch is a significant component in such tablets. In general, *Kitniyos* is permitted for medical reasons, but *Chometz* raises a greater concern. Even in North America, wheat starch is sometimes used in the manufacture of pharmaceuticals, and it is therefore important to check all medicines before *Pesach*. *Pesach* starch concerns are even more insidious than one might think. Latex gloves, generally worn

by workers involved in food preparation, are often coated with starch to make them easier to use, and should not be used in Passover food production. Baby powder is no longer made from talc (which has been determined to pose a respiratory risk) but is made from starch. Again, wheat starch would be a major concern in this regard.

Such *Chometz* concerns are not limited to the starch itself, and starch finds its way into innumerable foods in ways that are not always obvious. A molecule of starch is composed of many sugar molecules bound together. When these bonds are broken (hydrolyzed), simple sugars such as glucose, maltodextrin, and other types of more complex sugars are obtained. Candies often contain maltodextrin and sorbitol, and any product manufactured in Europe that contains any of these ingredients is suspect of being *Chometz*, not just *Kitniyos*. Even citric acid and ascorbic acid (vitamin C)—often assumed to come from citrus—are actually produced through the fermentation of glucose and its derivatives and can pose a significant *Chometz* concern. Most soft drinks are sweetened with high-fructose syrup, which is made from starch-derived glucose, and for this reason, *Pesach* soda is sweetened with sugar (“the real thing”), and *Pesach* candies and other products that use glucose use a material that is obtained from the hydrolysis of potato or tapioca starch.

Two more points should be made regarding *Chometz* starch. First, facilities that handle otherwise acceptable starches for *Pesach* (such as potato or tapioca) often also handle *Kitniyos* or *Chometz* starches. A reliable *Hashgacha* is required to ensure that the *Pesach* material is not compromised. Second, wheat starch—and wheat glucose—would pose a *Chodosh* concern for those who are strict in this regard. Modern technology has greatly expanded both the uses and *Kashrus* concerns of starch, certainly worthy of our making the effort (*amylum*) to understand them.

### ***The Bottom Line***

- Starch is a major source of sweeteners, which are produced by the hydrolysis of starch into simple sugars.
- Virtually all starch manufactured in the North America—and used for the production of sweeteners and other starch-based products—is derived from corn (maize). In other parts of the world, notably in Europe, much starch is derived from wheat.
- Wheat starch is *Chometz* and may not be used for Passover. Cornstarch is only *Kitniyos*, however, and many *S’phardic* Jews use *Kitniyos* during Passover. *Ashkenazic* Jews, however, do not use *Kitniyos* on Passover and therefore abstain from using cornstarch or corn syrup during this period. Enzymes and organic acids produced through the *fermentation* of corn syrup, however, may be permitted for all groups.
- Potato and tapioca starch are typically used for Passover productions.
- Some starches are spray-dried on equipment that is used for products that pose a *Kashrus* concern. The Kosher status of starch must be verified.
- Starch is periodically recycled, so the Kosher status of all starch must be verified.
- Modified starch typically poses no *Kashrus* concerns. The chemical modification of the starch generally uses inherently Kosher agents.
- Gelatinized starch means that the starch has been precooked to allow it to jell without further cooking. Currently, this is done on dedicated equipment that presents no *Kashrus* concern.
- Sugars produced from starch are often fermented into organic acids, amino acids, and enzymes. Those fermented on wheat glucose are *Chometz*. Many authorities, however, permit the use of such items fermented on sugars derived from *Kitniyos* starch.

# The Story of Steam

וישלך אל המים וימתקו המים  
שמות ט"ז כ"ה

**And He Threw It into the Water and the Water Sweetened**

*Exodus 15:25*

During their sojourn in the wilderness, the Children of Israel encamped in an area called *Marah*, so named because the water in that area was bitter. (*Mar* is the Hebrew word for *bitter*.) To slake the people's thirst, *Hashem* commanded Moses to cast a certain tree into the water, and the water miraculously became sweet. The *Targum Yonasan* explains that the tree that Moses used was actually bitter, compounding the miracle. The use of a bitter substance to resolve a food issue is not confined to the Bible, however. Although the art of food preparation is generally predicated upon trying to make food palatable, there are times when the appropriate means of obtaining a sweet result is by the use of something bitter. Nothing illustrates such a concept better than the issue of hot-water and steam utilities in a modern food plant.

Many processes are required to make food fit to eat, often culminating in the cooking of the food. When foods are cooked in a modern food plant, we must address a myriad of *Kashrus* concerns. Some of these issues may be obvious and common to any kitchen, such as ensuring that the equipment used to cook Kosher foods is not used for non-Kosher products and resolving concerns of *Bishul Akum*. Others, however, are more insidious and are not found in a normal kitchen. A good example of such a concern involves the heating utilities used in factories and institutional kitchens. A large factory may employ many different processes for cooking, and having a heat source built

into each unit is often impractical. A common practice is to design a central boiler system to produce steam, which is then piped throughout the plant and used to cook the products. The use of steam poses a number of interesting *Halachic* issues.

## **Direct and Indirect Steam Heating**

Steam can be used to cook foods in two ways—*direct* heating and *indirect* heating. With direct steam heating, the steam is added to the food itself, allowing the heat from the steam as well as the *water* to become part of the food. A common household application of this process is a pressure cooker, in which a small amount of water is heated in a closed vessel, allowing the steam to become hotter than 100°C (212°F) and therefore cook the food in less time. An industrial example of this process is a direct steam injection (DSI) system used to heat a mixture of starch and water to create a base of mayonnaise and salad dressings, or to heat certain types of cheeses. Another application of steam cooking is in the production of tuna fish, during which the fish is steamed under pressure to cook it quickly and reduce bacterial contamination.

Steaming vegetables is also a common method of preparation in an institutional kitchen. Direct steam can also be used to add *moisture* to a food, such as in a bakery oven or a fish smoker. In such a case, steam is not the primary source of heat but the

process allows the steam to become incorporated into the food. This process is the subject of an interesting discussion in *Halacha* as to the rules of *Bishul Akum*, but in and of itself it creates no other *Kashrus* issues, provided the steam is Kosher.

Indirect heating is the process whereby steam is used to heat the outside of the vessel that actually holds the food. Such vessels are often called steam-jacketed kettles, and in such a system only the heat from the steam is used in the cooking, not the water itself. This process tends to create the following significant *Kashrus* concern. As the steam surrenders its heat to the food, it condenses into water. This water is very pure (the quintessential distilled water) and retains a significant amount of heat. Whenever possible, manufacturers attempt to recover this water and heat, and return it to the boiler to be used to make additional steam.

### **Condensate**

Although the industry considers such steam condensate to be pristine, the *Halachic* approach is somewhat different. Although there is significant discussion among the *Poskim* as to whether flavors can migrate through a metal barrier (a concept known as *B'lios*), the consensus of the authorities is that we must be concerned that it does (based in part on *Talmudic* discussions that assume the porous nature of early iron cookware). The steam condensate from the indirect steam would obtain the same *Halachic* status as the food that it cooked. Such an arrangement poses no *Kashrus* concern when the entire system is used to produce Kosher products or if condensate from non-Kosher productions is not returned to the boiler. (Most authorities do not consider a common steam system *supply* for single use as a significant connection to convey *B'lios*.) However, when such indirect steam is used in a factory to produce both Kosher and non-

Kosher products (or Dairy and Pareve items) and its condensate returned to a common boiler, the steam made from this returned condensate would have the *Halachic* status of the product that it heated. In such a case, we cannot allow “non-Kosher” steam to heat Kosher products, or even “Dairy” steam to heat Pareve foods, even when it is used as indirect steam. The concern is even greater when such steam is subsequently used directly in the product. Such steam systems are extremely common in industrial food production and institutional kitchens such as hospitals and nursing homes, and *Kashrus* agencies have expended great effort to resolve the *Kashrus* concerns created by them. Each situation offers its unique challenges, but the following examples should offer an insight into some of the ways that we deal with this issue.

Non-Kosher condensate may also be created by another, even more serious, means. Many liquids, such as milk and whey, are condensed during their processing by removing water. As the product is heated under a vacuum to remove the excess moisture, the resulting vapors can be recovered and condensed into water and returned to the boiler. The *Halachic* status of such condensate, known as *Ze'ah* in *Halacha*, is identical to the product from which it was derived.

### **Solutions to Condensate Issues**

Clearly, the best way to resolve the issue is to discard the offending condensate and not return it to the boiler in the first place. Often, however, the cost of such a solution is prohibitive. When two boilers are in operation, they can sometimes be separated into two independent steam systems. Unfortunately, this option also involves significant expense that often cannot be justified based on the value of obtaining a Kosher certification. This leaves us with a third option, one that

has some interesting *Halachic* and scientific permutations.

*Halacha* states that for a material to convey a prohibited taste, such a taste must be *palatable*. Under certain circumstances, a foul-tasting non-Kosher flavor will not compromise the status of an otherwise Kosher food. Were the “non-Kosher” condensate and steam no longer palatable—a status known as *Pagum*—its use as indirect steam would be permitted. (The consensus of authorities is that such steam would nonetheless be prohibited as *direct* steam in Kosher products.) The question therefore becomes how to ensure that the boiler water is indeed *Pagum*. (There has been significant discussion as to whether this *P’gimah* must remain in the steam as it is being used to heat the Kosher products, or if it is sufficient for the boiler water to be *Pagum* even though the steam is palatable. Generally, it is considered sufficient if the *P’gimah* remains only in the boiler water.)

Sometimes, the boiler water is inherently *Pagum*, which resolves our concern. In many cases, however, such a state of *P’gimah* (foulness) must be achieved by adding a foul-tasting chemical to the boiler water itself. One of the first chemicals identified for this purpose was pine oil. However, as in most things, it has advantages and disadvantages. It has the distinct advantage in that it volatilizes into the steam and thus remains in the steam throughout the cooking cycle. Unfortunately, this very property makes it unsuitable in many applications, especially when DSI is required. (Pine flavor is not a desired attribute in many foods.) Another chemical used for this purpose is called Bitrex<sup>®</sup> (denatonium benzoate), which was developed to impart a bitter flavor to deter inappropriate consumption of nonfood household liquids (such as industrial alcohol and household-cleaning compounds). Although not as volatile as pine oil, it is nevertheless considered inappropri-

ate when live steam is employed. However, both of these agents have been used with much success in situations when only indirect steam is being used.

### **Hot-Water Heating**

In a similar vein, recirculating hot water can also be used to heat foods. When the same hot water is recirculated to heat both Kosher and non-Kosher products (or Dairy and Pareve), concerns similar to those involving steam are raised. Often times, such problems can easily be resolved by ensuring an adequate level of *P’gimah* in the water.

The prophet *Isaiah* (55:1) declares, “Let all who are thirsty drink the water.” The *Talmud* (*Avodah Zarah* 5b) allegorically compares *Torah* to water, with which one may slake his thirst for learning. As we have seen, however, even water that is not drinkable may indeed be a wellspring of *Halachic* insight!

### **The Bottom Line**

- Steam systems in food-manufacturing plants may be the source of significant *Kashrus* concerns. *Halacha* stipulates that condensate that forms from steam that has been used to heat foods (such as in steam-jacketed kettles) attains the status of the food that was cooked, even though the steam never actually touches the food. The basis of this concern is a concept known as *B’lios*, the concern being that some of the flavor of the food may have migrated through the wall of the vessel.
- Condensate recovered from the heating of non-Kosher foods is considered non-Kosher. Similarly, condensate derived from the heating of meat, dairy, or *Chometz* attains the *Halachic* status of each material, respectively. Steam produced from non-Kosher (or meat, dairy,

or *Chometz*) condensate that had been returned to the boiler is also considered non-Kosher (or Meat, Dairy, or *Chometz*). The use of such steam would therefore compromise the status of products heated with it, even indirectly.

- Factories that use steam to heat both Kosher and non-Kosher products may therefore not return condensate from the non-Kosher productions to the boiler. The

same concern holds true with Dairy, Meat, and *Chometz* products.

- Alternatively, the boiler water may be treated with a chemical that would render it unpalatable (*Pagum*). In such situations, the condensate is no longer considered capable of transferring *B'lios*.
- Recirculating hot-water system poses similar concerns, which can also be resolved by rendering the water *Pagum*.

# The Story of Sugar and Sugar Alcohols

## אות לטל

שופטים ו' י"ז

### *-Ose l'Tol*—A Sign for Dew

*Judges 6:17*

In the book of *Judges* (6:17), *Gideon* asks of the angel an *-ose*—a heavenly sign—that his mission would be successful. The exact nature of this *-ose* is the subject of an interesting discussion in the commentaries. The *M'tzudas Dovid* (ibid., 18) and the *Ralbag* (ibid., 21) explain that the *-ose* was the miraculous burning of the flour offering that *Gideon* brought. *Rashi* (*Deuteronomy* 13:2), however, quotes the *Sifri* (*Parschas R'eh* 31) that the *-ose* given *Gideon* was when *Hashem* caused the fleece of wool to be alternatively full of dew (“*-tol*”) or completely dry (see *Judges* 6:37–40). Although the *Netzi"v* (*Emek ha'Netziv*, ibid.) raises question that the word *-ose* appears only in the discussion of the flour offering and not in the description of the subsequent miracle of the fleece, *Rashi* obviously held that the *-tol* also became an *-ose*. Today in the production of sugar alcohols, however, the terminology is reversed—*-ose* is converted into *-tol*! The purpose of this essay is to discuss these types of products and recent changes in the industry that have interesting *Kashrus* ramifications.

### **Types of Sugar**

The term *sugar* refers to a broad category of *carbohydrates*, foods that are composed of carbon, hydrogen, and oxygen. Most simple sugars in our diet are *hexoses*, molecules containing six carbon atoms, which are represented by the chemical formula  $C_6H_{12}O_6$ .

Depending on the position of the atoms in the molecule, however, this one chemical formula represents many different sugars—glucose, fructose, galactose, and others. These sugars are called monosaccharides. When two molecules of such sugars are bonded together, the molecule is called a disaccharide. Two glucose molecules form a sugar called maltose; glucose and fructose form sucrose (common table sugar); glucose and galactose form lactose (milk sugar). You will notice that the names of all sugars end with an *-ose*, a convention derived from the Greek word *gleukos* (a sweet wine), which is the source of the Greek *glykys*, meaning sweet.

Early sources of sugar were honey and dates, although cane sugar is the subject of much discussion as far back as the *Rishonim* concerning its appropriate *B'rachah* (see *Shulchan Aruch O.C.* 102:15). However, sugar remained a luxury until the seventeenth century, when commercial production of sugar from sugarcane and sugar beets was developed. Napoleon built sugar refineries throughout Europe in the hope of placating his empire in the face of the British blockade. (He even awarded the Cross of the Legion of Honour to Benjamin Delessert for perfecting a process of producing white sugar from sugar beets.) Sugar pervades many processed foods, including those produced for Passover. Sugars present many interesting *Halachic* insights, especially relating to Passover. As we shall see, things are



not always as they seem. *Korn* can be true *Chometz*, and *Maltodextrin* may be no more of a concern than *Kitniyos*.

### **Sucrose**

When we use the term *sugar*, we are usually referring to *sucrose*. Commercially, sucrose is derived from sugarcane and sugar beets. (Dates may have been the earliest source of sucrose, which is the “honey” referred to in the verse “Land flowing with milk and honey” [for example, *Exodus* 3:8]. However, this source is of no commercial importance today.) The processing of sugar involves extracting the juice from the cane or beet, concentrating it, and crystallizing the crude sucrose crystals. The sucrose exists naturally in the plant—there is no *conversion* of raw materials into sugar. This process yields crude sugar and molasses, which is a sugar syrup containing about 50 percent sugar as well as other impurities. (Removing this sugar is not economical, and the spent molasses is sold for various purposes including fermentation into rum [alcohol] and citric acid.) The crude sugar crystal is called brown sugar and still contains significant amounts of impurities. This sugar is then *refined* to remove these residual impurities to yield white sugar. We should note that the terms *refining* and *impurities* are somewhat of a misnomer. We usually look to food as a source of balanced nutrition, and crude sugar has many nutritious components in addition to sucrose. The consumer has historically expressed an aesthetic preference for white sugar that has been stripped (refined) of these nutrients. This has changed somewhat today, however, with “health-conscious” consumers often seeking “natural” sugar that is less refined.

### **Glucose**

Another major sugar used in food preparation is glucose. Glucose is also known by

its chemical name dextrose, a term derived from the fact that its crystal structure deflects polarized light to the right (from the Latin *dexter*, meaning “right”). (Fructose, on the other hand, is also called levulose because it deflects light to the left [from the Latin *laevus*, meaning “left”].) Glucose is the sugar found in grapes and is sometimes still referred to as “grape sugar.” In most cases this nomenclature is not indicative of the source of the sucrose, merely a name given to it based on historical imperative. (Note, however, that owing to market distortions in the price of sugar and grape juice in some countries, grape juice that cannot be sold in any other fashion may be converted into glucose and sold as such.) Glucose can also be produced through the hydrolysis of sucrose into its component sugars, glucose and fructose.

Although such glucose is produced in small quantities, the preponderance of commercial glucose produced today is done through the hydrolysis of starch. A starch molecule consists of a long chain of glucose molecules linked together, and glucose is obtained by cleaving individual glucose molecules from the starch. This hydrolysis can be done by adding acids or using amylase enzymes. The United States enjoys an abundance of corn (maize), and historically *all* glucose syrup manufactured in the United States comes from cornstarch. This has led to the common use of the term *corn syrup* when referring to glucose syrup, and for this reason glucose and maltodextrin produced in the United States can be considered purely *Kitniyos*. (Indeed, arrangements have been made with all domestic corn syrup manufacturers to ensure that even the enzymes used in such products are *Chometz* free.) Incidentally, maltodextrin is unrelated to “malt” and is not inherently *Chometz*. The product is similar to glucose syrup, except that the hydrolysis is not complete; the starch molecule is broken into smaller units but not into individual glucose molecules.

Interestingly, though, the *terminology* is related to malt. Malt is produced by soaking barley in water and allowing it to germinate. The germ then produces a maltase enzyme, which cleaves the barley starch into units of two glucoses called maltose. Since maltose is a sugar made of multiple glucoses, the term *malt* is used together with the word *dextrin* (referring to longer chains of glucoses)—*maltodextrin*. Because all American maltodextrin is made from cornstarch, it is not *Chometz*. On the other hand, maltose syrup, even in the United States, may be *Chometz*. The maltase enzyme used to produce maltose is often an extract from germinating barley and would be considered a *Da'var ha'Ma'amid* (causative factor), giving a *Chometz* status to a corn-based maltose syrup.

### Passover

Although corn syrup is not acceptable for use as a Passover sweetener, it may be acceptable as a base for certain Passover fermentations. Many authorities rule that the conversion of *Kitniyos* syrup into different chemicals constitutes such a significant change that the resulting products are no longer classified as *Kitniyos*. Although this approach is accepted by many for the production of citric acid, enzymes, and amino acids (but *not* alcohol), one must ensure that any such *Kitniyos* syrup is produced with only *Chometz*-free enzymes.

At this point, a clarification of the term “corn” is appropriate. *Chometz* is defined as any of the five major types of grains—wheat, rye, oats, barley, and spelt—that have begun to ferment. Maize, or corn, is definitely not from this group and cannot become *Chometz*. However, the word *Korn* in German refers to *grain*, not maize, and the old English word “corn” follows this usage. Indeed, old English translations of *Pharaoh*’s insomniac inspirations refer to “seven sheaves of *corn*.” Maize is native

to the New World, and Columbus had not yet discovered America during the time of *Pharaoh*. Clearly, *Pharaoh* was not dreaming of corn on the cob; the “corn” to which he referred was one of the five grains. Yiddish speakers are especially prone to confusion because they often use the term *Korn* to refer to grain.

Although the etymology of the word *corn* may be of no more than passing interest, the possible *Chometz* status of “*korn*” *syrup* is not. In many European countries and Australia, glucose syrup is routinely made from *wheat* or *barley* starch, and is true *Chometz*. (As noted earlier, however, even glucose made from maize can have a concern of *Chometz* if the enzymes used to make them may be grown on *Chometz* glucose.) Being aware of this concern is important because the United States—even with all of its corn—is no longer immune to this issue. The world is becoming a single market, and foreign specialty glucose, starch, and maltodextrin products are making their way into the U.S. market, albeit in relatively small quantities. Fortunately, importing conventional corn syrups is not economical. (Glucose and fructose can also be obtained through the *inversion* of sucrose. This process typically uses an enzyme called *invertase*, which is derived from yeast. Glucose and fructose derived from sucrose may be Kosher for Passover, provided the *invertase* comes from Passover-approved yeast.)

### Fructose and High-Fructose Corn Syrup

Another commonly used sugar is fructose. Although technically fruit sugar, it is prepared commercially by conversion from glucose through the use of a glucose isomerase enzyme. Although all monosaccharides have the same caloric value, some taste sweeter than others. In determining the relative perceived sweetness of sugars, a scale has been devised with sucrose having a value

of 1. Glucose has a value of 0.6, whereas fructose has a value of 1.6 on this scale. The source of these sugars is irrelevant to their sweetness but can be a major factor in their price.

The United States has an indigenous sugar industry (sugarcane based in Florida and Louisiana, and sugar beet in Minnesota and North Dakota). To protect the domestic sugar industry, imported sugar is subject to a quota. As a result, the price of sugar in the United States is significantly higher than the world price. (Interestingly, allocation of this quota has historically been a tool of U.S. foreign policy. One of the first actions signaling U.S. displeasure with Fidel Castro's new government in Cuba was the elimination of the Cuban sugar allocation.) Corn-based sweeteners are much less expensive, but since they were nominally *glucose*—and therefore not as sweet as sucrose—they were not considered a suitable replacement for higher-priced sugar. In the late 1970s, however, technology was perfected that allowed for the conversion (a process known as *inversion*) of glucose into fructose. By mixing an appropriate ratio of glucose and fructose, manufacturers were able to produce corn-based sugar syrup that had the same perceived sweetness as liquid sucrose. This product is known as high-fructose corn syrup (HFCS) and has virtually supplanted the use of liquid sugar (sucrose) in the beverage industry because of its slightly lower cost. Interestingly, it was possible for beverage manufacturers to reformulate their products to use pure fructose syrup and thus take advantage of the inherent higher perceived sweetness of fructose to use less and reduce the calories of their product. They chose, however, to maintain the interchangeability of their sweeteners. For this reason, beverage labels routinely declare “Sugar and/or High-Fructose Corn Syrup” as the sweetener being used.

Although domestic HFCS may not be *Chometz*, it is still *Kitniyos* and is not suit-

able for Passover soft drinks. (Indeed, the glucose isomerase enzyme used in its manufacture may be *Chometz*.) This would create a concern because the *Pesach* world would be without a significant amount of company if soft drinks could not be used on Passover. Fortunately, this is the *Pesach* generation, and the major soft drink manufacturers make special productions of the world's favorite beverages for Passover (*un-Kitniyos*) the old-fashioned way—they use liquid sugar (even though the label may state “Sugar and/or High-Fructose Corn Syrup”). In more ways than one, Passover really does herald “the Real Thing!”

### **Sugar Alcohols**

Although sugars serve many uses in the food industry, scientists have developed ways of modifying them to alter their characteristics. One of these processes involves converting the sugars into sugar alcohols. The term *alcohol* connotes a category of chemicals with an added OH (oxygen/hydrogen) hydroxyl radical, intoxicating properties not being a prerequisite for membership. The addition of hydrogen to the molecule of sugar is called hydrogenation (specifically, taking a ketone/aldehyde down to an alcohol) and is accomplished by introducing hydrogen gas into the sugar solution in the presence of a nickel/aluminum catalyst (called Raney nickel after its inventor).

Just as the various sugars have distinct names, their respective alcohols are similarly differentiated. Hydrogenated glucose is called sorbitol, hydrogenated fructose is called mannitol, hydrogenated maltose is called maltitol, and hydrogenated lactose is called lactitol. Note that all these alcohols end with a *-tol* ending. (The word *alcohol* comes from the Arabic *al-kuhl*, meaning “a powder for painting the eyelids” that contained alcoholic spirits, hence the convention of ending alcohols with an *-ol*.)

Alcohols of sugar play important roles in food production. Sorbitol was first discovered in the apple-like fruit of the mountain ash tree, which is known as the *sorb*, or *service* tree. (This name is derived from the Latin *sorbum*, which means “service” and is also the source of the chemical name sorbic acid that, although unrelated to sorbitol, was also originally identified in this fruit.) Today, however, all sorbitol is produced through the hydrogenation of glucose. Although sorbitol is less sweet than glucose, it is often used in reduced-calorie foods. Sorbitol has recently been recognized to provide slightly fewer available calories per gram than glucose, and is important to diabetics in that it does not require insulin to be metabolized. It is also the sweetener used in toothpaste because it does not promote tooth decay. (The bacteria that cause *caries*, tooth decay, do not grow on sorbitol.) Sorbitol also tends to retain water and is used as a *humectant* (a chemical that retains water) in chewing gum to keep it soft. Xylitol, the alcohol of the wood sugar xylose, is often used in chewing gum because of its refreshing flavor and its ability (according to some studies) to inhibit the growth of caries-causing bacteria. Maltitol is used in the manufacture of reduced-calorie hard candies because it has the same hardening properties as maltose. Lactitol is used to replace lactose in sugar-free chocolate.

Historically, sorbitol and other sugar alcohols were considered relatively innocuous from a Kosher perspective; they posed no greater *Kashrus* concerns than the base sugar from which they were produced. Sorbitol was the primary sugar alcohol used in the food industry, with mannitol, maltitol, and xylitol having very specific uses. Lactitol’s practical application was limited to that of a laxative. Recently, however, the use of lactitol was approved for use in sugar-free chocolate, and demand for the product has increased substantially. Companies that heretofore had produced only plant sugar alcohols began the manufacture of lactitol on

the same equipment. Although lactose may be Kosher, it is certainly dairy. Because the hydrogenation of these sugars is done at high temperatures, were sorbitol to be produced on the same equipment as lactitol without an appropriate *Kashering* in between, the sorbitol would be considered dairy. Given the broad use of sorbitol throughout the food industry, dairy sorbitol would cause serious *Kashrus* problems. Fortunately, many sorbitol manufacturers were under Kosher certification, and the certification organizations were in a position to work with the companies to ensure the continued Kosher and Pareve status of their sorbitol and other sugar alcohols. What became clear, however, was that sorbitol was certainly not as problem free as once assumed and that a reliable Kosher certification was required for these products.

Changes in the food industry are the rule rather than the exception. Development of new products and new applications can have *Kashrus* ramifications that are difficult to anticipate, and all involved in *Kashrus* are responsible for being alert to these changes. When Jews intone the prayer for *tol* (dew), they might also remember the *Kashrus* issues relating to the *-tol* of sugars and ensure that it be *l’Vracha v’Lo l’Klala*—“for a blessing!”

### **The Bottom Line**

- Sucrose, as well as molasses, is inherently Kosher for year-round and Passover use.
- Glucose (dextrose) and fructose syrups are generally produced through the hydrolysis of starch. In the United States, the source of this starch is generally corn (maize) and is therefore *Kitniyos*. In Europe and some other area, the starch may be wheat or barley, and would be *Chometz*. None of these sources is acceptable for Passover use, although *Chometz*-free corn syrup may be acceptable for use

- for fermentation into Passover citric acid, amino acids, and enzymes.
- Glucose and fructose may also be derived from sucrose and may be acceptable for Passover if the invertase enzyme used in the process is Passover approved.
  - Most soft drinks use *Kitniyos*-based high-fructose corn syrup as a sweetener. Passover soft drinks typically use liquid sucrose instead.
  - Sugar alcohols, such as sorbitol, have less sweetening power than sugar. However, they may have fewer calories and other desirable properties, and are classified as “sugar free.” Kosher certification is required for these products, and they are also subject to the same Passover concerns as other starch-derived sweeteners.

# The Story of Sugar Replacers

## מה מתוק מדבש

שופטים י"ד י"ח

### What Could Be Sweeter Than Honey?

*Judges 14:18*

When Jews throughout the world usher in *Rosh ha'Shanah* (the New Year), they use honey to symbolize their hope for a good and sweet year. We tend to use the concepts of “goodness” and “sweetness” interchangeably, and since times of antiquity, honey has served to symbolize the sweetest of foods. It is for this reason that the Philistines retorted to *Samson*, “What could be sweeter than honey?” Even the land of Israel was praised as flowing with milk and honey, although *Chaza"l* (our Sages) interpret this honey to be the nectar of dates. Another reference to sweeteners in *Tana"ch* (the Bible) is *Ya'ari im Divshi*—“my forest with my honey” (*Song of Songs 5:1*)—which the *Tosafos* (*B'rachos 36b*) explained was sugarcane. Common to all these sources of sweetness is their being based on various types of sugar. Although sugar satisfies a natural craving, it is not without its downsides. Too much of any good thing can lead to trouble, and sugar is no exception. Sugar is the quintessential source of energy, and most foods, when digested, are metabolized by the body as the basic sugar glucose. Recognizing the importance of this nutritious commodity, the body saves the energy in sugar that is not needed at any given time for a rainy day—as fat. Although some stored fat is necessary, too much is not desirable. In the never-ending battle that is waged to balance a person's intake of energy (measured in calories) and the body's needs, great efforts are expended to reduce the intake of calories and thus the tendency to accumu-

late fat. Because sugar is a major source of calories in the diet, a concerted effort has been made to find ways of sweetening foods that reduce or eliminate the use of sugar.

Sugar may pose other health concerns. Common table sugar (sucrose) comprises fructose and glucose. The body uses a hormone called *insulin* to metabolize glucose, and the inability of those with diabetes to produce and manage this hormone has their doctors suggest that they sharply curtail their intake of this material. Sugar is also believed to support the growth of the bacteria that causes tooth decay (*dental caries*). Food scientists are a creative bunch, and for all these reasons, have come up with a variety of ways of providing sweetness to foods while reducing or eliminating the use of sugar. It is indeed a paradox that these alternative sweeteners are often much sweeter than the sugar they replace, turning *Samson's* query on its head!

In addition to the purported health benefits that may be realized by the replacement of sugar with these sweetening compounds, their intense sweetness has provided another incentive for their use. Although, pound for pound, these compounds may seem to be far more expensive than the sugar they replace, the small amounts required to produce an equivalent level of sweetness make their use quite economical. Indeed, in some European countries, artificial compounds have become the default sweetener mainstream products from soda to pickled gherkins. Artificial

sweeteners are longer limited to “diet” products.

However, just as sugar is not a panacea, sugar replacements pose their own set of concerns. Indeed, one ancient alternative to sugar was known as “sugar of lead” (lead acetate), whose toxicity far outweighed any sugar-free benefits. Modern sugar substitutes, of course, are perceived to be far safer, and the purpose of this essay is to outline some of the interesting properties they have and the *Kashrus* issues they may pose.

Sugar substitutes can be divided into three categories: modified sugars, proteins/amino acids, and synthetic chemicals. Many synthetic chemicals have no nutritional value and hence no calories. Other sweetening agents, although possessing some caloric value, are so intense that they can be used at very low levels, thereby conveying the desired sweetness with a negligible number of calories. Still others may contain a significant number of calories, but are metabolized in such a way that they avoid certain health concerns. Each type of sweetener poses its unique and interesting *Kashrus* issues.

### **Saccharin**

Saccharin was first discovered in 1879 and is the most widely used synthetic sweetener. It has no caloric value and is about three hundred times as sweet as sugar. Because pure saccharin is insoluble, it is typically converted into a soluble sodium or calcium salt that may then be formed into a tablet, dissolved in liquid solution, or mixed with other ingredients in a powder blend (see below concerning diluents). Tablets are generally measured in “grains,” and a 1/4-grain tablet has about the same sweetening power as one level teaspoon of sugar.

The safety of saccharin has been the source of controversy since its introduction. Indeed, U.S. President Theodore Roosevelt weighed in its defense against critics who claimed that it caused digestive disorders. In

1977, however, several studies implicated it as causing cancer in laboratory rats, causing Canada to ban its use except in the treatment of diabetes. The United States Food and Drug Administration (FDA) was poised to take similar action based on the “Delaney Clause,” which mandated the ban of any food additive shown to induce cancer in laboratory animals. Congress, however, was loathe to allow a ban on the only artificial sweetener available at the time, and compromised by staying the ban but mandating that all saccharin-containing foods display a warning label, indicating that saccharin may be a carcinogen.

Eventually, the weight of scientific evidence tended to discredit the methodology and pharmacology of these studies and veracity of their conclusions, and in 1991 the FDA formally withdrew its 1977 proposal to ban the use of saccharin. In 2000, the U.S. Congress finally repealed the law requiring saccharin products to carry health warning labels. Canada, however, retains its restrictions on saccharin.

Saccharin is in a class of chemicals called *petrochemicals*—synthesized from petroleum or coal together with other (inorganic) chemicals; in itself, it poses no *Kashrus* concerns. The commercial sweetening compounds that contain it, however, often do. Forming a tablet that will not decompose in the bottle but will dissolve when needed is a bit complicated. Most tablets, to function properly, therefore contain *inactive* ingredients (in this case, ingredients that do not contribute significant sweetness) in addition to the active ingredient. Lactose (dairy, generally non-*Cholov Yisroel*) and magnesium stearate (often derived from animal fat) are commonly used in saccharin tablets to provide bulk and aid in the tableting process. Other ingredients can be added to make the saccharin effervesce and therefore dissolve quickly when placed in water. In addition, one of the major shortcomings of saccharin is the bitter after-taste perceived by some people. To mitigate

this concern, ingredients such as cream of tartar and flavorings are often added to mask the aftertaste. All of these added ingredients may pose *Kashrus* concerns.

### **Cyclamates and Acesulfame-K**

Another nonnutritive sweetener is *cyclamate*, sodium or calcium salt of cyclamic acid. Although not as sweet as saccharin, saccharin/cyclamate blends tend to exhibit less of an aftertaste than either alone. For this reason, this blend was the sweetener of choice for most low-calorie soft drinks in the United States until 1969. At that time, studies implicated cyclamates as causing cancer in laboratory rats, causing the abrupt ban of cyclamates in the United States. Research has subsequently called the conclusions of these studies into question, and cyclamates remain legal for use in over fifty-five countries, including Canada (where saccharin remains restricted). Indeed, Sweet-n-Low<sup>®</sup> sold in many parts of the world is based on sodium cyclamate, whereas the version sold in the United States is based on saccharin.

Acesulfame-K (or potassium acesulfame), another nonnutritive sweetener, was discovered in 1967, and is marketed under the trade name Sunett<sup>®</sup>. A blend of acesulfame-K and aspartame (see below) is often used to sweeten soft drinks due its stability in the acid environment of carbonated beverages. In addition, these sweeteners tend to mask each other's aftertaste and provide more sweetness together than each one alone.

Both cyclamates and acesulfame-K are also petrochemicals and pose no *Kashrus* concerns in and of themselves. Sweetener products that contain them, however, are subject to the same concerns as expressed in the discussion of saccharin.

### **Aspartame**

One of the most popular sweeteners today is aspartame, a synthesis of two amino acids

(aspartic acid and L-phenylalanine) plus an extra methyl group. Although aspartame is a nutritive sweetener, it contributes a negligible number of calories to foods because of the small amount required to provide the desired sweetness. Since it obtained regulatory approval in the 1970s, aspartame has become the major nonsugar sweetener used in soft drinks and a host of other cold products. Its use is limited, however, because it degrades when heated and is therefore unsuitable for use in most baked products.

Although the ingredient issues relating to dextrose blends and tableting ingredients mirror those of the artificial sweeteners, an interesting controversy relates to the Passover status of aspartame itself. L-Phenylalanine is often produced through the controlled fermentation of glucose, which is derived from the hydrolysis of starch. Although virtually any type of starch may be converted into glucose, cornstarch is most commonly used. Although corn is not *Chometz*, the custom among *Ashkenazim* is to prohibit the use of corn (as well as rice and legumes) on Passover (the rule of *Kitniyos*). Products containing corn syrup typically are therefore not considered Kosher for Passover. However, many authorities consider certain *fermentation* products derived from corn glucose, such as enzymes, amino acids, and organic acids, to be exceptions to this general rule and acceptable for Passover use. Three reasons are provided for this opinion. First, these chemicals have undergone a significant change from their original state, which may be considered under the *Halachic* guidelines of *Nishtanah* (literally, "changed") and thus unrelated to the original base material. Second, in the case of aspartame, the corn-based L-phenylalanine has no inherent sweetness. It is but one of two critical components, the other of which is not a derivative of corn, and the interaction between them is what creates the sweetening property of aspartame. The concept of *Zeh v'Zeh Gorem* (literally, "two independent causes," one permitted and one



forbidden) therefore may come into play to permit the product. Third, the parameters of the prohibition against *Kitniyos* are subject to various customs, and many authorities are of the opinion that the concept of *Kitniyos* never extended to these types of *Kitniyos* derivatives. Although many certifications have chosen to avoid this controversy and not accept aspartame as Kosher for Passover, other eminently reliable authorities and Kosher-certifying agencies follow the opinion that it is permitted. Indeed, most Passover-certified, low-calorie soft drinks are certified on this basis. (Consumers concerned about this issue should check with the certifying agency for the products they use.)

Neotame is an extremely potent sweetener, similar on composition to aspartame. It is between eight thousand and thirteen thousand times sweeter than sucrose, and its Kosher status is essentially identical to that of aspartame.

### **Sucralose®**

Several new categories of sweeteners have recently received regulatory approval. Sucralose®, sold under the trade name *Splenda®*, is a chlorinated sucrose. By replacing three of the hydroxyl groups normally found in sucrose with chlorine atoms, its sweetening power is increased by a factor of six hundred—and the new compound is not metabolized by the body! It is claimed to have less of an aftertaste than other sugar replacers do and is suitable for use in baked products as well as in soft drinks. The product is Kosher and—theoretically—approved for Passover use (see below regarding diluents).

### **Diluents**

Another ironic point should be noted regarding virtually all sweetening powder blends, such as those based on saccharin

or cyclamates (for example, Sweet'n Low®, Sugar-Twin®, aspartame (such as Equal®), sucralose (Splenda®), and acesulfame-K (Sunett®)). In all these products, some type of sugar is usually the predominant ingredient in the packet! Such sweeteners are generally sold in single-serving packets, typically equaling the sweetening power of two teaspoons of sugar. Because the amount of the actual sweetening agent necessary to achieve this level is quite minute, it is commonly blended with maltodextrin, dextrose, or lactose to create an easy-to-handle powder. These ingredients do have some caloric value, but the amount found in a sweetener packet is small enough to consider the added calories negligible. From a *Kashrus* perspective, however, their use may not be innocuous. In many parts of the world, the diluent of choice for this purpose is lactose—milk sugar (non-*Cholov Yisroel*)—which raises concerns of the packet's Kosher and Dairy status. Indeed, ubiquitous brands of powdered sweeteners use maltodextrin in the United States and Canada and are Kosher certified, but the identical branded product in other parts of the world may contain lactose.

In addition, although many artificial sweeteners or certain brands of aspartame may be inherently Kosher for Passover, the sweetening *blends* that contain them may still contain non-Passover dextrose. Indeed, some companies make special Passover productions of their sweetener—using sugar instead of dextrose!

The potential Kosher for Passover status of “Splenda®” poses another interesting quandary. Sweeteners are complicated chemicals, and manufacturers generally create catchy names for their products. For example, *2,3-dihydro-3-oxobenzisulfonazole* was renamed *saccharin*, and *aspartyl-phenylalanine-1-methyl ester* became *aspartame*. Similar literary inspirations resulted in the names *cyclamate*, *acesulfame*, and *sucralose*. Although these terms were created

by the developer, they were intended to function as a generic identification, and an additional trademarked name was often created to differentiate its product from that of its competitors. For example, *Nutrasweet*<sup>®</sup> refers to a specific brand of aspartame and *Splenda*<sup>®</sup> to a specific brand of sucralose. With the possible exception of saccharin tablets, however, these sweeteners are never sold to the consumer in their pure form. When compounded into a consumer product, they are usually given a new brand name—*Nutrasweet*<sup>®</sup>-containing products are sold as *Equal*<sup>®</sup>, acesulfame as *Sunnet*<sup>®</sup>, and saccharin (or cyclamates) as *Sweet'n Low*<sup>®</sup>, *Sugar-Twin*<sup>®</sup>, and so on. It is generally understood that a Kosher for Passover status enjoyed by the sweetener does not automatically carry over to the retail product.

In the case of *Splenda*<sup>®</sup>, however, the manufacturer has chosen to maintain the same trademark identification for both its bulk material and its consumer product. As such, one may see a Kosher for Passover product containing *Splenda*<sup>®</sup> and might assume that a blended *sachet* of *Splenda*<sup>®</sup> is similarly approved. However, the diluents added to *Splenda*<sup>®</sup> packets are not approved for Passover, even if the sucralose may itself be.

### **Tagatose**

Another sweetener recently approved is a nutritive sweetener called *tagatose*. Although slightly less sweet than sucrose, it contains only one-third of its calories. Tagatose is called a *functional* sweetener because it addresses a shortcoming associated with the removal of sugar from certain frozen products. One popular summertime treat is called a *Slurpee*<sup>®</sup>, the brand name of a slush-type product made by freezing a sugary beverage. In this case, the sugar in the base beverage serves two purposes. In addition to providing sweetness, it lowers the

freezing temperature and allows the product to remain slush after freezing. A *Slurpee*<sup>®</sup> without sugar would freeze into a block of ice, eschewing the “slurping” characteristics on which its success is based. When attempting to create a low-calorie version, a replacement for both sweetness and antifreeze was therefore needed. To this end, low-calorie *Slurpee*<sup>®</sup> was developed with sweetness supplied by conventional low-calorie sweeteners and the freeze-retarding properties of sugar by tagatose.

Naturally, tagatose is found in dairy products, albeit at very low levels. Commercially, it is produced by treating galactose (one of the two component sugars of lactose) with calcium hydroxide. Given the dairy provenance of tagatose, products containing it are generally accorded a dairy, non-*Cholov Yisroel* status. Some authorities, however, have posited that the chemical changes inherent in the conversion of galactose into tagatose serve to remove its Dairy status.

### **Botanical Sweeteners**

Whereas the products just discussed are synthesized, other sweetening agents occur naturally. Although they have not yet been approved for use in Canada or the United States, they are already commonly used in other parts of the world and may become factor here. Stevia is an extract of a plant and is the most popular nonsugar sweetener in Japan. Its use in many countries is limited to pharmaceutical applications, but its inherent Kosher status may make this chemical a potential new sweetener in the future. Other, more exotic natural proteins are found in many rainforest plants. Thaumatin, also approved in Japan, is found in a tropical plant that grows in West Africa and is claimed to be one hundred thousand times as sweet as sugar. Research is currently being conducted with a number of other plant extracts; the rainforest may well hold the key to the next generation of natural sugar replacers.

## **Sugar Alcohols**

Not all sugar replacers are sweeter than sugar. Sorbitol, a hydrogenated glucose, is in a category of sweeteners called sugar alcohols. Although sorbitol contributes almost as many calories as glucose—and is less sweet—it nevertheless has an advantage in that it is metabolized differently from glucose and does not create an insulin demand in diabetics. Sorbitol, as well as other sugar alcohols such as manitol and maltitol, can be used in the production of candies in much the same way as glucose can. Sorbitol is also used in toothpaste because it does not support the growth of bacteria that cause tooth decay.

The Passover acceptability of sorbitol, however, raises a number of concerns. In the United States, virtually all sorbitol is derived from corn glucose (*Kitniyos*) and in Europe, it is often derived from wheat glucose (*Chometz*), neither of which would prove acceptable for Passover use. Fortunately, Passover sorbitol has been produced from glucose derived from sugar by inverting the sucrose into glucose and fructose, as well as by the hydrolysis of potato and tapioca starch. The resulting glucose is then hydrogenated into sorbitol, which has made its way into some Passover-approved products.

Isomalt, another popular sugar replacer, more closely mimics the functionality and sweetness of sucrose. Since it is derived from sugar, as opposed to starch-based glucose syrup, it has the potential for approval for Passover.

Xylitol is the alcohol of xylose (wood sugar) and has a rather unique flavor. It has been approved for use in chewing gum and toothpaste. Because it is not derived from starch hydrolysates, it poses no concern for Passover approval.

Lactitol is the sugar alcohol of lactose, and has been approved for use in diabetic-approved chocolates. Although sorbitol and

xylitol pose few *Kashrus* concerns, lactitol is dairy and generally not *Cholov Yisroel*.

Polydextrose (sold under the trademark Litesse®) is produced from dextrose, sorbitol, and citric acid. It is designed to replace the functional characteristics of sugar, relying on other, more intense sweeteners to provide sweetness. It is not approved for Passover use.

The use of these and other sugar replacements, however, can cause some confusion. By law, products that contain sugar alcohols can be labeled “sugar free,” yet still contain a significant number of calories. One should not consume large amounts of these products under the assumption that they are calorie free. (One should also be aware that many are strong laxatives!) An additional concern with sugar-free products involves the use of another polyhydric alcohol called glycerin (glycerin). Glycerin has many food applications, including its ability to provide sweetness. It is unique, however, in that it is often derived from non-Kosher animal fats and poses a potentially explosive Kosher concern unless Kosher certified.

During *Rosh ha'Shanah*, perhaps we can extend Samson's parable and use it as a blessing for the New Year: *u'Me'az Yatzah Masok*—“And from strength came sweetness” (*Judges* 14:14). May the strength of the judgment on *Rosh ha'Shanah* be tempered into a sweet decree for all.

## **The Bottom Line**

- Low and no-calorie sugar replacements may be of either synthetic or natural origin. Generally, *pure* synthetic chemicals (for example, saccharin and cyclamates) pose few *Kashrus* concerns for year-round or Passover use.
- Because of the intensity of such sweeteners, however, consumer products that contain them are typically blended with diluents that may pose Kosher concerns for both year-round (lactose) and Passover

(dextrose and maltodextrin) use. Tableted versions may contain additional, potentially non-Kosher excipients (such as lactose and stearates).

- Aspartame typically involves the use of ingredients produced through fermentation and thus requires a reliable Kosher certification. Although corn derivatives are generally not approved for Passover, many authorities grant Passover approval for aspartame produced by a corn-based fermentation (that is, phenylalanine) based on a number of *Halachic* considerations.
- Tagatose poses unique Kosher concerns in that it is based on lactose (dairy, non-

*Cholov Yisroel*). Some authorities, however, consider this product to be Pareve.

- Plant-derived sweeteners, such as stevia and thaumatin, pose no specific Kosher concerns.
- Sugar alcohols, such as sorbitol, have a “sugar-free” regulatory status and may be used to replace sugars. Those based on Kosher sugar (such as sorbitol) pose little Kosher concern, although their Passover status would be restricted by the source of its base glucose. Lactitol poses both dairy and Kosher concerns, whereas glycerol (glycerin) must be verified to be of Kosher vegetable or petroleum origin.

# The Story of Tea

## ועשב לעבודת האדם

תהלים ק"ד י"ד

### And Grasses in the Service of Man

*Psalms* 104:14

Hot beverages have enjoyed popularity in virtually every culture in the world. Before the advent of modern sanitation, boiling water made it safer to drink, and botanicals brewed in it created beverages that have been variously regarded as refreshing, recuperative, and relaxing. In addition, they have become enmeshed in the social and historical fabric of some countries. Perhaps the most famous example of such notoriety is tea. It has given its name to a country (China—“*cha*” being the name for tea in Mandarin and many other languages—in other dialects it is called “*te*”), was instrumental in the independence of another (the Boston Tea Party), and has served as the centerpiece of formal tea ceremonies from Japan to England. *Halachic* issues relating to tea are equally fascinating, and serve as the topic of this essay.

### Unflavored Tea

The beverage we know as tea is produced by brewing the leaves of an evergreen shrub known as *Camellia sinensis* (from China) or *Camellia assamica* (from Assam, India) in hot water. Tea was originally discovered in China, adopted by the Japanese, and cultivated in India by the colonial British. Only the top two leaves and bud are harvested from the tree after each “flush” (or sprouting), which are then processed and cut into the product we use for brewing. Black tea is produced by allowing the leaves to oxidize, yielding dark tea, while green tea is

dried without allowing for significant oxidation of the leaf. All such teas contain no additives or flavorings, and are inherently Kosher. (Tea bags also do not contain any non-Kosher ingredients.)

### Flavored Tea

*Flavored* teas, however, may pose significant *Kashrus* concerns. The most famous of these—Earl Grey—is produced by adding a small amount of oil of bergamot to black tea. Since oil of bergamot is considered inherently Kosher (it is an essential oil derived from the bergamot citrus fruit), it poses no *Kashrus* concern. Other flavored teas, however, use a variety of commercially prepared flavorings, many of which may contain ingredients that pose significant Kosher concerns. Indeed, some flavored teas contain dairy ingredients, and Kosher versions would be certified as Kosher Dairy. All flavored teas, with the exception of Earl Grey, require reliable Kosher certification.

### Caffeine and Theine

In addition to having a desirable taste, tea acts as a stimulant. Originally, scientists gave the name *theine* to the stimulating compound in tea, just as they gave the name *caffeine* to the compound in coffee that possessed the same qualities. Eventually, scientists realized that these two compounds were one and the same, and the name theine was dropped. A stimulant by any other name is still a

stimulant, of course, and many people drink tea to obtain that effect. Others, however, prefer to drink *decaffeinated* tea, where the caffeine is removed from the tea using chemical solvents, similar to the process used to make decaffeinated coffee. Other than *Pesach* concerns based on the possible *Chometz* status of some of these chemicals, decaffeinated tea poses no *Kashrus* concerns for year-round use.

### **Instant Tea**

*Instant* tea is produced by brewing liquid tea and spray-drying it into a powder. In most cases, the equipment used to produce instant tea is not used for any other purpose, and *unflavored* instant tea may be used without a *Hashgacha*. Iced tea *mix*, however, is a blend of instant tea, sweetener, and flavorings, and requires a reliable *Hashgacha*. *Pesach*, however, poses additional concerns for instant tea, since maltodextrins (either *Kitniyos* or *Chometz*) may be blended with the tea to aid in the spray-drying process. Instant tea therefore requires a reliable *Hashgacha*.

### **Bottled Tea**

Bottled iced tea poses another *Kashrus* concern. Many soft drinks are filled at cold temperatures, avoiding the *Kashrus* concerns of the equipment on which they are produced. Iced tea, as well as many juice products, however, must be pasteurized and filled at high temperatures. Since virtually all bottled iced tea is produced in facilities that also handle other beverages—some of which may be non-Kosher—it is critical to ensure the Kosher status of the equipment used to produce Kosher iced tea.

### **Tea on Shabbos**

*Halachic* issues relating to tea are not limited to the realm of *Kashrus*, however. Drinking tea on *Shabbos* requires addressing a number

of *Halachic* issues, since tea leaves may not be *cooked* in the brewing of the beverage, as is the normal process. For hundreds of year, and perhaps more than any other food eaten on *Shabbos*, *Halachic* authorities have dealt with the best way to make tea, ranging from preparing *sense* (tea essence) before *Shabbos* and ensuring that this tea concentrate be mixed with hot water in a manner that meets *Halachic* requirements. Modern powdered instant tea, however, allows a much easier way to make tea on *Shabbos*.

### **Herbal Tea**

Not all “tea,” however, is truly “tea.” Many botanicals, such as flowers, herbs, and grasses, are sold as “herbal tea,” and while the term “tea” may be misleading—they are not tea—the emphasis should be on the term “herbal” for such products. Many herbal brews, such as chamomile and peppermint, have been used for years, with reputed health benefits. While the curative powers of such products have yet to be proved, they clearly do qualify as “caffeine free.” *Pure* botanical tea, just as regular tea, is inherently Kosher. It is important to recognize, however, that herbal tea may contain ingredients other than the botanicals that make up the name of the product. Often, additional flavorings are added to such products, which require a reliable Kosher certification.

Herbal teas, however, may have one advantage over the standard beverage. It has long been noted that certain herbs have medicinal qualities, often surpassing those of more modern pharmaceuticals. The *Mezridzer Maggid* explains that herbs had merited such powers based on their actions at the very time of creation. When Miriam was punished with *Tzora’as*, Moshe appealed to *Hashem* for her recovery by invoking the name of “*Kel*” (see *Bamidbar* 12:13), which is the Divine Attribute that heals a person. The *Talmud* (*Chullin* 60a) notes that when *Hashem* commanded grasses to be created,

He did not specify that they maintain themselves separate from one another, as He did in the case of trees. When the grasses actually sprouted, however, they did so reasoning that a *Kal va'Chomer*—a conclusion based on an analogy from a less stringent to a more stringent set of circumstances—required them to do so. (In this case, they reasoned that if trees—which normally remain distinct and noticeable from one another—were commanded to remain separate, all the more so should grasses—which tend to grow together—show their individuality by remaining separate from one another.) The *Maggid* therefore explains that since the power of a *Kal va'Chomer* derives from the first of the thirteen Divine Attributes—which is “*Kel*”—and the grasses were the first creations to invoke a *Kal va'Chomer*, they merited the assumption of the gift of the healing powers of *Kel*. Such an understanding, of course, should provide an entirely fresh insight into the cup of herbal tea one may take next time he has a cold!

### ***The Bottom Line***

- Unflavored tea leaves and tea bags pose no *Kashrus* concerns.
- Flavored teas require a reliable Kosher certification.
- Decaffeinated tea requires a reliable Passover certification for Passover use.
- Pure instant tea poses few Kosher concerns. Iced tea mix, however, contains additional ingredients that require Kosher certification.
- Bottled iced tea beverages often contain flavorings and therefore require a reliable Kosher certification. In addition, they are often “hot filled,” and the Kosher status of the equipment on which they are processed requires verification.
- Herbal teas that contain pure botanicals pose no Kosher concerns. However, many such products contain added flavors, the Kosher status of which must be verified.

# The Story of Tuna

v'Tana Tuna—**ותנא תונא**

“To Wit”

Fish has been one of the staple proteins in humankind's diet from the earliest times. Its utility, however, has often been hindered by its perishability. Although *Rav* relates the aphorism of an angler named *Ada* (“*Ada Zeiyda*”; see *Mo'ed Katan* 11a) to the effect that fish is best as it is about to rot, the *Tosafos* (ibid.) caution that rotten fish is now considered most unhealthful and should be avoided. Many methods of preserving fish have been devised, often serving to create new fish delicacies in the process. Smoked fish, lox, and salted herring are of ancient vintage and are excellent examples of “necessity is the mother of invention.” About one hundred years ago, however, *canned* fish became available and, with it, canned sardines, salmon, mackerel, pilchard, anchovy, and tuna became staples around the world. In North America, canned *tuna* has become the most popular fish product, and indeed many of the most popular brands of canned tuna sport a Kosher certification. However, the *Halachic* underpinnings of these *Hashgachos* have been the grist of much discussion—and misinformation—and the purpose of this chapter is to clarify the *Kashrus* issues relating to this product.

## **Determination of the Kosher Status of Fish**

In analyzing the *Halachic* status of any fish product, we must first establish that the fish in question is of a Kosher *species*. By definition, a Kosher fish must exhibit both fins and *Halachically* defined scales, which are the “*Simonim*” (indications) of a Kosher fish.

The *Talmud* (*Chullin* 66b) teaches us that all scaled fish indeed have fins, and the *Shulchan Aruch* therefore rules that one need only verify the scales on a fish to be able to consider it Kosher. In addressing the issues related to canned tuna, we must therefore establish two points: (1) “tuna” is a Kosher species, and (2) the fish that is actually in the can is indeed “tuna.” Both points pose interesting *Halachic* issues.

Ichthyologists would point out that no *species* of “tuna” (or “tunny,” as it is sometimes known) exists; the term actually derives from the Latin *Thunnus*, the name of a *genus* of large fish in the mackerel family, which includes the species known as albacore, skipjack, and yellowfin, which make up the bulk of the canned tuna supply. The word *tuna* is actually found in the *Rashi*, who translates the word “*Tris*” as “*Tunina*” (*M'gillah* 6a; see *M'targem*, who translates this word as *der gezaltzene Thun Fish* [salted tuna fish]). Indeed, *Thun Fish* is a term used by many *M'forshim* (commentaries) to refer to a fish that was commonly eaten (see *Aruch* discussing the word *Tris*, who states that its Roman name is *Atunis*—a name that still survives in the modern Spanish as the name for this group of fish—*Atùn*). Whatever the derivation of our modern word *tuna*, the Kosher status of the specific species is the concern. Based on extensive review of *all* species of “tuna” that are of commercial value, it can be safely stated that all of them have *Halachically* valid scales. There was indeed some confusion on this point because some species of tuna typically have very few scales. However, the *Shulchan Aruch* explicitly stipulates that even one scale is



sufficient (*Y.D.* 83:1), and it has been verified that *all* commercially processed species of tuna have a significant number of scales to obviate *Kashrus* concerns.

The second issue, however—that of the verification of the scales on the specific fish being canned—is a more complicated one. Because the tuna that one finds in a can has been carefully trimmed and processed to remove all vestiges of scales and skin, an inspection of the *Simonim* of the fish by the consumer is not possible. The only methods by which the consumer may be assured that the fish that is actually in the can is indeed Kosher is by virtue of regulatory requirements that stipulate that cans marked as “tuna” indeed contain nothing but the indicated species, as well as the *Hashgacha* that it bears. The *Shulchan Aruch* (*ibid.*, 4) rules that one may not purchase pieces of fish that do not bear any scales from a non-Jew because verifying the Kosher status of such pieces in the absence of scales would be impossible. Although most opinions rule that recognizing the *type* of fish as one that typically has scales would be sufficient (see the introduction of the *Darkei Tshuvah* to *Y.D.* 83), canned tuna fish neither has scales nor is readily recognizable as tuna (and although an expert may be able to recognize canned tuna as tuna, most consumers do not possess this level of expertise.) A logical assumption would, therefore, be that the *Halachic* basis for granting a *Hashgacha* to canned tuna fish would be based on the supervision of a *Mashgiach*. However, virtually all brand-name Kosher tuna is processed in factories that do not have a full-time *Mashgiach*, seemingly giving rise to a significant *Kashrus* issue. To complicate matters further, tuna factories are typically located in remote areas of the world—Pago Pago (American Samoa), Thailand, Taiwan, and Puerto Rico—and it would be *very difficult* to find a reliable full-time *Mashgiach* willing to serve in such locations.

### **Determination of the Kosher Status of Canned Fish**

Indeed, the Kosher status of canned tuna (produced without a *Mashgiach T'midi*) has been the subject of much *Halachic* discussion. Many *Rishonim* (*Sma" G* and *Chinuch*, among others) believe that there is a specific *Mitzvah* to inspect the *Simonim* of fish prior to eating, an obvious impossibility after tuna has been canned. Indeed, about forty years ago, Rav Eliyahu Henkin *zt"l* wrote that such canned tuna fish is, in fact, prohibited because no *Mashgiach* is present to inspect the *Simonim* of the tuna to verify its Kosher status. Many subsequent authorities have concurred with this opinion, including Rav Moshe Feinstein *zt"l* (*Igros Moshe Y.D.* III:8 and IV:1) and, more recently, *yb"l* Rav J. Dovid Bleich (in his work *b'Nesivos ha'Halacha* Vol. I). To understand their position, however, note that the requirement to inspect each fish is not absolute. *Halacha* stipulates several instances when fish is permitted notwithstanding the impossibility to actually observe the requisite scales. For example, species of fish that tend to grow scales as adults are permitted in their immature state *sans* scales (*Y.D.* 83:1). Similarly, a species of fish that is known to bear scales while in the sea but tends to lose them as it is removed from the water is also considered Kosher—even though checking for such scales is impossible (*ibid.*).

Clearly, an “absolute” knowledge that a fish is Kosher precludes the need to actually see the scales, a point noted by the *Rambam* (*Ma'achalos Asuros* I:8) regarding the *Simonim* of animals. The authorities that prohibit unsupervised canned tuna, however, argue that having such an absolute knowledge is impossible in the case of canned tuna because non-Kosher species are routinely caught together with tuna and are only subsequently removed. (Indeed, *Rav Moshe* dismisses the concept of regulatory oversight in regard to fish, in contradistinction to his

position regarding milk and *Cholov Yisroel*.) They argue that the default requirement to inspect fish for scales remains in effect and is not satisfied in routine canned tuna fish productions. Although the exact circumstances that were the basis of these opinions may not reflect the situation in tuna-processing facilities today, the usual assumption is that the *Hashgacha* provided on most brand-name tuna would not be acceptable according to these opinions. For this reason, special productions of tuna are arranged for certain *Hashgachos*, the product of which is clearly labeled “*Mashgiach T'midi*.” (Indeed, concerns about the Kosher status of tuna are so significant that the *Minhag* of the Jews in Hamburg was to forego this type of fish altogether—even when purchased with the skin on it.)

On the other hand, many authorities, including Rabbi J. B. Soleveitchik *zt"l* and *yb"l* Rabbi Herschel Shachter *shlit"a* (see *Mesorah* Vol. 1), cite numerous precedents and *Halachic* justification to permit the ongoing production of Kosher tuna fish without the supervision of a full-time *Mashgiach*. Indeed, the *Tosafos Rid* (*Avodah Zarah* 40a) permits barrels of *Tunina* that arrive without any scales or other indication as to the source of the fish because it was known that the factories where these fish were processed handled Kosher species of fish exclusively. In *Halachic* terms, this is called a *Chazakah*—an established fact—and this opinion is quoted in the *Bais Yosef* and the *Darkei Moshe* (*ibid.*) in the name of the *Shibolei ha'Leket*. Modern tuna plants clearly process *only* (Kosher) tuna and are fastidious in their efforts to ensure that all bycatch (other species of fish caught in the nets) is eliminated before processing. A reasonable conclusion, therefore, is that tuna factories today have no less of a *Chazakah* than those discussed by the *Shibolei ha'Leket*. Indeed, to the best of anyone's knowledge, no *Mashgiach* has ever found

a non-Kosher fish in the processing area of a tuna factory. Although a *Mashgiach* may visit a tuna factory but a few times a year, this is deemed sufficient to establish and maintain the *Chazakah* that the factory handles only Kosher fish. Clearly, however, the disagreement regarding the need for a *Mashgiach T'midi* in tuna facilities is longstanding and unresolved.

### **Dolphin**

Note, however, that absolutely no concern exists that *dolphin* may wind up in a can of tuna. Dolphins are non-Kosher marine mammals but are never confused with tuna. Tuna are sorted, eviscerated, and trimmed by hand, and it is virtually impossible for a dolphin to inadvertently make its way through a tuna-processing system. Many brands of tuna bear a “dolphin-friendly” logo because certain fishing techniques tended to trap—and kill—the dolphin that often swim along with schools of yellowfin tuna. Although the dolphins were immediately removed from the net, they often died nonetheless, and environmental activists fought to protect them from this unnecessary slaughter. The tuna industry finally resolved this concern by designing “dolphin-friendly” fishing methods, which have been verified to catch the tuna and let the dolphins escape unharmed.

### **Storage**

Regardless of the care with which tuna are segregated from non-Kosher fish, there is one point at which they may share a common fate. Commercial tuna-fishing boats catch enormous amounts of fish and transport it to processing facilities located at some distance from the fishing grounds. In the olden days, fish was salted on the boat to preserve it. Today, however, tuna is quick-frozen and may therefore be stored for a long period, after which it is defrosted and

canned as a fresh product. The most efficient method of freezing large amounts of such big fish is by soaking them in a bath of “freezing”—but not “frozen”—saltwater brine. Such brine can be cooled to just below 0°F without turning into ice, but whole tuna will become solidly frozen at that temperature. Tuna boats therefore have large vats of supercooled brine into which their catch is dumped directly from the nets and is kept frozen in the liquid brine until unloaded at the processing plant. Most tuna plants store the brine-frozen tuna in blast freezers at the plant until ready for processing. Although the fishermen attempt to limit their catch to tuna, a certain amount of non-Kosher bycatch invariably winds up in the nets and may not be completely sorted out of the catch before being frozen in the brine. Some have therefore argued that by soaking the non-Kosher fish together with the Kosher tuna, the rule of *Ka'vush* (soaking) would come into play and it would be considered as though that all the fish were cooked together. Fortunately, the amount of such non-Kosher bycatch in the brine is far less than 1/60, and any *B'lios* (absorbed flavor) from the non-Kosher fish would be *Batul* (nullified). (The argument that the non-Kosher fish is a *Beryah* [a whole unit] and therefore not *Batul* is a misplaced concern because the *Issur* [prohibition] in this case would be the *B'lios*, which is not subject to the rules of *Beryah* [Y.D. 100:2].)

## **Bishul Akum**

Issues relating to the *Kashrus* of canned tuna are not restricted to the inherent Kosher status of the species, however. *Halacha* stipulates that certain types of cooked food are Kosher only when actually *cooked* by a Jew. This rule, known as *Bishul Akum*, applies to foods that are considered important and cannot be eaten without cooking. Most types of fish—presumably including tuna—are considered important foods that require cooking

and are thus subject to the rules of *Bishul Akum* (see *Shulchan Aruch Y.D.* 113:12). Canned tuna is a cooked product, but as noted previously, it is usually not produced under the supervision—or cooking—of a *Mashgiach*, thus raising another significant *Kashrus* concern. Indeed, concerns of *Bishul Akum* are but another reason why many require tuna productions to be under the supervision of a *Mashgiach*, which also affords him the opportunity to participate in the cooking process. The exact method by which concerns of *Bishul Akum* may be obviated depends on a disagreement between the *Shulchan Aruch* and the *Rama*. The *Shulchan Aruch* (*ibid.*, 7) rules that, in contradistinction to the rules of *Pas Yisroel* (bread baked by a Jew) whereas it is sufficient for the Jew to merely light the oven, *Bishul Akum* requires that the Jew take part in the actual cooking process. The *Rama*, however, rules that no such distinction need be made, and concerns of *Bishul Akum* may indeed be addressed by having the Jew turn on the fire (or merely add fuel to an existing fire). This dispute carries over to the customs of *S'phardim*, who follow the opinion of the *Shulchan Aruch*, and *Ashkenazim*, who follow the approach of the *Rama*. For this reason, to meet the *Halachic* requirements of *S'phardim*, the *S'phardic* Chief Rabbinate of Israel arranges for Kosher productions of tuna fish that entail having the *Mashgiach* actually push the cans of tuna into the cooker or turn on the steam for each production! Alternatively, he may turn the steam valve on for each production.

Regular Kosher productions of tuna do not benefit from such involvement by a *Mashgiach*, however, and concerns of *Bishul Akum* must be addressed in other ways. Although many *Halachic* authorities disagree with this approach, one of the most cogent arguments to resolve *Bishul Akum* concerns stems from a cost-saving measure taken by the tuna processors themselves. Processing tuna involves stripping the flesh

from the skeleton—without allowing any of the bones inadvertently to stay in the meat and as anyone who has ever eaten fish knows that such a process is tedious and time consuming. Tuna processors, however, realized that if the fish were first *cooked*, it would be easier to strip the meat from the bones and result in less waste. The routine processing of tuna involves steaming the whole tuna until it is fully cooked, after which it is easier to remove the bones and pack the tuna in a can. Although such steaming is done to simplify the boning process, the process is fortuitous in resolving our concerns of *Bishul Akum*. The *Shulchan Aruch* (ibid., 13) rules that foods that are *smoked* and not cooked are not subject to concerns of *Bishul Akum*. Many *Acharonim* (see *Darkei T'shuvah* 116:13, *Yabia Omer* V:9, and *S'ridei Aish* II:138) believe that cooking with live steam falls into the same category as smoking and is thus not subject to the rules of *Bishul Akum* at all. (The *Minchas Yitzchok* [III:26.6] is less sanguine with this approach but accepts it with the additional consideration that whether *Bishul Akum* is applicable in a factory setting is questionable.) On the other hand, many authorities disagree with the entire concept of considering steam to be in the category of *M'ushan*. They posit that the leniency of *M'ushan* applies to situations in which cold smoke preserves the food without cooking it (that is, the product never exceeds *Yad Soledes Bo*, the default temperature required for cooking according to *Halacha*). According to this understanding, the *Heter* (leniency) of smoking would not be applicable to canned tuna fish.

Not all tuna, however, is steamed before canning. Large companies maintain that, in addition to facilitating the boning process, the precooking removes fat that may have undergone oxidation and become rancid during the freezing process. Some smaller companies, however, maintain that steaming degrades the quality of the product. For this reason, some small tuna canneries do

not presteam the tuna at all, thereby forfeiting the leniencies it might afford as regards *Bishul Akum*. (Please note that other considerations may obviate *Bishul Akum* concerns. For example, some hold that even the steaming of a *sealed* can may be considered steaming for purposes of *Bishul Akum* (see *Minchas Yitzchok* X:67). In addition, some argue that *canned* tuna (as opposed to freshly cooked product) is not considered an important food—*Oleh Al Shulchan M'lachim*—and thus not subject to *Bishul Akum* concerns.)

(Some have also argued that, with the growing popularity of Japanese cuisine, perhaps tuna is no longer subject to concerns of *Bishul Akum* at all. The Japanese typically eat sushi and sashimi made with raw tuna, and one of the basic criteria for a food to be subject to *Bishul Akum* is that it must require cooking. On the other hand, most tuna eaten in the United States is cooked. It would seem that—until such time as most people develop a taste for raw fish—tuna would follow the precedent set by eggs; that is, although some may eat raw eggs, most people require that they be cooked [ibid., 14].)

### **Steaming and Evisceration**

Although steaming the tuna may resolve one *Kashrus* concern, it paves the way for another, based on the diet of the tuna. The *Talmud* (*Avodah Zarah* 4a) notes the propensity of larger fish to feed on smaller ones and, indeed, tuna are predatory species whose diet includes a host of non-Kosher marine species (for example, shrimp, crabs, and squid). Although the *Halacha* is clear in that a Kosher animal remains Kosher even if it has eaten non-Kosher food (see *Rama Y.D.* 60:1 and *Sha"Ch s.k.* 5), it also states that a non-Kosher fish that is found inside a Kosher fish remains non-Kosher (see *B'choros* 7b and *Y.D.* 83:9). In most cases, finding a non-Kosher fish inside a Kosher fish does not pose much of a concern

because one routinely eviscerates the fish—and thus removes any offending non-Kosher material—before cooking. As we have seen, however, tuna is steamed prior to processing. Although this steaming generally takes place after the fish has been eviscerated, it *may* also be done *before* the evisceration. Such a situation creates the possibility that the non-Kosher species in the tuna's gut were cooked together with the tuna, thereby rendering the entire tuna non-Kosher by dint of the non-Kosher *B'lios* (flavors) absorbed into it. This situation is seemingly similar to the case in which a sprouted grain was found in a cooked chicken on *Pesach*, for which the *Shulchan Aruch* (*O.C.* 467:10 and 17) rules that the *B'lios* of *Chometz* would compromise the status of the chicken. Indeed, for this reason many *Hashgachos* supervising tuna insist that the tuna be eviscerated *before* it is steamed. (Please note that objections to this process are not limited to Kosher concerns. One of the reasons that some companies prefer this process is precisely *because* some of the stomach contents are infused into—and therefore increase the weight of and modify the flavor of—the tuna. However, some would also consider such a process aesthetically questionable.)

Those *Hashgachos* that have no such requirement, however, base their position on the following considerations: The *Mishnah* (*Ohalos* 11:7) states that human flesh consumed by an animal may lose its status—and therefore no longer be considered *Ta'meh* (ritually impure)—if it had been *digested*. The *Mishnah* further states that this period of digestion differs between species, with a three-day requirement for animals (for example, a dog) that consume the flesh and a lesser period for birds and fish (either a twenty-four-hour period or the period required for a fire to consume the flesh). The *Rosh* notes the seeming contradiction between the *Mishnah* in *B'choros* regarding the ingested non-Kosher fish and the *Mishnah* in *Ohalos* concerning the ingested

human flesh and therefore makes a distinction between the laws of *Tum'ah* (when digestion is effective) and prohibited foods (when it is not). However, *Rav Moshe mi'Pontoise* (quoted in the aforementioned *Rosh*) makes a distinction between macerated food, such as the flesh chewed and consumed by the dog discussed in *Ohalos*, and the whole fish is discussed in *B'choros*. *Rav Moshe mi'Pontoise* postulates that chewed food is considered digested even before it reaches the stomach and therefore loses its status as a prohibited item. The *P'ri Chodosh* (83) rules that when the food is indeed completely decomposed in the gut, it is considered digested and loses its prohibited status. Based on a review of the contents of many tuna stomachs, certain *Hashgachos* have concluded that such material is generally sufficiently decomposed, and this is the approach on which they allow tuna to be cooked before evisceration. Indeed, some have suggested that even if such fish are not considered *Halachically* “digested,” they would certainly be *No'sen Ta'am l'Ph'gam* (have a putrid taste) and thus would not have the ability to compromise the tuna in which they were cooked. Others, however, quote the opinion of *Rabbeinu Tam*, who holds that one should follow the opinion that food ingested by fish requires twenty-four hours for digestion, which may preclude processing the tuna in this fashion.

### **“Dairy” Tuna Fish**

The precooking of tuna is not the only method by which tuna processors attempt to maximize their yields. The *Torah* stresses the requirement that weights and measures be accurate (*Leviticus* 19:36), and modern food regulations stipulate the accuracy with which the amount of food in a package is indicated. In the case of canned tuna, the indicated number of ounces or grams must be drained weight—the weight of the tuna in the can after the liquid has been drained from

it using an official method. A small amount of hydrolyzed protein added to the broth in the can would, however, bind some of the moisture so that more of the water would remain in the can after draining. Tuna companies, of course, indicated the presence of this additive on the label, but preferred to claim that it was used as a flavor enhancer as opposed to inexpensive filler. Truth in labeling issues aside, some of the hydrolyzed proteins created a major *Kashrus* concern. Virtually any protein can be broken down (hydrolyzed) using acids, bases, or enzymes, though in most cases the protein used for tuna was soy. However, some companies used hydrolyzed casein (milk protein) for this purpose, creating a line of “dairy” tuna fish. Although the *Hashgacha* on these products indicated that the product was indeed dairy, it nonetheless raised issues regarding the equipment on which it was processed, as well as *Cholov Yisroel* and other *Kashrus* concerns (such as the prohibition of cooking fish with milk according to certain opinions; see *Sha”Ch* 87 *s.k.* 5). Fortunately, most tuna canneries have decided to maintain the value of their products to the consumers by vastly reducing or eliminating the use of hydrolyzed proteins, and virtually no Kosher tuna today contains any dairy hydrolysates. Indeed, the vegetable broth added today is generally nonhydrolyzed and is added for flavor.

### **Pet Food**

Another example of the tuna industry’s thrift—and potential *Kashrus* concerns—is based on other products typically produced at a tuna cannery. The canning process used for tuna and many other foods involves hermetically sealing the product in a can and then subjecting it to heat sufficient to kill the bacteria that would otherwise cause the food in the can to spoil. Typically, this heating process takes place in a large, steam-pressurized vessel called a retort. Because

a retort is essentially a large kettle, one is not allowed to use the same retort for both Kosher and non-Kosher products (unless it is *Kashered* in between). Consumers prefer light-colored tuna, but many parts of the tuna are too dark for human tastes. Cats, however, have no such qualms, and the traditional destination for these parts of the tuna are cans of cat food—which must also be retorted. Were cat food to contain only (Kosher) rejected parts of the tuna, no *Kashrus* concerns would exist with using the same retort for Kosher and pet food. However, cats are notorious for their finicky tastes, and a diet restricted to tuna is not a happy tabby make. Some tuna factories therefore import various types of non-Kosher meat by-products (for example, liver and kidney) to be mixed with the tuna to provide a varied line of cat food products. The processing of such products would compromise the Kosher status of the retort, so factories that produce both Kosher tuna and non-Kosher pet food must develop systems to ensure that the retorts, as well as all related equipment, cannot be used for the wrong product. Many plants keep the two operations completely separate, but again, *Hashgacha T’midis* tends to resolve this concern because the *Mashgiach* supervises the production to ensure that only Kosher equipment is used for the Kosher canned tuna.

As we have seen, maintaining the *Kashrus* of one of the staples in the Kosher household is a significant undertaking. The *Talmudic* phrase for bringing a proof from a *Mishnah is v’Tana Tuna*, and in our case, the saga of the tuna is a superb witness to the *Kashrus* issues that must be addressed for the items that we eat.

### **The Bottom Line**

- The Kosher status of a fish is determined by the existence of *Halachically* acceptable scales (known as ctenoid and cycloid types of scales, which can be removed from the skin without damaging

it). The group of fish collectively known as tuna exhibits such scales and is therefore Kosher.

- Traditionally, the Kosher status of a fish was verified by inspection of such scales. Most canned fish (including tuna) are filleted and cannot be inspected after being placed in the can, raising a question as to the method by which such fish can be certified as Kosher. Some authorities require that a *Mashgiach* supervise each production to ensure the Kosher status of the fish. Other authorities follow *Halachic* opinions that permit reliance on periodic inspections of canneries to verify that they handle only Kosher fish.
- Canned tuna fish also raises concerns of *Bishul Akum*. Some authorities require the presence of a *Mashgiach* to participate in the cooking (for example, turn on the fire) to obviate such concerns. Others rely on various other considerations, including steaming and the type of product involved, to eliminate this concern.
- Although most tuna is eviscerated before steaming, some companies prefer to steam the whole tuna before evisceration. In such cases, however, some of the non-

Kosher fish that make up the tuna's diet will remain inside the tuna while it is being steamed. This creates a *Kashrus* concern in that the non-Kosher fish are cooked together with the tuna, thereby contaminating it. Some authorities therefore insist that the tuna be eviscerated before steaming. Others, however, believe that any residual non-Kosher feed is considered digested and no longer a prohibited item.

- The use of hydrolyzed casein had posed a significant concern in that tuna that had contained this material was dairy. Fortunately, it seems that the industry has discontinued the use of hydrolyzed casein as a filler and has vastly reduced or eliminated the use of all hydrolyzed proteins for this purpose.
- Tuna companies produce pet food from portions of the tuna that are not considered fit for human consumption. Often, non-Kosher meat by-products are added to the tuna to increase the variety of such products. Care must be exercised to ensure that equipment used to process such non-Kosher products is segregated from that used for Kosher production.

# The Story of Vinegar

## וטבלת פתך בחמץ

רות ב' י"ד

### And Ye Shall Dip Your Bread in Vinegar

Ruth 2:14

Many of the foods we eat today have been with us since times of antiquity. However, the methods by which they are produced today may differ significantly from traditional processes and give rise to new *Halachic* issues and challenges. An interesting example of such a product is vinegar. Historically, vinegar was a by-product of the winemaking industry; the name is derived from the French words *vin*, meaning wine, and *aigre*, meaning sour. During this souring process, the alcohol in the wine would be converted into acetic acid by the action of *Acetobacter* (bacteria that grow on alcohol and produce acetic acid). Wine that spoiled became vinegar and was thus considered inferior to wine. Its value was recognized, however, as an aid in the preservation of food and as a favorite condiment used to ameliorate the effects of heat on Boaz's workers (*Ruth* 2:14). The major *Halachic* concern relating to vinegar has historically been that of *S'tam Yaynam* (grape wine handled by non-Jews); Kosher vinegar could be derived only from Kosher wine. Today, vinegar is made from various raw materials with differing questions and practical *Halachic* applications.

### Acetic Acid

Commercial acetic acid can be produced at high purity (over 95 percent) through a variety of means, primarily through catalytic reactions of petrochemicals such as methanol, naphtha, and ethanol. Such pure acetic acid has a freezing point of 16.7°C

and is called glacial acetic acid because it crystallizes and freezes into a solid mass at a higher temperature than water. In many parts of the world, vinegar can be produced by mixing glacial acetic acid with water. In the United States, however, the term *vinegar* is restricted to acetic acid derived through the fermentation of alcohol (the alcohol itself being derived either synthetically or through fermentation). In the fermentation process, each molecule of alcohol consumed by the *Acetobacter* is converted into a molecule of acetic acid. However, these bacteria cannot survive in a strong solution of alcohol. Conventional vinegar fermentation requires alcohol to be diluted to about 12 percent (similar to the natural alcohol concentration in wine), resulting in vinegar that is about 12 percent acetic acid. Vinegar of this strength is referred to as 120-grain vinegar, which is the industry standard. (Each grain equals 1/10 percent of acetic acid.) Because water constitutes the bulk of such vinegar, it will not freeze uniformly at 16.7°C and is not called glacial acetic acid. The acetic acid strength of vinegar can be increased by removing some of this water, but producing glacial acetic acid through fermentation of alcohol and subsequent concentration is not generally considered economical.

### Vinegar Fermentation

The equipment used to ferment vinegar has also changed over time. One of the primary concerns in the fermentation process is to



ensure that sufficient oxygen is available to the bacteria. Until recently, the fermentation equipment consisted of a large tank of wood shavings that had been inoculated with the bacteria. The alcohol solution would be continuously trickled over the loosely packed wood shavings, allowing for an ample supply of oxygen during the fermentation. More recently, special fermentors called acetators have been developed, in which air is pumped into a tank of alcohol solution and bacteria.

Bacteria normally found in the environment, the classic culture source, often fostered fermentations that yielded undesirable flavors and characteristics. As is the case in almost all modern fermentations, vinegar fermentations today use specific bacterial cultures that have been isolated and proved to be most effective for this purpose. Bacteria, however, do not live by alcohol alone, and the dietary needs of these bacteria give rise to interesting *Halachic* considerations.

### **Types of Vinegar**

The difference in taste between different types of vinegar stems from the nonacetic acid portion of the vinegar. Today, three major types of vinegar are produced. Wine vinegar is produced the old-fashioned way, using (second-quality) wine. Because the level of alcohol in wine is nominally 12 percent or less, no adjustment to the concentration of alcohol is necessary. In addition, wine contains an array of the micronutrients preferred by finicky bacteria, so additional ingredients may not be required. The distinctive flavor of wine vinegar comes from the 88 percent of the wine that is not reacted during the vinegar conversion. The Kosher status of such wine vinegar depends on the Kosher status of the wine used for the fermentation, and most such vinegar is not Kosher. (The H. J. Heinz Company, as well as Royal Wine Company, produces wine vinegars that are indeed Kosher approved.) Please note

that wine-*flavored* vinegar generally refers to white vinegar that has been colored and flavored to imitate wine vinegar. Such a product may well be Kosher, provided that the flavorings and colorings are acceptable.

In some countries, grape juice is converted into wine vinegar through a double fermentation—a yeast fermentation of the sugar into alcohol followed by a bacterial fermentation of the alcohol into acetic acid. Balsamic vinegar is a specialty wine vinegar made from grape *must*, the pulp of grapes that remains after pressing. The sugars in the must are converted into alcohol using naturally occurring yeasts, and the alcohol is subsequently converted into acetic acid using naturally occurring bacteria. The production of absolute (pure) balsamic vinegar is an ancient art practiced in Modena, Italy, and involves aging the vinegar over long periods of time in a variety of wooden casks to create this unique vinegar. Traditional balsamic vinegar is highly prized and very expensive; most balsamic vinegar sold today uses grape juice and commercial cultures to reduce cost. Kosher balsamic vinegar is now available, however.

Apple cider vinegar is produced through a double fermentation in much the same manner as vinegar is derived from grape juice. Again, the distinctive flavor of apple cider vinegar is derived from the nonalcohol portion of the cider. Apple cider is also replete with micronutrients, and the bacteria are generally quite content to grow in this medium without additional nutrients. For this reason, Passover vinegar historically has always been cider vinegar because it could be produced without vinegar nutrients that often posed a *Pesach* concern. Cider-*flavored* vinegar can be produced from white vinegar using appropriate flavors and colors.

Other fruit juices such as pineapple, sugarcane syrup, rice wine, and corn sweeteners are used to produce specialty vinegars. Malt syrup is also used to produce malt vinegar, which is prized for its taste as well as its dark

color, which may be Kosher, provided that it is not produced on equipment also used for non-Kosher wine vinegar.

White vinegar is produced through the fermentation of ethanol that has been derived either through fermentation of carbohydrates or from petrochemical sources. In some countries, this type of vinegar is called “spirit” vinegar and may be produced only from fermentation of alcohol. The source of the alcohol may be important because trace impurities in ethanol differ from source to source and have a discernible effect on the taste of the resulting vinegar. In the production of vinegar, the alcohol must first be diluted to about a 12 percent concentration, and additional micronutrients must be added to allow the bacteria to thrive. Historically, malted barley had been used for this purpose, but more recently, special “vinegar food” has been developed, which is a mixture of sugars, salts, and yeast extract. (Passover vinegar food is specially produced, using Passover dextrose and yeast extract.)

Ethanol can be derived from the fermentation of different types of carbohydrates, and in many countries, excess wine as well as sugars left in grape pulp after grape juice has been squeezed from the grapes are converted into industrial ethanol. Alcohol derived from *S'tam Yaynam* is not considered Kosher; vinegar made from such alcohol would be *Halachically* classified as “wine” vinegar even though it is sold as white distilled vinegar. (Some authorities have argued that alcohol produce from the fermentation of the pulp that remains after squeezing out grape juice—marc alcohol—would be permitted. This position, however, has not been generally accepted.) Another carbohydrate often fermented into alcohol is lactose (milk sugar). In certain countries (for example, New Zealand and Ireland), such alcohol is the predominant base for the production of vinegar, which should at best be considered dairy.

### **Vinegar Strength—“Grain”**

Vinegar sold as a consumer product is typically diluted with water to 5 percent acidity level. Common industrial vinegar is sold as 120-grain vinegar (12 percent), although recent improvements in vinegar production have allowed for fermentation at greater than 160 grain. Vinegar of 200 or 300 grain is obtained by freezing 120-grain vinegar and concentrating it through selective crystallization. (This is the same process used to raise the alcohol content of “ice house” beers, in which beer is frozen to create ice crystals. The ice is then filtered out of the beer, reducing the amount of water in the beer and raising its alcohol level.) A more recent process of concentrating vinegar involves the use of reverse-osmosis filtration. Concentration of vinegar to greater than 300 grain is generally not considered economical. In some countries, vinegar is distilled to reduce the concentration of metal ions, and the product is called distilled vinegar. This process is not common in the United States, however, and the appellation white distilled vinegar generally refers to the distillation alcohol from which the vinegar is derived.

In recent years, white vinegar has posed several *Kashrus* concerns.

### **Passover Vinegar**

Another set of issues concerns Passover vinegar. Because the alcohol used to produce vinegar may be *Chometz* (fermented grain prohibited on Passover), one is not allowed to eat or own such vinegar on Passover. This is a serious concern for Jewish-owned companies that are Kosher certified. This would not be a concern with fermentation alcohol from corn, but a significant amount of industrial wheat alcohol is produced in the United States. (In Europe, even alcohol ostensibly derived from molasses may be adulterated with significant amounts of

alcohol recovered from spoiled beer that did not make it to the pub.) For this reason, Jewish-owned companies that use vinegar are required to purchase vinegar produced from non-*Chometz* alcohol during Passover. (The use of nutrients that contain *Chometz* in non-*Chometz* alcohol, however, would not create vinegar subject to the prohibition of *owning Chometz* because the nutrients would be *Halachically* insignificant.) Vinegar that is approved for Passover use is generally produced from petrochemical ethanol—hence the term *synthetic* vinegar. In addition, although the usage level of vinegar nutrients is minute, vinegar approved for Passover must be entirely free of any concerns of *Chometz*. Special formulations of vinegar food for Passover must therefore be prepared for such productions. However, some of the necessary ingredients are difficult to procure for Passover, and indeed, recently no Passover white vinegar was produced. Glacial acetic acid may be diluted and used as a replacement for *Pesach* white vinegar, but it cannot be labeled as “vinegar” in the United States.

The relationship between glacial acetic acid and vinegar recently gave rise to another *Pesach* concern. Sorbic acid and potassium sorbate, preservatives used in a number of Passover products, are produced by a chemical synthesis involving glacial acetic acid. Vinegar is traditionally not considered appropriate for use in this process because its acetic acid concentration is too low and the cost of concentrating the vinegar to an acceptable acidity is generally considered prohibitive. Unfortunately, industrial productions in some parts of the world are not subject to conventional economic constraints, and it was discovered that the Chinese have—in at least one instance—deemed it appropriate to concentrate corn-based vinegar for the production of sorbic acid. Although sorbic acid had been considered generally innocuous as regards

Passover, this is clearly no longer the case. The only sure bet in *Kashrus* is that things change, and this finding should reinforce our resolve to be ever vigilant to the vicissitudes of the food industry.

### **The Bottom Line**

- Vinegar was historically produced through the fermentation of grape wine with *Acetobacter*, which produce acetic acid. Although vinegar was generally regarded as the unfortunate result of spoiled wine, its value was recognized as a flavoring and preservative. The Kosher status of such wine vinegar is based primarily on the Kosher status of the wine from which it is fermented.
- Acetic acid may also be produced through other processes. Glacial acetic acid is typically produced through the catalytic conversion of petrochemicals and poses no Kosher concern. In many parts of the world, such acetic acid may be diluted with water and listed as “vinegar” on an ingredient declaration. In the United States, glacial acetic acid must be declared as “acetic acid” and not vinegar.
- Vinegar may also be produced through the fermentation of other types of alcohol, either in the form of fermented fruit juice or in the form of pure alcohol. *Acetobacter* cannot tolerate a high alcohol concentration, and pure alcohol must typically be diluted to about 12 percent for vinegar production. The Kosher status of vinegar produced from pure alcohol is based primarily on the source of the ethyl alcohol.
- *Acetobacter* require trace nutrients in addition to alcohol. Wine and other fermented fruit juice naturally contain such nutrients. However, the fermentation of distilled alcohol requires the use of vinegar nutrients that must meet Kosher requirements.

- Vinegar produced from *Chometz* alcohol is considered *Chometz* and may not be used or owned by a Jewish company on Passover. Glacial acetic acid is generally used as a Passover replacement for vinegar.
- True Passover vinegar may be produced, however, through the fermentation of apple cider or by fermenting synthetic or other Kosher for Passover alcohol. In such cases, any vinegar nutrients used must also be certified Kosher for Passover.

# The Story of Vitamins

## אלף בינה

שבת ק"ד ע"א

### The Wisdom of the Letters

*Shabbos 104a*

*Chaza"l* (*M'nachos 29b*) teach us that the world was created using the mystical attributes of the letters of the *Aleph Bais*. Each letter contributed an essential and unique ingredient to the spirituality of the world, which together completed the creation. *Chaza"l* also teach us that a symbiotic relationship exists between the spiritual and physical worlds. When scientists began analyzing the myriad of components in the foods we eat and determined that they contained certain micronutrients that were vital to life, they chose to categorize them by the letters of the alphabet. Vitamins are known by their alphabetical acronyms and indeed have the ability to affect both our physical well-being through their nutritional value and our spiritual well-being through the *Kashrus* issues that they present.

#### **Definition**

A vitamin is defined as a nutritional substance necessary for life but one that cannot generally be produced by the body itself. The term *vitamine* was coined to stand for *vita* (life) and *amine* (a specific family of compounds containing nitrogen, originally thought to be a trait common to all such compounds). When further research showed that some vitamins contained no amine structures, the final *-e* was dropped, leaving the term as we know it today (at least in American English). Vitamins were identified as specific nutritional factors only within the past hundred years, but their properties have

been known since ancient times. Some 3,500 years ago, King Amenophis IV in Old Egypt ate liver to help him see clearly at night, and Hippocrates healed night-blindness with raw liver soaked in honey. Although neither understood the chemical basis for this therapy, science has since ascribed the curative properties of liver to a chemical called retinol. Because retinol was the first vitamin to be identified, it was given the name vitamin A. As other vitamins were discovered, they were identified by subsequent letters of the alphabet. (The “missing letters” in the vitamin alphabet came about because some compounds were originally thought to be vitamins and were given a letter, but subsequent research led to their being excluded from the list.) Vitamins were also grouped by the general biological systems they affect. For this reason, several vitamins are identified as subscripted numbers under the “B” group. (Again, some numbers were assigned and then rescinded, leaving breaks in the sequence.) Most vitamins were originally identified in animal tissue, and were these to have remained the source of our vitamin supplements we might have serious *Kashrus* concerns. Fortunately, virtually all vitamins today are produced by other means, although *Kashrus* concerns exist nonetheless.

#### **Fat-Soluble Vitamins**

Vitamins are divided into two categories: fat-soluble and water-soluble varieties. Vitamin A is a fat-soluble vitamin, and in nature

can be found only in fatty animal tissue. Many fresh vegetables, especially orange and yellow ones (for example, carrots), contain beta carotene, which is a precursor to vitamin A and is easily converted by the human body from its inactive form in the vegetables to the active form. Historically, however, fresh vegetables were available only seasonally, and for hundreds of years children looked forward to a regimen of cod liver oil that provided them with this nutrient, as well as with vitamin D. Today, we obtain our vitamin A from a number of sources, such as butterfat, in which it is also plentiful, as well as through eating fresh vegetables. With the advent of butter replacements such as vegetable margarine, and in our current zeal to reduce the butterfat content of the dairy foods we eat, there was a concern that an insufficient amount of vitamin A would be available in our diet. The government has therefore mandated that vitamin A be added to low-fat dairy products and beta carotene to margarine (in which it is also used to provide color). Although the original sources of vitamin A were of non-Kosher animal and fish origin, modern vitamin A, used in the forms of palmitate and acetate, is produced synthetically and poses little inherent *Kashrus* concern. However, palmitic acid (used to produce the palmitate ester that is most bioavailable, that is, the easiest for humans to use) and other oils used to store these vitamins do require a *Hashgacha*. Products that advertise *natural* vitamin A, sometimes referred to as L-retinol, generally come from animal tissue and must, therefore, have a reliable *Hechsher*.

Vitamin D is another fat-soluble vitamin and was identified as necessary to prevent rickets and other diseases affecting bones. Vitamin D is called the “sunshine vitamin” because it is produced in the body by the reaction of solar ultraviolet (UV) irradiation with cholesterol. This reaction occurs just under the skin, and is known as vitamin D<sub>1</sub>. However, many people do not get

enough sunlight, and other forms of vitamin D are now routinely added to milk to ensure an adequate amount together with the calcium in the milk. Two commercially available forms of this vitamin are available, vitamin D<sub>2</sub> and vitamin D<sub>3</sub>, each with its unique *Kashrus* concerns. Vitamin D<sub>2</sub> is produced by irradiating a chemical called ergosterol, converting it to ergocalciferol (vitamin D<sub>2</sub>). Ergosterol is produced by a fungus, so named because it was first isolated from a fungus (ergot) growing on rye. Today, a strain of yeast that produces a far higher yield of ergosterol is grown in large fermentors and although it requires a Kosher certification, as do all fermentation products, it poses no innate *Kashrus* concern. Passover certification would depend on the Passover status of the yeast.

Vitamin D<sub>3</sub> is produced by irradiating 7-dehydrocholesterol, a product derived from the cholesterol found in the skin, which is thereby converted into cholecalciferol (vitamin D<sub>3</sub>). The source for this cholesterol is what poses the potential *Kashrus* concern. Sheep’s wool has been used as a clothing material since the dawn of time (see *Sotah* 11a, in which, according to one opinion, the clothing supplied to Adam and Eve was wool). While on the sheep, however, wool is dirty and oily, and wool processors wash raw wool with various chemicals to remove this grease. From this washing process they obtain wool grease, which is processed into a lubricant called lanolin. When lanolin is further processed and irradiated it is converted into vitamin D<sub>3</sub>. The question is whether lanolin itself is Kosher, because it is an excretion from a live animal. For many years, some authorities recommended to avoid using vitamin D<sub>3</sub> under the mistaken belief that the lanolin was somehow animal fat that was exuded from the flesh into the wool, a misunderstanding of the term “wool fat.” Were this to be the case, it would have been forbidden as *Ba’sar Min ha’Chai* (flesh from a living animal). On further

clarification, however, lanolin was determined to be a secretion of the skin, which does not have the forbidden *Halachic* status of meat, and this concern became moot. Its status as a secretion of a living animal, however, does leave room for discussion. It is arguably still subject to the rule of *Yo'tze*, something that is produced by a forbidden animal (in this case, one that is not yet properly slaughtered) remains prohibited. Much has been written on this point, with *Halachic* authorities arguing on both sides. Some have argued that because the lanolin becomes inedible during processing, it is no longer a subject of concern; items prohibited because of *Yo'tze* become permitted if first rendered inedible. In addition, some have argued more to the point that wool is a permitted item *per se* (either before or after the animal is slaughtered) and items derived from it pose no *Halachic* concern. Others have argued that lanolin should be treated as any other prohibited excretion, and thus they avoid using vitamin D<sub>3</sub>.

Vitamin E, another fat-soluble vitamin, poses a totally different *Kashrus* concern. Vitamin E was originally identified in wheat germ oil and was named tocopherol (from the Greek “to bring forth child”) because it was deemed essential to reproduction. Its primary form,  $\alpha$ -tocopherol, can be produced synthetically and poses little *Kashrus* concern. Natural vitamin E, known as mixed tocopherols, is currently produced from a by-product of the soybean oil industry. Crude vegetable oil contains many impurities, which must be removed to produce the edible oil we use in cooking. As part of the oil-refining procedure, the oil is deodorized, a process by which the volatile impurities are distilled from the oil and removed as a vapor. This deodorizer distillate is rich in mixed tocopherols and is condensed and processed into natural vitamin E. The *Kashrus* concern stems from the fact that many edible oil plants refine both vegetable *and* animal fats. In such a case, soy deodorizer dis-

tillate from a deodorizer that is also used for animal fat deodorizing would be non-Kosher. Today, literally hundreds of soybean oil refineries around the world are monitored by *Kashrus* organizations to ensure that a formerly discarded material indeed meets Kosher requirements.

Vitamin K is somewhat unique in that it exists in both oil- and water-soluble forms. Vitamin K, which is essential to the proper clotting of blood, received its alphabetic designation from the German word *koagulation*. Vitamin K<sub>1</sub> (phylloquinone) was originally isolated from alfalfa sprouts and can be found in many green vegetables such as cabbage, spinach, and turnip greens. Vitamin K<sub>2</sub> (menaquinone) is produced by bacteria that are normally resident in a person's intestines. A synthetic version, vitamin K<sub>3</sub> (menadione), is the form generally used as a vitamin supplement and poses no *Kashrus* concerns.

All fat-soluble vitamins, however, do share one major *Kashrus* concern. In their natural state, fat-soluble vitamins are dissolved in an oil emulsion, but to produce a vitamin tablet they must be converted into a powdered form. This is accomplished through a process called spray drying, in which a fine mist of the vitamin in the oil emulsion is sprayed into hot air. The subsequent drying process creates a powder. However, when exposed to air these vitamins tend to oxidize and become rancid, and gelatin is often used to counteract this problem through a process called microencapsulation. Gelatin is added to the vitamin emulsion to form a protective coating around each particle as the powder is formed. Although other protective agents (such as gum of acacia) are used, gelatin is the most effective, and its use—at up to 45 percent of the finished powder—creates a *Kashrus* concern with otherwise inherently Kosher vitamins. To resolve this issue, some vitamin companies use Kosher fish gelatin to ensure acceptability to the Kosher consumer.

## Water-Soluble Vitamins

The B vitamins, as well as vitamin C, are water soluble and are produced through a variety of synthetic and fermentation processes. Vitamin C, or ascorbic acid, was first recognized as an important nutrient by the surgeon general of the British Royal Navy, when he prescribed fresh lemons on ocean voyages to combat scurvy among the sailors (engendering the nickname for British sailors as “limies”). Although vitamin C is indeed found in abundance in many fruit and vegetables, the modern production of vitamin C relies on the fermentation of sorbitol (a carbohydrate) and subsequent chemical treatments to convert it into ascorbic acid. In addition to its value in nutrition, ascorbic acid serves to prevent oxidation in processed fruit and is routinely added for that purpose. The *Kashrus* concern for this material primarily involves Passover. Sorbitol is produced from glucose, which in turn is produced by the hydrolysis of various starches. Although cornstarch is used to produce glucose in North America because of its abundance and low price, in many other parts of the world wheat starch is more attractive for this purpose. Glucose (and sorbitol) produced from wheat starch is *Chometz* and may not be used on *Pesach*, and ascorbic acid made from such a sorbitol is therefore considered *Chometz*. An additional concern with the vitamin C used in tablets is that it may be formulated with lactose (milk sugar), posing a general *Kashrus* concern, or with cornstarch, posing a concern for *Pesach*.

Thiamin (vitamin B<sub>1</sub>), niacin (vitamin B<sub>3</sub>), pyridoxine (vitamin B<sub>6</sub>) and biotin (vitamin B<sub>x</sub>) are produced synthetically and pose relatively minor *Kashrus* concerns. Riboflavin (vitamin B<sub>2</sub>) and cyanocobalamin (vitamin B<sub>12</sub>), on the other hand, are fermentation products and require a reliable Kosher certification. Many serious diseases have been traced to deficiencies of these vita-

mins in the diet. For example, a neurological disease called beriberi is caused by a deficiency of thiamine. Pellagra, a debilitating illness that was common in the United States in the first part of the last century, was finally traced to a diet deficient in niacin. Although whole grains (such as rice and wheat) are rich in these and other vitamins, polished rice and white flour are notoriously deficient. Refined grains may be more appealing but they are certainly not as healthful, and for this reason most flour and rice sold in the United States and many other countries are fortified with niacin, thiamine, and riboflavin. This may indeed be a concern for *S'phardim* who eat rice on Passover, because although the rice may not pose a problem, the vitamin enrichment may: *Chometz* may have been included in the fermentation process.

The *G'mara* (*Shabbos* 104a) relates that great lessons are to be learned from the juxtaposition of the letters of the *Aleph Bais*. *Aleph Bais* is a mnemonic for *Aleph Bina*, which *Rashi* explains to mean “Learn Torah.” *Gimel Daled* symbolizes *G'mol Da'lim*—“Be Charitable to the Poor.” (The *Talmud* continues with an explanation of the rest of the *Aleph Bais*.) Each small letter can have a major effect on spiritual well-being, and by ensuring that the *As*, *Bs*, and *Cs* of our foods are Kosher, the spiritual well-being of the foods we eat can be maintained.

## The Bottom Line

- Fat-soluble vitamins (for example, vitamins A, D, and E) are often derived from Kosher sources. Natural vitamin A, however, may be derived from animal tissue. If derived from such a source, it is not considered Kosher. Vitamin D<sub>2</sub> is derived from a fungal fermentation. Vitamin D<sub>3</sub>, however, is derived from lanolin (wool grease) and some authorities consider it to be non-Kosher. Natural vitamin E is generally isolated from vegetable oil plant distillate, the source of which must be



verified to ensure that the plant does not process animal fats on the same equipment.

- Liquid preparations of fat-soluble vitamins are often mixed with polysorbates or other emulsifiers. These emulsifiers must be Kosher and, if used for Passover, must be approved for Passover.
- Powdered forms of fat-soluble vitamins are often microencapsulated in gelatin to prevent oxidation. A reliable Kosher certification ensures that the gelatin is Kosher

(fish based). Alternatively, various gums or oils are used to replace the gelatin. Because such powders are produced in spray dryers, the Kosher status of that equipment must be verified.

- Water-soluble vitamins (for example, the B complex and vitamin C) are generally derived from Kosher sources. Many of them, however, are fermentation products, which generally require a reliable Kosher certification. Fermentations also require attention to concerns for Passover.

# The Story of Whey

## מים שאל חלב נתנה

שופטים ה' כ"ה

### *He Asked for Water and She Gave Him Milk* What Is It, Any-Whey?

*Judges 5:25*

A *Kashrus Mashgiach* is often confronted with a myriad of ingredients grouped loosely under the term “dairy.” Although milk may be the first food that a person eats, it is a complex product with many components. From ancient times, people have developed methods of processing and preparing milk to separate these components into independent foods. Milk and its discrete components pose a number of unique *Halachic* issues that are the subject of this essay.

Fluid milk is composed of a number of proteins, with the two predominant classes being casein and whey. It also contains lactose, butterfat, minerals, trace proteins (for example, enzymes), amino acids, small organic compounds, and water. Cheese is made by souring, or fermenting, the milk, which imparts the flavor, and then curdling the milk with either rennet or acid. All the other components of milk—water, whey protein, trace proteins, lactose, fat, and minerals—remain unaffected by this reaction, and most of them are drained from the curd as a liquid called whey (*Nis'yuvai d'Chalba*). Indeed, the amino acid tryptophan found in whey is probably what caused *Sis'ra* to go into his final sleep in the story in *Judges* (4:20).

### **Components of Whey**

Although whey is undoubtedly a component of milk, its *Halachic* status is somewhat complicated. *Chaza"l* also tell us that milk

contains a component called *Mei Cholov*—literally, “milk water”—which is *not* considered “milk” for certain purposes. A disagreement exists as to exactly what *Mei Cholov* is. According to *Tosafos* (*Chullin* 114a), *Mei Cholov* and *Nis'yuvai d'Chalba* (whey) are one and the same. The *Rosh* (*ibid.*) disagrees, ruling that whey remains an eminently dairy commodity. *Mei Cholov*, he argues, refers to the material that remains after the whey protein has been denatured and removed, leaving a clear liquid comprising water, lactose, and minerals. The method described by the *Rosh* to accomplish this separation is to heat the liquid whey until the whey protein is denatured and becomes insoluble, a process still used today in the production of ricotta cheese and the Norwegian sweet cheese “gjetost,” as well as certain types of whey protein concentrate (WPC). Today, whey protein concentrate and whey protein isolate (with a higher protein concentration) are more commonly produced by a process called ultrafiltration, in which a semipermeable membrane is used to separate the components of whey based on their molecular size. (When ultrafiltration is used, the resulting clear liquid that passes through the filter is called permeate.) In either process, the liquid that remains after the protein has been removed would be the *Mei Cholov* referred to in *Halacha*. (To avoid confusion, the *Rosh* calls this material *Mei'mei Cholov*—literally, “the water of the water of milk.”)

## Ba'sar b'Cholov

The “nonmilk” status of *Mei Cholov*—and the determination of its exact nature—has two interesting *Halachic* ramifications. The first relates to the prohibition of cooking meat and milk together, known as *Ba'sar b'Cholov*. *Ba'sar b'Cholov* comprises three distinct Biblical prohibitions: (1) the act of cooking milk and meat together; (2) deriving any benefit from such a cooked mixture; and (3) eating such a cooked mixture. The *Talmud* (*Chullin*, *ibid.*) rules that the Biblical prohibition of *Ba'sar b'Cholov* applies to “milk” but not to “*Mei Cholov*.” Although such cooking would still be subject to a Rabbinic prohibition against eating such a mixture (*Tosafos*, *ibid.*), there would be no prohibition of deriving benefit from such Rabbinically prohibited *Ba'sar b'Cholov*. The *Shulchan Aruch* (87:8) quotes this ruling but follows the opinion of the *Rosh* that limits its application to *Mei'mei Cholov* (whey permeate).

Whey that is cooked with meat would still be subject to a Biblical prohibition; deriving any benefit from such a mixture would be forbidden. An interesting note is that this *Halacha* is far from academic because many pet foods contain both meat and dairy components that have been cooked together. According to the ruling of the *Shulchan Aruch*, including either milk or whey in such products would make them inappropriate for their “Kosher” use as a pet food! (Interestingly, one company has actually obtained a “pet food” certification, guaranteeing that its products contain no *Ba'sar b'Cholov*—or *Chometz*—to obviate concerns of properly feeding Fido any time of the year.)

## Yotze min ha'Chai

The second ramification relates to the Kosher status of *Mei Cholov* itself. The *Talmud* (*B'choros* 6b) posits that foods that derive from animals while they are alive

are prohibited unless specifically enumerated as permissible items. Although the *Talmud* allows that milk enjoys such scriptural sanction (for example, the land of Israel is lauded as “flowing with milk and honey,” implying that milk is a permitted food), no such reference is cited for *Mei Cholov*. *Rabbeinu Eliezer* (quoted in *Tur Y.D.* 81) argues that, just as *Mei Cholov* is not considered milk as regards the prohibition of *Ba'sar b'Cholov*, it would not be included in the Kosher dispensation accorded milk—despite the fact that it was once a constituent of Kosher milk. *Rabbeinu Simcha*, on the other hand, rejects this approach, reasoning that milk and all components—both jointly and severally—are included in the allowance afforded milk. Although the *Shulchan Aruch* (*Y.D.* 81:5) indicates that some authorities are stringent in this matter, the *Sha"Ch* (*ibid.*, *s.k.* 13) notes that this concern applies only to *Mei'mei Cholov* (permeate) because, as noted previously, the *Shulchan Aruch* considers *Mei Cholov* to have the *Halachic* status of regular milk. In any event, the *Rama* (*ibid.*) follows the opinion of the *Tur* and rules in accordance with *Rabbeinu Simcha*.

## Whey Products

Until about fifty years ago, whey had been considered a troublesome by-product of the cheese industry; it was either dumped down the drain (or into a stream) or spread on fields. Today, every part of the milk stream has found a use, both because of economic necessity and also because the dumping led to environmental problems. Whey is used as a condensed liquid, or spray-dried into a powder, and provides important functionality in baked goods and dairy products. The protein in whey can also be concentrated into WPC, which is used to produce a variety of protein-rich foods. The resulting whey permeate serves as the primary source of lactose, and the minerals in permeate can also be recovered. The fat that is recovered from

whey is called whey cream and is used in the production of butter and ice cream.

Even the water that remains—known as “cow water”—can be recovered and used for cleaning or converted into steam. (Note that steam produced from cow water is dairy and would create a problem when the steam is used in Pareve productions elsewhere in the plant.) Whey is also the source of the trace protein called lactoferrin, much sought after in the health industry. (Whey is being fractionated into an ever-increasing number of differing components in recent years, many for the nutraceutical/functional food market.) The Kosher status of all these products is dependent on the following considerations.

### **Rennet**

Whey is the by-product of the coagulation of milk, whether in the production of “rennet-set” cheese, “acid-set” cheese, or casein. Rennet-set cheeses, such as Münster, mozzarella, and cheddar, rely on the action of a particular enzyme to form the cheese curd. Historically, milk was curdled by using an enzymatic preparation called rennet, which is derived from the fourth stomach of a suckling calf. Rennin, the active enzyme in rennet, is a protease, a class of enzymes that degrade proteins. As the rennin cleaves the casein molecule in a particular manner, most of the casein becomes insoluble and curdles. About fifty years ago, scientists succeeded in isolating other types of proteases produced through fermentation, which are commonly known as microbial rennet. Although they are not truly rennet, these microbial proteases function very similarly to true rennet and eventually replaced animal rennet in most cheese production in the United States. More recently, scientists have succeeded in using genetic engineering to develop microorganisms that produce a protease that is virtually identical to true calf rennet.

Today, the vast majority of cheese made in the United States uses one of these types of microbial curdling agents. Animal rennet derived from non-Kosher meat sources may not be used to produce Kosher cheese (*Y.D.* 87:11). To ensure the Kosher status of cheese, a rule called *G'vinas Akum* (cheese manufactured by non-Jewish cheesemakers) was instituted (see *Y.D.* 115:2), which stipulates that cheese is Kosher only if all ingredients are Kosher *and* a *Mashgiach* adds the rennet to each and every vat of cheese. (The only exception to this requirement is when a Jew owns the cheese, in which case only the ingredients are of consequence; see *Sha"Ch*, *ibid.*, *s.k.* 20.) The rule of *G'vinas Akum* applies to *all* rennet-set cheese, regardless of whether animal or microbial rennet is used (*ibid.*). It would therefore seem that because virtually all whey sold commercially is the by-product of non-Kosher *G'vinas Akum* cheese productions, a serious concern arises over the Kosher status of such whey. The *P'ri Chodosh* (*Y.D.* 115) rules, however, that the rule of *G'vinas Akum* applies only to the cheese itself and not to its by-products—that is, whey.

Although *P'ri Chodosh* resolves the problem of *G'vinas Akum* regarding whey, other issues may still pose a Kosher concern. The first relates to the type of rennet used. Rav Shmuel Vosner *shlit"a* (*She'vet ha'Levi* IV:86) rules that the use of non-Kosher rennet to produce non-Kosher cheese would not compromise the Kosher status of the resulting whey. Rav Moshe Feinstein *zt"l* (*Igros Moshe* *Y.D.* III:17) may be less sanguine on the matter, but many other authorities, including the *Chasam Sofer* (*Y.D. T'shuvah* 79), believe that such whey is acceptable only if Kosher rennet is used, which is the position followed by most *Hashgachos* today. Most Kosher whey derives from cheese productions that use microbial rennet, although some productions may use Kosher animal rennet. A similar issue relates to the Kosher status of other ingredients in

the cheese production, such as cultures and enzymes (for example, lipase) that are added to certain types of cheeses to develop flavors specific for those cheeses. Again, the consensus of *Halachic* authorities is to insist that all such ingredients be Kosher.

### **Cooking Temperature**

The second issue relating to the Kosher status of whey concerns the temperature at which the *G'vinas Akum* curd is cooked together with the whey. Normative Kosher rules stipulate that when a non-Kosher and Kosher food are cooked together, a transfer of flavors between the two takes place, a concept known as *B'lios*. In such a situation, the non-Kosher flavor would seep into the Kosher food and compromise its erstwhile Kosher status. In the case of whey derived from non-Kosher *G'vinas Akum* cheese productions, we have an interesting situation; the curd is not considered Kosher, but the whey in which it is mixed may nevertheless be a Kosher product. However, because the curd and whey are generally cooked together as part of the cheese process, it would seem that the *B'lios* from the cheese would compromise the Kosher status of the whey. Fortunately, this is not a concern in the production of most types of cheeses because the cook temperature is less than 120°F. (In most cases, the *Halachic* threshold for *B'lios* to transfer is called *Yad Soledes Bo*—literally, “the temperature at which one would instinctively withdraw his hand.” Based on empirical evidence, *Halachic* authorities in the United States have concluded that, for the purposes of *G'vinas Akum*, this temperature may be fixed at 120°F.) Many Swiss- and Italian-type cheeses, however, are often cooked at higher temperatures, raising a significant concern for the whey from these productions. Although Rav Moshe Feinstein (*ibid.*) permits such whey, many other authorities rule that it is not acceptable. Most *Kashrus* organizations follow the more strict

interpretation and do not accept whey from cheese productions if the curd is cooked with the cheese at temperatures above 120°F. (Ironically, in the making of Swiss cheese, the workers actually keep their hands in the whey/curd mixture to work the cheese at 127°F! This anomaly notwithstanding, the *Halachic* temperature of *Yad Soledes Bo* is pegged at a lower temperature.)

An interesting extension of the temperature problem concerns whey from mozzarella cheese productions. Although mozzarella cheese typically is not cooked with its whey above *Yad Soledes Bo*, it is subjected to a process called *pasta filata*. *Pasta filata* involves cooking and stretching the curd to develop the necessary protein structure in the cheese to give it its characteristic stringiness. Although the whey poses no *Kashrus* concerns at the time it is removed from the vat, the cooking and stretching of the (non-Kosher) curd may ultimately compromise the whey's erstwhile Kosher status. The reason for this is that this cooking and stretching takes place in a bath of hot water, the run-off from which is routinely mixed into the whey stream. Whey from mozzarella cheese productions that might otherwise be considered Kosher may therefore be contaminated with cooker water that was rendered non-Kosher through cooking with *G'vinas Akum*. If the two streams are kept separate, however, the initial whey retains its Kosher status.

In the United States, cheddar and similar types of cheeses are typically heated (to temperatures below 120°F) by warming the jacket of the vat with steam or hot water. Because neither the cheese nor the whey reaches 120°F, the whey is free from the temperature concerns just discussed. In Europe, however, many producers of such cheese heat the curd by pouring hot water (above 120°F) onto it, with this water then mixing with the whey. Although the curd cools the water and the two reach temperature equilibrium below 120°F, the fact that

the hotter water actually touched the curd before cooling may be sufficient to contaminate the water—and the whey into which it is ultimately mixed.

Acid-set cheeses, such as cottage cheese and cream cheese, typically use little or no rennet and are thus generally not considered a true cheese for purposes of *G'vinas Akum*. Provided that all ingredients used in the production of such cheese are Kosher, whey derived from them poses no *Kashrus* concerns.

Casein as a commercial ingredient is produced by clotting fresh milk. The milk can be clotted by using strong acid (acid casein), culture (lactic casein), or rennet (rennet casein). The first two types have the same *Halachic* status as acid-set cheese, and the whey derived from their production poses no *Kashrus* problem. However, rennet casein is considered a true cheese, and the whey from productions of this type of casein is subject to the same concerns as those for whey from productions of cheese.

## Cholov Yisroel

One final point may be noted regarding whey. *Halacha* stipulates that Kosher milk must be supervised to ensure that it has not been adulterated with milk from non-Kosher species of animals, a concept known as *Cholov Yisroel* (*Y.D.* 115:1). Today, in countries where the government ensures the integrity of the milk supply, many authorities rule that regular milk is acceptable. Others, however, disagree with this approach and insist that Kosher milk be supervised by a *Mashgiach* from the time of the milking. However, *Chaza"l* tell us that milk from non-Kosher species of animals will not coagulate in the same way as Kosher milk and will not produce conventional cheese (*Avodah Zarah* 35b). (See *M'Lamed l'Ho'il* II:36 for an interesting explanation of this phenomenon. He notes that the ratio of whey to casein is much higher in milk from non-

Kosher animals, which he posits inhibits the efficient coagulation of the casein protein into cheese.) Many authorities that do not accept regular milk as a Kosher product will nevertheless accept *cheese* made from such milk (see *Rama, Y.D.* 115:2 and *Igros Moshe Y.D.* III:16). As an extension of this rule, many authorities also consider whey to be free of *Cholov Yisroel* concerns (see *Igros Moshe Y.D.* III:17).

Clearly, whey can be the source of a variety of valuable products, such as protein, micronutrients, lactose, and even water. The *Halachic* issues attendant to these products are equally varied, complex, and unique.

## The Bottom Line

- Milk is composed of two predominant categories of proteins, known as casein and whey, as well as water, fat, lactose, vitamins, minerals, and other trace proteins (for example, enzymes) and amino acids.
- The process of making cheese involves the precipitation of the casein fraction of the milk into a curd, which is then separated from the balance of the milk components that remain in solution. Whey is the general term for the liquid that drains from the curd during the cheesemaking process.
- Cheese is subject to the rule of *G'vinas Akum*, which stipulates that a *Mashgiach* must supervise and, according to some opinions, participate in the production of each vat of cheese even if all the ingredients used are Kosher. Whey, however, is not subject to this requirement, and its Kosher status defaults to conventional Kosher considerations of the status of the ingredients used.
- Whey is generally considered Kosher when the following requirements are met:
  - All ingredients used in the cheese production are Kosher. This includes the rennet, cultures, and any enzymes or flavors added to the cheese.

- The cook temperature of the curd together with the whey does not exceed 120°F.
- In the case of pasta filata cheese, such as mozzarella, the water recovered from the cooker/stretcher is not mixed with the regular whey.
- The primary protein component of liquid whey is the whey proteins, typically found at a concentration of about 1 percent. The level of protein can be increased by removing lactose and water, generally by using a process called ultrafiltration. The resulting product is called whey protein concentrate (WPC). Products with very high protein concentrations (above 90 percent) are called whey protein isolates.
- Permeate that remains after whey concentration is a source of lactose and minerals.
- Cream is recovered from whey, and this whey cream is commonly used in the production of butter and ice cream. All these products are subject to the Kosher requirements of the whey from which it was derived.
- Acid-set cheese is not considered cheese for the purposes of *G'vinas Akum*. There are no temperature restrictions on the cooking of acid curd together with whey.
- Whey derived from rennet casein production is subject to the same concerns as that derived from cheese. Acid casein is considered an acid-set cheese for this purpose.

# The Story of Wine, Beer, and Alcohol

## מים חיים

בראשית כ"ו י"ט

### *Aqua Vitæ*

Genesis 26:19

Among the myriad of foods and drinks that have been devised by humans since the beginning of time, alcoholic beverages have enjoyed a place of special prominence in both gastronomy and *Halacha*. Whether it be wine, beer, whisky, or even fermented mare's milk, the use of alcohol has permeated virtually every culture in the world, to the point of these libations often being considered a staple. The workers in ancient Egypt subsisted on a ration of bread and beer, satisfying both their nutritional and social needs. Both bread (the *staff of life*) and alcohol (*aqua vitæ*—the *water of life*) are closely related in both ingredients and process, with both claiming a rightful place in *Halachic* analysis.

### Yeast

Although the word *alcohol* is of relatively recent vintage (derived from the Arabic *al-kuhl*, meaning “a powder for painting the eyelids” that contained powdered antimony mixed with alcoholic spirits), the word actually appears in the *Mishnah* (*Shabbos* 8:3) in the form of *K'chol*—a powder for painting eyelids. In chemistry, the term alcohol connotes a category of chemicals with an added OH hydroxyl radical bound to a carbon (carbon—oxygen—hydrogen bonds), with the other carbon bonds having either a carbon or hydrogen to eliminate acids, and has nothing to do with any potential intoxicating properties. Many types of alcohol have no food value; some are even poisonous. When we refer to alcoholic beverages, we mean

that the liquid contains a particular type of 2-carbon alcohol called ethanol (from the Latin *æther*—upper air, volatile spirit). Historically, ethanol was produced through the fermentation of sugar by a class of single-celled fungi called yeast—the same yeast that is used to make bread. These yeasts are of the genus *Saccharomyces* (from the Latin *sacchar* [sugar] and *-myces* [fungus] from the Greek *mykes*). In both cases, yeast consumes some of the sugar that is available and produces an enzyme that catalyzes the conversion of sugar into ethanol and carbon dioxide, a process called fermentation. When the fermentation takes place aerobically (in the presence of oxygen), the amount of this alcohol produced is rather small. When making bread, some type of sugar such as honey, molasses, sugar, or malted barley must be added to the dough to allow the yeast to grow well. (Yeast can grow in plain flour and water—classic *Chometz*—by relying on the native sugars present in flour as well as the action of amylase enzymes naturally found in flour to convert the starch in the flour into sugar, but such fermentation proceeds very slowly. Adding a small amount of sweetener ensures a ready supply of sugar for the rapid growth of the yeast.) The resulting aerobic fermentation produces the carbon dioxide that causes the bread to rise. The small amount of alcohol produced is dissipated during the baking process, which is part of what contributes to the fresh-baked aroma of bread. Wild yeasts abound in nature, and early breads were



easily made by merely leaving sweetened dough in an open, warm environment that is conducive to the growth of yeast. Eventually, people discovered that if the yeasts were allowed to grow beyond what was needed to make bread, the resulting sour dough—known as *S'or* in Hebrew—could be saved as a future source of yeast to hasten the fermentation of subsequent batches of bread.

## **Wine**

When the fermentation takes place anaerobically (deprived of oxygen), these enzymes convert much more of the sugar into ethanol. As Noah quickly discovered, the joys of fermented sugar could easily be had by fermenting grapes. Grapes are particularly rich in glucose and tend to have natural yeast on the surface of their skins. By merely crushing the grapes and giving them a little time, a wine could easily be produced. Just as was the case with bread, people soon learned that the use of additional yeast would hasten the fermentation, and dregs (the sediment that collected on the bottom of fermenting wine casks) from previous productions were saved and added to subsequent fermentations. Although all fruit juices will ferment, the appellation “wine” is reserved for fermented grape juice, a status that has both commercial and *Halachic* ramifications. Commercially, only fermented grape juice may be labeled simply as “wine”; the fermented juice of other fruit must indicate the source of the fruit as part of its name (for example, apple wine). *Halachically*, only grape wine (as well as grape juice) is subject to special rules known as *Ya'yin Ne'sech* and *S'tam Yaynam*. Historically, grape wine was used as part of pagan ritual, and any wine actually used for idolatry, or prepared for use in idol worship, is forbidden by Biblical law. Such wine is called *Ya'yin Ne'sech* (literally, “wine used in ritual libations”).

*Chaza"l* further recognized that sharing wine in the context of the prevailing pagan

culture tended to foster assimilation. To forestall such a possibility, they expanded the concept of *Ya'yin Ne'sech* to include any wine that was *susceptible* to having been used for pagan worship—essentially, any wine handled by a non-Jew. Such wine is called *S'tam Yaynam* (literally, “nondescript wine”) and is prohibited by Rabbinic decree. Included in this ruling are grape wine, grape juice, and raisin juice, as well as wine vinegar. Grapes and raisins, however, are not subject to this ruling because they are but the fruit itself and have not been processed into a drink that could be used as a libation. In addition, certain derivatives of dried grape products, such as cream of tartar and grape seed oil, may be exempt because they lack the fluid characteristic and flavor of wine. (Cream of tartar was originally obtained from the argol crystals that precipitated out of wine during aging and collected on the inside surface of the cask. The *Shulchan Aruch* [*Y.D.* 123:17] rules that such sediment is permitted, and many modern authorities have extended this permissibility to tartaric acid crystal extracted directly from grape juice.)

Although the genesis of the rule of *S'tam Yaynam* may merely seem to be of *Halachic* curiosity, its theoretical underpinnings are actually critical to its practical application. The *Talmud* (*Avodah Zarah* 29b) notes that cooked wine was considered of inferior quality and thus never used for pagan worship. *Ya'yin M'vushal*—cooked wine—is not subject to the rules of *S'tam Yaynam*. Although one cannot render non-Kosher wine Kosher by cooking it, heating Kosher wine to an appropriate temperature renders it exempt from the rules of *S'tam Yaynam*; thus, it can subsequently be handled by non-Jews without compromising its Kosher status. Grape juice serves as the base for grape jelly and is commonly used as a sweetener in soft drinks and baked goods. Wine may be used in the production of certain condiments, and many of these products may be

produced as Kosher by using cooked versions of these grape products. (The exact temperature required for this *Bishul* [cooking] is the subject of much controversy [see *Igros Moshe Y.D.* II:52, III:31, and IV:108], with some authorities accepting a temperature of 175°F and others requiring a temperature close to boiling. For this reason, many reliable certifications indicate the temperature of the cooking on the label.)

## Beer

Grapes, however, were not the only early source of inebriation. Beer was a favorite in Babylonia and came in two species. Date beer was made almost the same way as wine, by crushing and mixing the dates with water and allowing the abundance of sucrose in the fruit to be fermented by wild yeasts found in the environment. Barley beer, the type that is currently popular around the world, required a bit more technology to yield the desired results. Barley is rich in starch, a molecule that is composed of long chains of sugar molecules, but contains very little available sugar. Yeasts can easily convert sugar into alcohol but have virtually no ability to catalyze the breakdown of starch. This problem was solved, however, by a process called malting. When a kernel of barley (or, for that matter, any cereal grain) is planted, the germ—the living part of the kernel—relies on the starch in the endosperm of the kernel to provide its first nutrition. However, just as in the case of the yeast, the germ cannot metabolize the starch and must first find a way of breaking this starch down into its constituent sugars. As it germinates, the germ accomplishes this task by producing an enzyme called amylase, a protein that converts starch into sugar that the germ, in turn, can absorb. The malting process involves soaking the barley kernels in water to start the germination process, leading to a large supply of amylase. This amylase-rich grain is then dried and used as a source of the

amylase enzyme, which is also used to convert other starches into sugar. (Allowing germination to continue until most of the barley starch is converted into sugar produces malt syrup.) After the starch has been converted into sugar, the mixture is called wort, and the yeast can do its job of fermenting the sugar into alcohol, thus creating beer. (The fermentation of rice into *sake* poses a similar problem because rice starch is virtually immune to yeast enzymes. This problem was solved by the inclusion of a mold called *Aspergillus oryzae* in the wort, in which the mold's enzymes convert the rice starch into sugar, thus allowing for the subsequent conversion of the rice sugar into alcohol.)

Malted barley has a distinctive flavor and in many parts of the world has historically served as the grain of choice for making beer. However, beer using only fermented grain would tend to be sweet—not the bitter, astringent beer that is preferred in many cultures. To address this challenge, beer makers have historically used many different additives in their creations. Wild rosemary, coriander, ginger, anise seed, juniper berries, and even wood bark were added to flavor the beer. The most popular additive, however, is the flower from a vine called *hops*, which are referred to as “*K’shusa*” in the *Talmud* (*Mo’ed Katan* 12b). *Rashi* translates *K’shusa* as *Humlin*, which is in turn translated by the *M’targem* as *hopfen*—hops. (The word *Humlin* actually comes from the Roman description of the wild vine that grew “like a wolf among sheep,” hence the name *Lupus salictarius* [“the good wolf”], from which hops took its modern botanical name *Humulus lupulus*.) Hops provide an astringency that serves as a counterpoint to the natural sweetness of the brew, as well as has mild sedative properties. In addition, hops act as a preservative and antiseptic, a point noted in the *Talmud* (*Avodah Zarah* 31b). Traditionally, the hops flower was added directly into the beer vats, although modern technology has made possible the use of an extract

of the hops rosin containing the active flavoring chemical, known as alpha acids.

Historically, fine European beer contained only barley, water, yeast, and hops—a recipe codified in the *Reinheitsgebot* (German Purity Law) of 1516. Today, however, many types of beer include less expensive corn and rice and may include some color additive (usually caramel color). (Rumors involving the use of non-Kosher grape skin extract for this purpose are anecdotal at best [even in German dark beers] and would pose no *Halachic* concern even if used.) One interesting question that was addressed by the authorities concerns a problem that has bedeviled beer makers for centuries. In addition to starch, barley also contains a certain amount of protein, a component that is not subject to fermentation. As the beer is cooled, the proteins tend to coalesce and form a haze, destroying the clarity of the product. Several processes have been developed to address this concern. One involves the use of protease enzymes to break down the proteins—a process called chillproofing—and the need for such enzymes served as one of the primary catalysts for the development of the modern enzyme industry. Papain and bromelain, naturally occurring enzymes from the papaya and pineapple plants, respectively, were originally used for this purpose, whereas today, proteases derived through microbial fermentation are used. Another process involved the use of certain negatively charged fining agents that attract the positively charged proteins and thus clarify the product. One of the classic clarifiers used for this purpose is isinglass, a type of gelatin derived from the swim bladder of sturgeon (a non-Kosher fish). The process involves the addition of a small amount of this gelatin to the hazy liquid, with the gelatin attracting the haze particles and causing both them and the gelatin to flocculate and fall to the bottom. This sediment is then filtered out

of the beer together with the gelatin. The *Noda b'Yehuda* (*M.K. Y.D.* 26) rules that because the gelatin is used in small amounts (*Batul*) and then removed, the added gelatin is not subject to the prohibition of intentionally adding a non-Kosher ingredient and can therefore be permitted. (Please note that this gelatin clarification process can also be used for fruit juices [for example, apple juice]. The generally accepted approach by the major *Kashrus* agencies today, however, is to avoid such an intentional process.) Alcoholic beverages are rather unique in the food industry in that they are regulated by the Department of the Treasury's Bureau of Alcohol, Tobacco, and Firearms, and no U.S. government mandate exists to disclose their ingredients (or processing aids, such as gelatin, that might also not be declared even in other types of foods). Although knowing exactly what might be contained in a keg of beer is therefore impossible, any possible non-Kosher ingredient can be assumed to be *Batul*. Nonetheless, we are fortunate in that some brands of beer now do enjoy a reliable *Hashgacha*.

Yeasts are widely found naturally, and their use in early fermentations was often serendipitous. As previously noted, however, bakers quickly learned to husband desired strains of yeast as sourdough to inoculate subsequent dough, and brewers learned to use yeast from one alcohol fermentation to start the next. Although yeasts have no intrinsic *Halachic* standing (yeasts grown on molasses may indeed be Kosher for Passover), we ascribe to them the *Halachic* status of the substrate on which they are grown. For example, a yeast preparation that is growing on *T'rumah* (a tithe given to the *Kohen* [priest]) is considered *T'rumah*; one growing on *Chometz* is considered *Chometz*. If they are used to ferment another item, the subsequent item takes on the *Halachic* status of the yeast—the souring agent. This leads to an interesting *Halachic* issue raised by

the *Ma'gen Avrohom* (O.C. 442:9) concerning mead. Mead is produced by fermenting a mixture of honey and water. (Water must be added because yeast will not grow if the sugar content is too high.)

### **Mead**

Mead is probably as ancient as wine, and brewers learned to take yeast from one mead fermentation and use it to begin the next. In one particular case, yeast from beer was used to inoculate the mead, after which some of that mead was used to ferment subsequent batches of mead. Although the basic ingredients in mead are Kosher for Passover, the original beer yeast was not, and the question arose as to the *Halachic* status of the subsequent batches of mead that were made. The *Ma'gen Avrohom* rules that the concept of a souring agent continues forever and all the subsequent batches of mead must be considered *Chometz*. (A particular type of beer brewed in Belgium called lambic beer is not subject to the perpetuation of a known yeast culture. Vats of wort are merely opened to the fresh air, allowing the natural yeast flora to inoculate the brew.)

### **Lactose**

In societies not blessed with ready sources of either fruit sugar or grain, ingenuity in their quest for liquid refreshment led them to rely on the fermentation of lactose—milk sugar. Milk from horses, yaks, camels, and virtually every other milkable animal was routinely collected and allowed to ferment with yeast to produce their alcoholic drinks. Indeed, the *Talmud* (*K'risus* 13b) quotes a *B'raissa* (*Talmudic* addenda) to the effect that a *Kohen* who drinks fermented milk is considered inebriated and prohibited from serving in the temple. One should not regard the production of such alcohol as being of mere historical or sociological curios-

ity, however. In countries with large dairy industries, notably New Zealand and Ireland, prodigious amounts of lactose are produced as a by-product of the casein industry. This surfeit of lactose is often fermented into alcohol and may be used to produce ethyl alcohol (ethanol) for use in beverages or a myriad of food products that contain alcohol as a base or processing aid. This is one of the reasons that alcohol requires a reliable certification.

### **Distillation**

All the aforementioned beverages mentioned are limited to an alcohol content of about 12 percent; an alcoholic concentration above that level would kill the yeast. A great advance in the development of alcoholic drinks was discovered about twelve hundred years ago (although alchemists had been using alembic distillation well before that) with the advent of distillation—a process by which the alcohol content could be concentrated to higher levels. As early as 800 CE, the intrepid Scots realized that if they heated the barley wort they had fermented, the vapors that emanated from it could be condensed (by air cooling) in a copper pipe as a much more potent beverage. Unbeknownst to the early Celts, distillation was based on the fact that alcohol has a lower boiling point than water, and as the wort was heated, the alcohol portion would evaporate at a higher rate than the water. The vapor so produced was condensed in a copper coil (by air cooling) and the distillate that dripped (from the Latin *stilla*—“drop”) from this device was named *uisce beathadh* in Irish Gaelic and *uisge beatha* in Scotch Gaelic, both based on the old Latin phrase *aqua vitae*, meaning “water of life.” This sobriquet was eventually shortened to the word *whisky* that we recognize today, a term that refers to alcohol derived from the fermentation of cereal grains. When alcohol

is distilled from wine, it is called brandy, from the Dutch *brandewijn* (“burnt wine”), which was developed as a means of preserving and concentrating wine. When wine is stored at its natural concentration of 12 percent alcohol, it is prone to contamination by a type of bacteria called *Acetobacter*, which thrives on alcohol and produces vinegar (literally, “sour wine”). Higher concentrations of alcohol do not support the growth of these bacteria, and the conversion of wine into brandy was an efficient means of protecting the wine investment. (*Cognac* refers to brandy produced in the Cognac region of France.) Fortified wines such as port, named after the town of Oporto, Portugal, where it first appeared, are made by adding brandy to wine at the appropriate time to stop the fermentation. The alcohol content of these wines is often about 20 percent, which both preserves the wine and permits the creation of a sweeter, fruitier beverage by arresting the fermentation before all the natural sugar is converted into alcohol.

One of the first mentions of the distillation of alcohol in *Halacha* is in the *Rivas’h* (*Responsa* 255). The *Rivas’h* discusses the *Halachic* status of *agua ardentis*—“burnt water”—derived from wine—and establishes the principle that the vapors from *S’tam Yaynam* have the same *Halachic* status as the wine itself. Based on this *Rivas’h*, the authorities have ruled that brandy made from *S’tam Yaynam* is prohibited. (The status of whisky made from the vapors of fermented grain, however, is subject to an interesting discussion. The *P’nei Y’hoshua* [II:9] suggests that whisky may not be subject to the prohibition of owning *Chometz* on Passover, for several reasons [because the fermentation may be considered inedible and distillation may not be considered the primary method of deriving benefit from such grain; see *Sha’arei T’shuvah* 442:2 for a fuller discussion]. For this reason, many people who do not otherwise sell “real” *Chometz* on Passover will nevertheless sell their whisky.)

### ***Grain Neutral Spirits, Vodka, and Specially Denatured Alcohol***

When almost pure alcohol is distilled from a fermentable sugar, it is called neutral spirits, and if the source material of the sugar is grain, it is called grain neutral spirits (GNS). The purity of such alcohol can be as high as 95 percent (or 190 proof in the United States and Canada) and contains virtually none of the flavor of the grains or other material used in the fermentation. It is often used as the base for other alcoholic beverages. Vodka (a diminutive of the Russian word for water—*voda*) is merely a diluted form of neutral spirits and can therefore be made from virtually any fermentable carbohydrate without concern about the residual flavor. Interestingly, the determination of the ideal ratio in which these two ingredients (water and alcohol) should be mixed and the blending method are both attributed to the great Russian atomic theorist Dmitri Mendeleev. Potatoes were the traditional source of Russian vodka, but most vodka today is made from cereal grains. Although these sources of vodka are of little consequence from a *Kashrus* perspective, some more exotic types of vodka are produced from ingredients that do raise significant Kosher concerns. Ciroc, a type of vodka produced in France’s Gaillac region, is made from specially processed grapes and is not Kosher because of concerns of *S’tam Yaynam*. In the Tuva region of Mongolia, vodka is based on fermented milk and is subject to several *Kashrus* concerns (for example, *Cholov Yisroel* and a Dairy status). Lest one think that such a drink is relegated to the outer regions of Mongolia, however, a company in the milk-rich state of Vermont produces “Tuvan-style” vodka fermented from milk sugar! In addition, although vodka is basically nothing more than alcohol and water, it may contain other ingredients. Small amounts of glycerin may be added to smooth its bite, although these would invariably be *Batul*. On the other

hand, flavored vodka has now become popular, and such products require Kosher certification because of *Kashrus* issues relating to the added flavors. (SD, or specially denatured, alcohol means that certain chemicals have been added to the pure alcohol to make it undrinkable and thus not subject to the beverage alcohol tax.)

## Whisky

When the distillation takes place at a lower proof (a greater amount of water is evaporated and condensed with the alcohol), the condensed liquid contains more components from the original fermentation than just pure alcohol. The marked differences in flavor stem from the types of grains used in the fermentation, the proof at which they are distilled, and the method by which they are aged. Straight whisky (otherwise known as single malt when discussing Scotch) consists of the pure distillate itself. Many whiskies, however, are called blended whiskies. These may be blends of different batches of similar whiskies, additional GNS, or other ingredients, which may include non-Kosher wine or non-Kosher wine derivatives. Extensive *Halachic* discussions have been published concerning whiskey in which a small amount of wine has been blended (see *Igros Moshe Y.D.* 1:62–64). The *Igros Moshe* points out that many authorities hold that wine is nullified at a ratio of 1:6, and this small amount of wine is certainly below that level. (He also notes that other minor ingredients, such as glycerin, would be *Batul* and would also not be subject to concerns of intentional *Bitul* because the products are not formally certified as Kosher.) Nonetheless, many are careful to avoid blended whisky unless the absence of wine has been verified, an approach Rabbi Feinstein indeed recommended. Generally, concerns about blended whisky are a concern only in the United States. Scotch, as well as Canadian whisky sold in Canada, contains no wine

even when the product labels indicate that they are “blended.”

Another ingredient used in whisky is called a blender, and its use highlights a concept almost unique in the annals of *Kashrus*. One of the certainties of life is taxes, and the government long ago realized that an excise tax on alcoholic drinks was an efficient means of raising them. (Indeed, the Internal Revenue Service was originally chartered by Congress to tax the alcohol industry.) This tax, however, was placed only on alcoholic beverages and not on alcohol used for industrial purposes, for example, as a diluent in flavors. The criterion for determining whether an alcoholic mixture is a beverage (and thus subject to tax) or merely an ingredient (and free of tax) is whether the liquid is potable. The mixture is considered a beverage if it can be diluted and drunk. If, however, it remains undrinkable even after being diluted, the government classifies it as a flavor and the alcohol is tax free. Clever distillers in the United States quickly figured out that, if they could develop a nonpotable (*Pagum*) alcohol mixture that could be added to whisky, they could avoid paying a significant amount of tax. The key to this legerdemain was to develop a blend that could qualify as a flavor but had one key difference: When added to whisky, it would not change the flavor of the finished product—an *unflavor*! Such a “flavor” is called a blender, and the government limits the allowable amount of a blender to 2.5 percent of the whisky. The actual flavoring component, called a merger, is in turn limited to 0.005 percent of the blender. This flavor component is therefore exceedingly miniscule in the final whisky and is, in any event, specifically designed *not* to change the flavor of the whisky. Although Kosher-certified products may not contain *any* non-Kosher ingredients, the inclusion of a non-Kosher ingredient that contributes no flavor would not compromise the inherent Kosher status of a noncertified product.

## **Wine Casks**

Scotch, however, is not free from controversy. Scotch and Irish whiskies are routinely aged in previously used barrels to enhance their flavor. Although these barrels may have been used to age other whiskies, they often had been used to store non-Kosher sherry wine. This again raises questions as to the possible taste of non-Kosher wine in the whisky and has been the subject of much *Halachic* discussion (see *Minchas Yitzchok* II:28). Many authorities have concluded that the use of such casks is not *Halachically* significant because wine is nullified at 1:6, the former wine had dissipated from the barrels over time, and a question exists as to which barrels were actually used. Another question arises as to whether the sherry actually contributes flavor to the Scotch or merely conditions the wood of the casks. In any event, those Scotch whiskies that actually claim a flavor note from being aged in sherry casks may pose more of a concern.

Scotch that bears a Kosher certification is monitored to ensure that the casks in which it is aged had not been used to store sherry.

Interestingly, American bourbon (named after Bourbon County in Kentucky) is free of such a concern, because by law such whiskey must be aged in new casks.

## **Gin**

Gin consists merely of neutral spirits that have been flavored with juniper berries and other botanical herbs and flowers. The name for this drink comes from the French word for the juniper berry—*genièvre*—which was shortened by the Dutch to *genever* and finally to *gin* by the English. The exact formula varies from manufacturer to manufacturer, but by law, all varieties must contain juniper berries. Although developed by a Dutch physician as a means of administering juniper berry oil to treat stomach ailments, gout, and gallstones, the British quickly developed a fondness for the potion. It even-

tually became a staple of the British army as the base for “gin and tonic,” a means of making the administering of bitter *quinine* (“tonic”) more palatable to His Majesty’s malaria-prone soldiers. The *Kashrus* concerns with gin relate to the flavorings used as well as the types of alcohol that may be obtained from any GNS.

## **Tequila**

The creativity of the liquor industry takes another interesting twist with regard to tequila. Although Napoleon may have noted that “an army marches on its stomach,” that army clearly needs something with which to wash down its food (preferably of high proof). After the Spanish *conquistadors* in Mexico had exhausted the supply of wine and brandy they had brought from Spain, they managed to find a way to ferment and distill the fruit of the blue agave plant that grew wild in Mexico, particularly around the town of Tequila. The resulting beverage was named in honor of this town, and the use of this noble drink (*agave* comes from the Greek word meaning “admirable” or “noble”) has burgeoned to become the national drink of Mexico. A related beverage called mezcal is distilled from the fermented sap of the roots, stalk, and leaves of wild agave plants. What is of particular *Kashrus* interest with this liquor, as opposed to true tequila, is the agave worm that graces every bottle of true mezcal. Because this worm inhabits only the species of cactus from which mezcal is made, the agave worm signifies genuine mezcal, made the traditional way. The worm is not there for looks; it is meant to be eaten and is definitely not on the Kosher liquor list—with or without the worm!

## **Liqueurs**

Liqueur differs from the previous types of drinks in that liqueurs are generally not a directly fermented product. The word comes

from the Latin *liquefacere*, meaning “to make liquid,” and refers to blended drinks that contain a certain amount of alcohol. Although many famous liqueurs are based on very old and secret recipes, most are mixtures of alcohol, sugar or corn syrup, and flavorings. The following *Kashrus* concerns should be noted when dealing with liqueurs. First, the alcohol base is often grape brandy and is not Kosher unless produced specifically as a Kosher product. Even pure alcohol may pose *Kashrus* concerns because a significant amount of alcohol produced in Europe is distilled from off-grade, non-Kosher wine. Even in the United States, companies blend non-Kosher grape wine with GNS to produce OTS (other than standard) wine because this product is taxed at a lower wine gallon rate as opposed to the proof gallon rate charged for straight alcohol (see preceding discussion about blenders). Second, the flavors used in the product require Kosher certification, just as do the flavors in any other Kosher food product. Third, glycerin is commonly used as a sweetener and emulsifier in such liqueurs. Glycerin is often produced from animal fat, and Kosher certification for this ingredient is essential. Clearly, liqueur can be considered Kosher only when it bears an acceptable Kosher certification.

### ***The Bottom Line***

- The Kosher status of alcoholic beverages follows the status of the substrate that is fermented:
  - Non-Kosher materials, such as non-Kosher grape juice, yield non-Kosher wine.
  - Dairy materials, such as lactose, yield dairy alcohol.
  - *Chometz* (fermented grain) yields a *Chometz* product, which is prohibited on Passover.
- Wine, grape juice, and raisin juice (and many of their derivatives) have special restrictions that govern their use—*S'tam Yaynam*—and may not be handled by a non-Jew.
- Kosher wine or grape juice that has been heated to a specified temperature loses the special handling restrictions of *S'tam Yaynam* and can be essentially treated in the same manner as any other ingredient.
- The exact temperature necessary for this purpose is subject to various interpretations, ranging from 175 to 212°F.
- Grapes themselves are not restricted. In addition, certain *dry* derivatives of otherwise non-Kosher grape juice or wine productions, such as cream of tartar and grape seed oil, may be permitted.
- Fermented drinks based on sugars other than grape (for example, beer and whisky) are not subject to the rules of *S'tam Yaynam* and may be treated as any food product.
- Straight whiskies generally pose no Kosher concern, as is the case with grain neutral spirits (GNS). Blended bourbons may contain small amounts of non-Kosher wine and for this reason are often avoided unless they have a reliable Kosher certification. Flavored alcoholic beverages are subject to the same Kosher concerns as any other product (for example, flavors and glycerin) and require a reliable Kosher certification.
- Scotch and Irish whiskies that have been aged in sherry casks may pose a Kosher concern according to certain opinions. Many authorities have concluded, however, that any flavor imparted by the sherry casks would be *Batul* and therefore of no *Halachic* significance.



# Kashrus Glossary for the Food Technologist

<i>A'sur</i>	Prohibited	אסור
<i>Acharonim</i>	Rabbinic authorities from approximately 1600 C.E. to the present (literally, “the later ones”)	אחרונים
<i>Achsh'vay</i>	Conferring the status of an edible food (and thus subject to Kosher concerns) onto something that would otherwise be considered inedible (whose Kosher status is irrelevant). For example, rancid pork (that is normally considered inedible) may lose its non-Kosher status, because it is no longer a food. By eating it, however, it may re-attain the status of a non-Kosher food because its erstwhile “nonfood” status has now been negated.	אחשביה
<i>Ashkenazim</i> (adj. <i>Ashkenazic</i> )	Jews of Central and Northern European heritage (that is, not Spain and Portugal or Middle Eastern countries)	אשכנזים
<i>Ayn M'vatlin I'sur</i> <i>I'Chatchila</i>	The prohibition of intentionally nullifying a forbidden item, such as by diluting it to a level that is considered insignificant (see <i>Bitul</i> ).	אין מבטלין איסור לכתחילה
<i>Ayno Ben Yomo</i>	A vessel that had not been used for at least twenty-four hours. (Any flavor that had been absorbed in such a vessel is assumed to have become spoiled after this period.)	אינו בן יומו

<i>Ba'sar</i>	Meat	בשר
<i>Ba'sar she'Nis'alem min ha' Ayin</i>	Literally, "meat that has been hidden from sight"; Meat whose identity can no longer be established	בשר שנתעלם מן העין
B.C.E.	Before the Common (or Civil) Era.	
<i>b'Chdei she'Yarsi'ach</i>	The amount of time necessary to heat a food.	בכדי שירתח
<i>b'Di'eved</i>	A situation coming to light after the fact ( <i>ex post facto</i> ).	בדיעבד
<i>B'dikah</i> (pl. <i>B'dikos</i> )	Inspection.	בדיקה (בדיקות)
<i>B'hemah</i> (pl. <i>B'hemos</i> )	Domesticated Kosher animal (for example, cattle, sheep, and goats).	בהמה (בהמות)
<i>B'nei Yisroel</i>	The Jewish People [literally, "The Children of Israel"]	בני ישראל
<i>B'rachah</i> (pl. <i>B'rachos</i> )	Blessing (one of which usually is uttered before eating a food).	ברכה (ברכות)
<i>B'raissa</i>	<i>Talmudic</i> statements.	ברייתא
<i>Ba'sar b'Cholov</i>	The prohibition of mixing meat and milk.	בשר בחלב
<i>Bais ha'Mikdash</i>	The Holy Temple that was in Jerusalem.	בית המקדש
<i>Bais Yosef</i>	Commentary of Rabbi Yosef Karo on the <i>Halachic</i> text known as the <i>Tur</i> .	בית יוסף
<i>Batul</i>	A trace amount that is considered <i>Halachically</i> insignificant.	בטל
<i>Berya</i>	An entire (whole) item.	בריה
<i>Bishul</i>	Literally, "cooking." a. A prohibited action on <i>Shabbos</i> b. An action that creates the Biblical prohibition of <i>Ba'sar b'Cholov</i> c. An action involving heat that creates a change in a food or the transfer of flavors.	בישול
<i>Bishul Akum</i>	Food cooked by a non-Jew.	בישול עכו"ם
<i>Bishul Yisroel</i>	Food cooked by a Jew.	בישול ישראל
<i>Bitul b'Rov</i>	An amount deemed insignificant because it comprises a minority of the mixture (less than 50%).	ביטול ברוב

<i>Bitul b'Shesh</i>	An amount deemed insignificant because it comprises less than 1/6 of the mixture.	ביטול בשש
<i>Bitul b'Shishim</i>	An amount deemed insignificant because it comprises less than 1/60 of the mixture.	ביטול בששים
<i>B'liah</i> (pl. <i>B'lios</i> ) <i>Bo'dek</i> (pl. <i>Bodkim</i> )	Absorbed flavors. Religious inspector of the internal parts of an animal.	בליעה (בליעות) בודק (בודקים)
<i>Bo'rei P'ri ha'Adamah</i>	"The Creator of the fruit of the ground" (formulation used in a <i>B'rachah</i> for plants in this category).	בורא פרי האדמה
<i>Bo'rei P'ri ha'Etz</i>	"The Creator of the fruit of the tree" (formulation used in a <i>B'rachah</i> for plants in this category).	בורא פרי העץ
<i>B'rachah</i> (pl. <i>B'rachos</i> ) C.E.	Blessing. Common (or Civil) Era.	ברכה (ברכות)
<i>Cha'lef</i> (pl. <i>Cha'lafim</i> ) <i>Challah</i>	Knife used for <i>Sh'chitah</i> . Small amount of dough or batter separated from Jewish-owned mixtures of the five major grains (wheat, rye, oats, barley, or spelt), which is subsequently burnt. (Colloquially, the term is used to refer to a braided loaf of bread traditionally eaten as part of the Sabbath meal.)	חלף (חלפים) חלה
<i>Cha'rif</i> <i>Cha'yah</i> (pl. <i>Cha'yos</i> )	Sharp or pungent. Nondomesticated Kosher animal (such as deer).	חרף חיה (חיות)
<i>Chamira Sakanta m'Isura</i>	Health and safety concerns are of greater concern than Kosher law and take precedence over it.	חמירה סכנתא מאיסורא
<i>Chaticha Na'asis N'veilah</i> ( <i>Chana'n</i> )	A rule that deems a forbidden mixture of Kosher and non-Kosher foods be considered completely non-Kosher, as opposed to merely non-Kosher based upon the percentage of forbidden ingredients.	חתיכה נעשית נבילה (חני"נ)

<i>Chaza"l</i>	<i>Talmudic</i> authorities. [The rendering here is a mnemonic based upon the three letters that form the Hebrew phrase <i>Cha'chameinu Zichronum l"Vracha</i> ("Our Rabbis of Blessed Memory").]	חז"ל
<i>Chazakah</i>	A <i>Halachic</i> presumption based upon the last known status of an item.	חזקה
<i>Cheylev</i>	Certain Biblically-enumerated animal fats that may not be eaten.	חֵלֵב
<i>Chezkas Kashrus</i>	A <i>Chazakah</i> that something is Kosher.	חזקת כשרות
<i>Chodosh</i>	Grain from the current year that has not existed at Passover. [Literally, "new."]	חדש
<i>Chol ha'Moed</i>	Intermediate days of certain major holidays.	חול המועד
<i>Cholov</i>	Milk.	חֵלֵב
<i>Cholov Akum</i>	Nonsupervised milk.	חלב עכו"ם
<i>Cholov S'tam</i>	Kosher, nonsupervised milk that is monitored by governmental agencies.	חלב סתם
<i>Cholov Yisroel</i>	Kosher milk supervised by a Jew.	חלב ישראל
<i>Chometz</i>	Any of the five major grains (wheat, rye, oats, barley, and spelt) that had begun to leaven and thus prohibited on Passover.	חמץ
<i>Chumrah</i>	A <i>Halachic</i> stringency voluntarily accepted.	חומרא
<i>d'Drabanan</i>	A Rabbinic rule.	דרבנן
<i>d'Oryssa</i>	A Biblical rule.	דאורייתא
<i>Da'var Cha'rif</i>	Sharp (spicy) foods.	דבר חריף
<i>Da'var ha'Ma'amid</i>	An ingredient that causes a significant change in the texture of a food.	דבר המעמיד
<i>Dam</i>	Blood.	דם
<i>Duchka d'Sakina</i>	Pressure of the knife.	דוחקא דסכינא
<i>Eretz Yisroel</i>	The Land of Israel.	ארץ ישראל
<i>Fleishig</i>	Pertaining to meat.	
<i>G'dolim</i>	Senior Rabbinic leaders.	גדולים
<i>G'mara</i>	Part of the <i>Talmud</i> expounded by the <i>Amora'im</i> (circa 200–500 C.E.).	גמרא

<i>G'onim</i>	Early Babylonian sages (800–1000 C.E.)	גאונים
<i>G'vinas Akum</i>	Cheese produced by a non-Jew.	גבינת עכו"ם
<i>G'vinas Yisroel</i>	Cheese produced by a Jew.	גבינת ישראל
<i>Gebrochts</i>	<i>Matzah</i> or <i>Matzah</i> meal that has been soaked with water (literally, “broken [ <i>Matzah</i> ]”).	
<i>Gid ha'Na'sheh</i>	Sciatic nerve.	גיד הנשה
<i>Glatt</i>	Meat from an animal that had exhibited no (or, according to some, less than two minor) pulmonary lesions. Colloquially, it refers to a high Kosher standard.	
<i>G'matria</i>	A relationship between Hebrew words based upon the numerical values of Hebrew letters.	גמטריה
<i>G'zeiras ha'Kasuv</i>	Biblical injunction.	גזירת הכתוב
<i>ha'Motzee (Le'chem min ha'Aretz)</i>	He Who brings forth (bread from the ground); formulation used in a <i>B'rachah</i> for bread that then covers the entire meal.	המוציא (לחם מן הארץ)
<i>Hag'olah</i>	The process of Kosherizing a utensil by subjecting it to overflowing, boiling water, thereby causing any absorbed flavor to be purged into the water.	הגעלה
<i>Halacha (pl. Halachos)</i>	Jewish Law.	הלכה (הלכות)
<i>Hashem</i>	G-d. (Literally, “The Name.” This term is used in place of the actual name of G-d to avoid mentioning His name in vain.)	השם
<i>Hashgacha (pl. Hasgachos)</i>	Kosher supervision.	השגחה
<i>Hashgacha T'midis</i>	Full-time Rabbinic supervision.	השגחה תמידית
<i>Hechsher</i>	Kosher certification.	הכשר
<i>Heter (pl. Heterim)</i>	<i>Halachic</i> leniency.	היתר (היתרים)
<i>Hidur (pl. Hidurim)</i>	<i>Halachic</i> stringency.	הידור (הידורים)
<i>Iruy</i>	Literally, “pouring.” Usually refers to <i>Kashering</i> or cooking by pouring boiling water over the food or vessel, as opposed to immersing the food or vessel in the boiling water.	עירוי
<i>Issur</i>	Prohibition.	איסור

<i>k'Bol'o Kach Polto</i>	In the same manner as it (the vessel) absorbed the flavor, so, too, would it expel such flavor.	כבולעו בך פולטו
<i>K'dushah</i>	Holiness.	קדושה
<i>Ka'vush</i>	Soaking.	כבוש
<i>Kasher</i> (or <i>Kosherizing</i> )	a. The process by which a utensil that had been used with non-Kosher food is made suitable for use with Kosher food. b. The process by which Kosher-slaughtered meat is soaked and salted (or broiled) to remove blood, thus rendering it fit for use. <i>Kashrus</i> c. The concept of Kosher	
<i>Ki'suy ha'Dam</i> <i>Kitniyos</i>	Covering of the blood. Certain legumes and other crops that European Jews do not use on Passover.	כיסוי הדם קטניות
<i>Kohen</i> (pl. <i>Kohanim</i> )	Priests that served the Holy Temple in Jerusalem.	כהן (כהנים)
<i>Kosher l'Pesach</i> <i>l'Chatchila</i>	Kosher for Passover. a. A situation being dealt with before the fact. b. The preferable manner	כשר לפסח לכתחילה
<i>l'Havdil</i> <i>Lach</i> <i>Libun Chamur</i>	Separated concepts. Liquids (literally, "wet"). The process of Kosherizing a utensil by subjecting it to a very high heat ("glowing") that incinerates any absorbed flavor.	להבדיל לח ליבון חמור
<i>M'naker</i> (pl. <i>M'nakrim</i> )	Butchers trained in the removal of forbidden fats, blood vessels, and nerves from meat.	מנקר (מנקרים)
<i>M'ushan</i>	Smoked.	מעושן
<i>M'vushal</i>	Cooked.	מבושל
<i>M'zonos</i>	Cake or other nonbread, baked pastry.	מזונות
<i>Machmir</i> <i>Mar'is A'yin</i>	Stringent. The prohibition of performing a permitted action that appears to others to be a prohibited act.	מחמיר מראית עין
<i>Mashgiach</i> (pl. <i>Mashgichim</i> )	<i>Kashrus</i> supervisor.	משגיח (משגיחים)
<i>Mashgiach T'midi</i>	Full-time <i>Mashgiach</i> .	משגיח תמידי
<i>Matzah</i>	Unleavened bread.	מצה
<i>Mechalya Leyl'Shvach</i>	Converts a spoiled flavor into a palatable one.	מחליא ליה לשבח

<i>M'forshim</i>	Rabbinic commentaries on the Bible or the <i>Talmud</i> .	מפרשים
<i>Midrash</i>	<i>Talmudic</i> commentaries on the Bible.	מדרש
<i>Milchig</i>	Dairy.	
<i>Minhag</i> (pl. <i>Minhagim</i> )	Custom.	מנהג (מנהגים)
<i>Mishnah</i>	Section of the <i>Talmud</i> expounded by the <i>Tana'im</i> (circa 10 B.C.E. to 200 C.E.).	משנה
<i>Mitzvah</i> (pl. <i>Mitzvos</i> )	a. Commandment b. Good deed	מצוה
<i>Miyut ha'Matzuy</i>	A minority that is common	מיעוט המצוי
<i>Miyut she'Ayno Matzuy</i>	A minority that is not common	מיעוט שאינו מצוי
<i>Mizbay'ach</i>	Altar.	מזבח
<i>M'sorah</i>	Tradition.	מסורה
<i>Muchzak b'Tolaim</i>	Generally infested with insects	מוחזק בתולעים
<i>Mutar</i>	Permitted.	מותר
<i>N'fulah</i>	An animal that had fallen and may have suffered injuries sufficient to cause it to be <i>T'reifah</i> .	נפולה
<i>N'veilah</i> (pl. <i>N'veilos</i> )	Carrion; meat that had not been slaughtered according to <i>Halacha</i> .	נבילה (נבילות)
<i>Nifgam</i>	Having been rendered foul tasting.	נפגם
<i>Nifsal me'Achilah</i>	Ruined, inedible.	נפסל מאכילה
<i>Nikkur</i>	The process of removing forbidden fats, blood vessels, and nerves from meat (Hebrew) ( <i>Treiboring</i> —Yiddish).	ניקור
<i>Nireh l'Ayin</i>	Visible to the unaided eye.	נראה לעין
<i>Nis'yuvai d'Chalba</i>	Whey (from milk).	ניתויבי דחלבא
<i>Nishtanah</i>	Changed.	נשתנה
<i>No'sen Ta'am l'Ph'gam</i>	Having an objectionable taste.	נותן טעם לפגם
<i>Oleh al Shulchan</i>	Important food (literally, "fit for a king's table").	עולה על שלחן מלכים
<i>M'lachim</i>		
<i>Orlah</i>	Prohibited fruit of the first three years of the growth of a tree.	עלרה
<i>P'gimah</i>	Foul taste.	פגימה
<i>P'sak</i>	Rabbinic ruling.	פסק
<i>Pa'gum</i>	Foul-tasting.	פגום
<i>Pareve</i> (or <i>Parve</i> or <i>Parva</i> )	Neutral; neither meat nor dairy.	פארווה

<i>Pas Palter</i>	Bread or cake baked by a commercial non-Jewish baker.	פת פלטר
<i>Pas Yisroel (Pat Yisroel according to S'phardic pronunciation)</i>	Bread or cake baked by a Jew.	פת ישראל
<i>Pesach</i>	The holiday of Passover.	פסח
<i>Pogem</i>	To impart a foul taste.	פוגם
<i>Posek (pl. Poskim)</i>	<i>Halachic</i> authority	פוסק
<i>Rabbonim</i>	Rabbis.	רבנים
<i>Rama</i>	Commentary by Rabbi Moshe Iserles (c. 1525–1572 C.E.) to the <i>Shulchan Aruch</i> , reflecting the customs of the Jewish communities in Central and Northern Europe.	רמ"א (ר' משה איסרליש)
<i>Rambam</i>	Maimomonides (early Rabbinic authority 1135–1204 C.E.).	רמב"ם (הרב משה בן מיימון)
<i>Rashi</i>	Rabbi Shlomo Yitzchaki (early Rabbinic authority c. 1040–1105 C.E.).	רש"י (הרב שלמה יצחקי)
<i>Rav</i>	Rabbi.	רב
<i>Rav ha'Machshir</i>	The Rabbi providing Kosher certification.	רב המכשיר
<i>Responsa</i>	Rabbinic rulings.	
<i>Rishonim</i>	Rabbinic authorities from approximately 1000–1600 C.E. (literally, “early ones”).	ראשונים
<i>Ro'sei'ch</i>	Boiling.	רוחת
<i>Rosh Ha'Shanah</i>	The holiday of the Jewish New Year.	ראש השנה
<i>S'phardim (also, Sephardim, Sefardim)</i>	Jews of Oriental and Spanish heritage.	ספרדים
<i>S'tam Yaynam</i>	Wine handled by non-Jews.	סתם יינם
<i>Sa'fek</i>	A questionable situation.	ספק
<i>Seder</i>	Liturgical meal celebrated on the first and second night of Passover.	סדר
<i>S'fek S'feka</i>	A Double <i>Sa'fek</i>	ספק ספיקא
<i>Sh'as ha'D'chak</i>	Extenuating circumstances.	שעת הדחק
<i>Sh'chitah</i>	Kosher slaughter.	שחיטה
<i>she'Hechi'yanu</i>	Blessing made upon eating a new fruit for the first time in a season.	שהחיינו
<i>Sh'mitah</i>	The <i>Sabbatical</i> year (occurs every seven years in Israel).	שמיטה



<i>Sh'murah Matzah</i>	<i>Matzah</i> prepared from flour that has been specially supervised from the time of harvest.	שמורה מצה
<i>Sheretz</i> (pl. <i>Sh'ratzim</i> )	Prohibited insects and other small creatures.	שרץ (שרצים)
<i>Shabbos</i> ( <i>Sephardic</i> pronunciation: <i>Shabbat</i> ).	The Sabbath (the seventh day of the week), which is considered the Day of Rest in the Hebrew calendar.	שבת
<i>she'Hakol</i> ( <i>ni'Hiyeh bi'Dvaro</i> )	That all things (are created by His word); formulation used in a <i>B'rachah</i> that covers foods not subject to a specific blessing.	שהכל (נהייה בדברו)
<i>Sh'chita</i>	The method of slaughtering an animal or bird according to <i>Halacha</i> .	שחיטה
<i>Shecht</i> <i>Sh'eilah</i> (pl. <i>Sh'eilos</i> )	Slaughter by <i>Sh'chitah</i> . <i>Halachic</i> questions put before a Rabbi.	שאלה
<i>shlit"á</i>	Mnemonic of the Hebrew phrase; it means "May he live for many good years" and is usually appended to the name of an important, living individual.	שליט"א
<i>Sho'chet</i> (pl. <i>Shochtim</i> ) <i>Shomer Shabbos</i>	A person trained in <i>Sh'chitah</i> . One who follows <i>Halacha</i> (literally, "one who observes the <i>Shabbos</i> according to <i>Halachic</i> requirements").	שוחט (שוחטים) שומר שבת
<i>Shulchan Aruch</i>	The basic compendium of practical Jewish law ( <i>Halacha</i> ) accepted as definitive by both Ashkenazic and Sephardic Jews; written by Rabbi Yosef Karo (c. 1488–1575).	שולחן ערוך
<i>Simonim</i>	a. Indicators (signs). b. Treachea and esophagus (relating to <i>Sh'chitah</i> )	סימנים
<i>Sircha</i> (pl. <i>sirchos</i> ) <i>Sirchon</i> <i>Sukkah</i>	Pulmonary lesions. Rot. A special hut (tabernacle) in which a Jew dwells and eats his meals during the holiday of <i>Sukkos</i> .	סירכא סירחון סוכה

<i>Sukkos (Sukkot)</i>	The Holiday of Tabernacles.	סוכות
<i>Ta'am</i>	Taste, flavor.	טעם
<i>Talmud</i>	The Oral Law ( <i>Torah she'Ba'al Peh</i> ) as given to Moses on Mt. Sinai. It is comprised of the <i>Mishnah</i> (the recorded sayings of the <i>Ta'na'im</i> ) and the <i>G'mara</i> (the recorded sayings of the <i>A'mora'im</i> ).	תלמוד
<i>Ta'meh</i>	Ritually impure.	טמא
<i>TaNa"Ch</i>	Mnemonic referring to the complete Bible (the Pentateuch [ <i>Torah</i> ], Prophets [ <i>Nevi'im</i> ], and Writings [ <i>Kesuvim</i> ]).	תנ"ך
<i>To'fel</i>	Subordinate.	טפל
<i>Torah she'Ba'al Peh</i>	The Oral Law as given at Sinai.	תורה שבעל פה
<i>Tosafos</i>	<i>Talmudic</i> commentators during the period of <i>Rishonim</i> (circa 1100–1400 C.E.).	תוספות
<i>Tosefta</i>	<i>Talmudic</i> writings.	תוספתא
<i>Treiboring</i>	The act of removing forbidden fats, blood vessels, and nerves from meat (Yiddish) ( <i>Nikkur</i> —Hebrew).	
<i>T'reif(ah)</i> (pl. <i>t'reifos</i> )	Literally, “torn.” Technically, meat from an animal that, although slaughtered appropriately, suffered certain internal ruptures or other ailments that rendered it non-Kosher. <i>Colloquially</i> : Any Non-Kosher food.	טריפה (טריפות)
<i>T'rumos u'Ma'asros</i>	Agricultural tithes required on produce of the land of Israel	תרומות ומעשרות
<i>T'shuvah</i> (p. <i>T'shuvos</i> )	Responsa.	תשובה (תשובות)
<i>Tur</i>	<i>Halachic</i> codification written by Rabbi Yaakov ben Asher in the 15th century C.E. It served as the basis (and precursor) for the <i>Shulchan Aruch</i> .	טור
<i>T'vilas Kelim</i>	The requirement to immerse new vessels in a <i>Mikveh</i> (ritualarium) prior to use (literally, “immersion of utensils”).	טבילת כלים
<i>Va'ad ho'Rabonim</i>	Council of Rabbis.	ועד הרבנים
<i>Ya'vesh</i>	Solids (literally, “dry”).	יבש

<i>Yad Soldes Bo</i>	The temperature at which <i>Bishul</i> (cooking) takes place (see <i>Bishul</i> ). Generally considered to be in the range of 110°–115°F. (Literally, “When the hand recoils from a hot liquid.”)	יד סולדת בו
<i>Yerushalayim</i>	Jerusalem.	ירושלים
<i>Yisroel</i>	Jew.	ישראל
<i>Yom Tov</i>	Festival (other than <i>Shabbos</i> ) (literally, “good day”).	יום טוב
<i>Yo'reh De'ah</i>	Section of the <i>Shulchan Aruch</i> covering most <i>Kashrus</i> issues.	יורה דעה
<i>Yoshon</i>	Grain from the previous years (literally, “old”).	ישן
<i>Yo'tze</i>	An excretion.	יוצא
<i>Yotzeh v'Nichnas</i>	Unannounced inspections.	יוצא ונכנס
<i>Zeh v'Zeh Gorem</i>	Double causation.	זה וזה גורם
<i>Zei'ah</i>	Volatiles that emanate from a food.	זיעה
<i>ZT"L</i>	Mnemonic of the Hebrew phrase “Of blessed saintly memory.”	זצ"ל

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