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REI'ACH NICH'O'ACH: Grillin', Griddlin' and Smokin' K'Halacha



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The intoxicating smell of raw meat sizzling on a grill, accompanied by the smoky pungency of a well-tended fire, is an intensely appealing sensory experience. From the moment the meat hits the heated surface and begins to sear, natural sugars and amino acids in the meat react with each other to trigger the “Maillard reaction” – more commonly known as caramelization – which releases a heady, irresistible aroma and an explosion of flavor. When done well, the barbecuing process produces involuntary gastronomic reactions in all who experience it.

The sensory reactions described above are actually an integral component of *korbanos*. The Gemara in *Zevachim* (46b) learns from the word *rei'ach* that the *korbanos* must be cooked on the *mizbei'ach* because precooked meat does not provide the *rei'ach* experience. Even the cooking technique prescribed for the edible parts of the *korban* had to be the very best option. This explains why the *korban Pesach* had to be prepared over *tzli eish* (an open fire) and why the *ayil nazir* was cooked in water (see Sidebar).¹ The combination of fire and the meat of a young animal creates a mouthwatering aroma that is hard to resist. An older animal is best prepared cooked in water.

Even the wood chosen for the *mizbei'ach* had to be carefully selected to ensure that the *avodah* was done with the best quality wood for a good clean burn.² Wood with impurities or that wasn't properly dried doesn't burn nicely, and its smoke may be acrid, which can affect the aroma and taste of the meat.

FIRING UP THE BARBECUE

- **Grills** are probably the most ubiquitous piece of equipment for BBQ cooking.
- **Griddles** have been gaining popularity. They offer even heat and easy cleanup and allow for the preparation of a wide range of foods to create a delicious crust and rich caramelized flavors that grill grates can't achieve.
- **Smokers** are also trending among barbecue enthusiasts. These heat the meat indirectly at low temperatures – “low and slow.” Meat prepared this way is prized for its deep, smoky flavor and the tender texture it produces. Devotees also enjoy the hands-on experience of managing fire, wood and airflow to create perfectly smoked meat.

Before you fire up your barbecue, here are some halachic issues that should be reviewed.

TEVILAS KEILIM

● Grates

Grill and smoker grates made of metal which have direct contact with food require *tevila* with a bracha. Porcelain or enamel-coated grates require *tevila* but without a bracha.³

● Griddles

A griddle is a flat cooking surface for cooking food such as pancakes, eggs and burgers and is characterized by its smooth, low-edged surface which allows for easy flipping and even cooking. Griddles are almost always made of cast iron and therefore require *tevila* with a bracha.

1 While fire roasting the meat of a younger animal, which was the requirement for the *korban Pesach*, produces a pleasant smell, that is not the case for older meat – which explains why older sheep and goats were typically cooked in water (see Sidebar for the science behind this practice).

2 See Rambam *Hilchos Issurei Mizbei'ach* 7:3.

3 Refer to the “STAR-K Tevilas Keilim Chart” at <https://www.star-k.org/articles/kosher-lists/1170/tevilas-keilim-guidelines/>.

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It's a Strange Bird:

An Insider's Look Into
Kosher Egg Laying



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The incredible edible egg. Eggs are, indeed, incredible. They can be hard boiled, soft boiled, fried or scrambled and are an essential ingredient in baking. Eggs give challah a shining glow. When my mother *a"h* was not feeling well – and when all else failed – she drank a *gogel mogel*, two raw eggs mixed with honey ... and it did the trick.

Then there's the reproductive aspect of eggs: when they hatch into chicks who mature into hens, we are afforded sumptuous varieties of poultry delicacies that are staples of our Shabbos tables. These are all excellent outcomes of Hashem's incredible creation.

But are all eggs equal? More importantly, are all eggs kosher? As we shall soon explain, the incredible edible egg is, in some cases, incredibly *inedible* from a kashrus standpoint.

The Kashrus of Eggs

The *Shulchan Aruch* (Y.D. 86:1) teaches that the *simanim* for a kosher egg are that its shape is circular (*kad*) on one end and pointy (*chad*) on the other. Additionally, the yellow yolk, the *chelmon*, should be surrounded by the white albumen, the *chelbon*.

It then poses a question: If an egg meets the kosher criteria, can it be purchased without discretion? The answer is, it depends.

Following the conclusion of the *Shulchan Aruch* (Y.D. 86:2), which provides us with the *simanim* of a kosher egg, we can purchase all eggs – whether white or brown – from our local supermarkets with complete confidence. The Rema (Y.D. 82:3), however, clearly states that in order to purchase non-commercial eggs (e.g., those we might find at a farmer's market or a gourmet food store), we must have information about the layers' halachic pedigree. A chicken requires a *mesorah* to be accepted as a kosher bird.

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Kitchen Countertops:

Scratching Beneath the Surface



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“Iwould like to purchase a countertop which can be kashered for Pesach. What should I buy?”

“I moved into a house, and the previous owner was not Jewish. Can I kasher the countertop?”

The answer to these questions and variations thereof depends on the material from which the countertop is made. We will begin by addressing which materials can be kashered and which cannot; then describe the kashering process; and finally, conclude with guidelines for countertops that cannot be kashered.

COUNTERTOP MATERIALS

Kitchen countertops can be made from a host of different materials. Some materials can be kashered, and some cannot. (See the chart in Fig. 1.)

With regard to stone countertops, there are two basic types:

A natural stone slab – This is one large piece of natural stone. The slab is mined whole and left intact.

An engineered stone composite – This consists of stone fragments which have been pressed and glued together.

Rav Heinemann *shlit”a paskens* that a *natural* stone slab can be kashered, whereas an *engineered* stone composite cannot.

One who moves into a house and does not know whether the countertop is made from natural or engineered stone should contact a kitchen design expert and send him a photo of the countertop. A professional should be able to determine the material it is made from.

HOW TO KASHER A COUNTERTOP

The countertop should be clean and not used for hot (i.e., above *yad soledes*, which is 120°) for the 24 hours before the kashering.

1. Pour boiling water onto the countertop from a pot or kettle which has been heated on the fire.
2. Move the kettle slowly, such that the stream of water directly hits every spot of the countertop.
3. Refill the kettle and heat the water as often as needed in order to accomplish this.

Note that this process is messy, as boiling water will spill over the sides of the countertop and onto your floor.¹

METHODS REQUIRING PROFESSIONAL EQUIPMENT

There are other ways to kasher countertops, but these require professional equipment and expertise and should not be attempted by a homeowner. These include:

► STEAM KASHERING

Igros Moshe (Y.D. 1:60) *paskens* that one cannot kasher with steam. Therefore, most steam machines cannot be used for kashering. However, *Igros Moshe* allows a steam machine to be used if it produces steam which condensates on the countertop surface into water, and the steam machine then heats the water until it is boiling hot. STAR-K has determined that steam machines sold in retail stores are not powerful enough to accomplish this and cannot be used for kashering. For this reason, one cannot kasher with steam unless he owns specialized equipment, which is fairly costly.

► SANDING

When hot non-kosher food is placed on a countertop, the non-kosher taste is only absorbed *kedei klipah*, meaning that it is not absorbed further than the thickness of a piece of paper. If that uppermost paper-thin layer of the

countertop is physically removed, the countertop no longer needs kashering. This is true even when the countertop is made from material that cannot be kashered. Therefore, if the countertop material can be sanded, there is no need to kasher it. Doing so, however, is likely to ruin the countertop. A countertop should only be sanded by a trained professional.

DEALING WITH UNKASHERABLE COUNTERTOPS

Managing a kitchen with an unkasherable countertop is actually very doable. Here are the basic guidelines:

DURING PESACH	Fully cover the countertops.
DURING THE REST OF THE YEAR	Cold food: may be placed directly on an unkashed countertop.
	Hot cookware and dishes: should be placed on a trivet.

If a hot utensil was inadvertently placed on an unkashed countertop, there is no need to kasher, provided the area where the underside of the utensil came into contact with the countertop was clean and dry. This is due to the halachic principle that *ein kli oser kli b’lo rotev*.

Food above the temperature of *yad soledes* should not be placed on an unkashed countertop. If that happened inadvertently, the hot food may be consumed provided that no non-kosher food above *yad soledes* had been placed on the countertop in the previous 24 hours.

For further halachic guidance, consult your rav. ☆

TYPE	CAN BE KASHERED	COMMENTS
Caesarstone	No	This is an engineered composite.
Ceramic Tile	No	
Concrete	No	
Corian	No	This is made from a blend of roughly one-third acrylic polymer and two-thirds natural mineral.
Dolomite	Depends	If natural stone: Yes; If engineered composite: No
Enamel	No	
Formica	No	This is a plastic laminate.
Granite	Depends	If natural stone: Yes; If engineered composite: No
Laminates	No	This is a plastic (e.g., Formica).
Marble	Depends	If natural stone: Yes; If engineered composite: No
Metal	Yes	
Onyx	Depends	If natural stone: Yes; If engineered composite: No
Plastic	No	
Porcelain	No	
Quartz*	No	An engineered composite. (See NOTE)
Quartzite*	Yes	A natural stone. (See NOTE)
Silestone	No	An engineered composite.
Soapstone	Depends	If natural stone: Yes; If engineered composite: No
Wood	Depends	Wooden countertops may be kashered provided they are smooth and have no cracks or crevices.

FIG. 1: LIST OF COUNTERTOPS MATERIALS AND THEIR “KASHERABILITY”

*NOTE: Quartzite vs. Quartz: Quartzite is a *natural* stone that can be kashered. Quartz is an *engineered* composite that cannot. These materials look the same, and the two terms often get mixed up. One purchasing a quartzite countertop should verify that he is getting a natural stone slab and not an engineered composite.

1 An alternative method is to run an iron over hot water on the countertop as demonstrated in the video on the STAR-K website at <https://www.star-k.org/videos?channel=benyomo>. STAR-K takes no responsibility for the safety of this process or for any damage to the countertop.

REI'ACH NICH'O'ACH:

Grillin', Griddlin' and Smokin' K'Halacha

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When an outdoor griddle is integrated with the cart, the griddle is nearly impossible to *tovel*. If it truly cannot be taken apart, the griddle may be used without *tevila*.⁴

● Disposable Grills

Despite the fact that disposable pans normally need *tevila*,⁵ since disposable grills are never used more than once, they do not require *tevila*.⁶

KASHERIN'

■ **Charcoal Grills & Grates:** One who purchased a non-kosher grill, or wants to use his year-round grill for Pesach, must kasher it properly.⁷ Since food is grilled directly on the grill grates, the grates must be heated to a glow. It is preferable to purchase new replacement grates than risk kashering with fire.

If one takes proper precautions, kashering grates can be done by sandwiching them between charcoal briquettes and lighting them on fire.

To kasher the grill cavity, it should be thoroughly cleaned, then lit with charcoal and covered for 45 minutes after the coals have whitened.

■ **Gas Grills:** An empty gas grill cavity is kashered by cleaning, closing the hood, then setting it to the highest temperature for 45 minutes. To kasher the grates, see guidance above for charcoal grills.

■ **Griddles:** As with grills, since food is cooked directly on their surface, a griddle must be heated until it's red hot. To kasher a griddle, see guidance above for charcoal grills. It is preferable to purchase a new replacement griddle than risk kashering with fire.

■ **Smokers:** The halachos would be the same for smokers, although electric smokers present a challenge. Even if one were to purchase new grates, the cavity is nearly impossible to kasher, as the process is similar to kashering an oven. But cleaning an electric smoker and then heating it to 500°F for 45 minutes is extremely difficult, and generally not recommended.

FISH GRILLIN'

Because it is unhealthy to eat meat and fish together, we are forbidden to do so.⁸ We are permitted, however, to cook or eat fish in a utensil that had previously been used for meat and, likewise, to cook or eat meat in a utensil that had previously been used for fish.⁹

Therefore, theoretically, we may barbecue fish on a completely clean *fleishig* grill. Or, we may cover dirty *fleishig* racks with two layers of foil and place the fish on the foil and grill it in an open, uncovered barbecue – provided the foil is strong enough not to tear, thus preventing the fish from making contact with the meat residue. However, as it is challenging to do either of these successfully, this is not recommended. A best practice would be to purchase either a grill dedicated exclusively to fish¹⁰ or a set of grates just for fish.

LIVER KASHERIN'

Liver is often sold unkashered.¹¹ Since liver must be kashered through broiling, a grill¹² provides a very convenient option to enjoy the unique pleasure of fresh liver. Since pre-kashered liver is not kosher, any utensil – whether a fork, skewer or (according to some) the grill grates – used in the broiling process should be dedicated exclusively for the use of kashering liver. It is a meritorious practice to re-kasher the fork and all the utensils used in the broiling process before the next time liver is to be kashered.

DAIRY AND PAREVE GRILLIN'

Although it may seem improper – or even sacrilegious – to some, non-meat grilling and smoking is not so uncommon.

■ **Pareve Grillin':** Common vegetarian items that work well on the grill include corn-on-the-cob, bell peppers, zucchini, mushrooms, asparagus and onions. Fruits like pineapple and peaches can be lightly charred for a sweet touch. Even vegetarian meats like tofu or tempeh can be marinated and then grilled.

A caveat: one who wants to serve these pareve items with a dairy meal must cook them on a fully pareve or dairy grill.

■ **Dairy Grillin':** Grilling pizzas on a stone, or cubes of cheese like halloumi or paneer threaded on skewers (or placed directly on the grill), are also popular. Due to the difficulty of kashering a grill (as discussed earlier), one should dedicate a grill and utensils exclusively for dairy use.

SHABBOS GRILLIN'

Grilling on Shabbos is clearly *asur mi'd'Oraysa* — since it involves *ha'avara*, *bishul* and possibly *mechabe'h* (extinguishing). Leaving food on a grill from before Shabbos, however, is also problematic. Even though *shehiya* can theoretically be addressed by making sure that the food is fully cooked (and, thus, avoiding *bishul*) and that the fire is managed properly,¹³ adjusting the vents or using a cover on a charcoal-fired smoker or grill may affect the flame; doing either of these would be forbidden because these actions influence the flame, either as an act of *ha'avara* or *mechabe'h*.

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4 See *Darchei Teshuva* 120:5.

5 See "STAR-K Tevilas Keilim Chart" referenced in footnote 3.

6 *Ma Nedaber Hilchos Tevilas Keilim* (unpublished galleys). See also "Kashrus With a 'Bren'" by Rabbi Tzvi Rosen at <https://www.star-k.org/articles/kashrus-kurrents/2131/grillin-with-a-bren/>.

7 We would never recommend kashering a public grill in a park, or the grates of a shared grill in a vacation rental, due to the safety issues involved.

8 Y.D. 116.

9 Ibid. There are some people who have a custom not to do so. However, if you do not have this custom there is no need to be stringent.

10 Many choose to get a small portable grill for this purpose.

11 For instructions on how to properly kasher liver, see "Kashering Liver" by Rav Moshe Heinemann *shlit"a* at <https://www.star-k.org/articles/articles/1133/kashering-liver/>. Since all other meats must be kashered within 72 hours of *shechita*, it is uncommon to use the grill for kashering anything aside from liver. However, were one to do so, the process is the same.

12 A griddle may not be used to kasher liver since the drippings must drain off for halachically compliant koshering.

13 Until the advent of modern gas and electric appliances, using a fire on Shabbos was common. Halachically, one would need to make the fire "*gerufah u'ketuma*" in order to keep food heated from before Shabbos.

• *Gerufah* means swept or removed. This refers to an oven or stove where the coals (the primary heat source in ancient times) were removed or swept away from under the pot before Shabbos began.

• *Ketumah* means covered or dampened. This refers to a fire that was *covered* or *dampened* in some way to reduce and contain its heat output before Shabbos.

While it was technically possible to uncover the flame and stoke it, the Sages permitted both *gerufah* and *ketumah* because the sweeping and covering acted as significant reminders and deterrents, making it less likely that one would go out of their way to adjust the flame on Shabbos. Since grills generally can't retain sufficient heat if the coals are removed or dampened, these methods are not practical today.



It's a Strange Bird:

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For instance, the proprietor of your local market farmstand tells you that this perfectly kosher-looking, *kad v'chad* egg is from the Resplendent Quetzal,¹ and you have no idea if the Resplendent Quetzal is even a kosher bird. In such a case, you may not eat the egg.

Chickens in the Backyard

Backyard chickens are most definitely on the rise. They currently place fourth in domestic pet rankings, right behind dogs, cats and fish. It is estimated that 13% of American households are now raising backyard chickens.

Their popularity can partly be attributed to the exorbitant rise in the cost of eggs resulting from the rampant spread of bird flu. This avian epidemic has meant the culling of millions of commercial layers throughout the U.S. Many households have turned to raising their own layers both to offset these costs and to enjoy the pleasure of caring for them as pets.

But in most cases, in today's non-agrarian society, ask a 3-year-old where milk or eggs come from and he will answer without hesitation: Milk comes from the jug inside the refrigerator, and eggs from the carton in the refrigerator door. Ask an adult where eggs come from and he will reply: from a chicken. But few of us have an inkling as to the journey of a chicken layer from hatchery to egg house.

The lifecycle of a chicken is pretty straightforward. Chicks are hatched and raised in a hatchery through their next stage of growth. This pre-egg-laying chicken is known as a *pullet*. Once a pullet begins to lay eggs, it is

known as a *hen*. A pullet can begin laying eggs when it reaches 16-18 weeks (approximately four months old). Full maturity is reached by week 20. A hen continues to lay eggs commercially until week 80 (not quite two years).

But the question remains: Do all varieties of backyard chickens meet the halachic *mesorah* criteria? Surprisingly not. Due to crossbreeding, unusual appearance, extra toes, unusual plumage and odd colored eggs, not all chickens are created "mesoratically" equal. Of the ten most popular breeds of backyard chickens,² only four make the halachic cut (see Fig.1).

Commercial Egg Production

The commercial egg business is far more complex than home egg laying. Commercial egg laying is a complex, multi-tiered business known in the industry as a "layer farm sequence," from hatching to chicken coop to egg laying. I guess in baseball terms, you have to go from the farm clubs to the major leagues. No matter the breed, all layers have to go through the basics. As noted above, the good news is that all commercial eggs come from kosher breeds.

Of course, choosing the right chicken breed that will produce the best egg in a particular region is left to the discretion of the skilled breeder (see Sidebar). Much of the skill and success of commercial egg production rests on an optimum environment, climate and diet. In short, a happy chicken will be the best egg producer.

1 A rare bird species.
2 <https://www.backyardchickens.com/articles/top-10-favorite-backyard-chicken-breeds.76182/>

RANKING	VARIETY	HIGHLIGHTS	ACCEPTABLE/NOT
1	Orpington	175-200 eggs annually	YES
2	Silkie	Blue earlobes, 5 toes on each foot	No
3	Plymouth Rock	Large brown eggs	YES
4	Easter Egger	A hybrid, not a true breed	No
5	Australorp	Large brown eggs	No
6	Brahma	Light brown eggs	No
7	Cochin	Large brown eggs	No
8	Rhode Island Red	Large brown eggs	YES
9	Ameraucana	Blue eggs	No
10	Leghorn	Large white eggs	YES

FIG. 1: TOP TEN MOST POPULAR VARIETIES OF BACKYARD CHICKENS



An Insider's Look Into Kosher Egg Laying

Due to STAR-K's longstanding close relationship with Kreider Farms and its chief operating officer **Tom Beachler**, and his son, director of egg operations **Ben Beachler**, we are fortunate to be able to glean some insights into a fascinating industry. Kreider is the largest egg producer in Pennsylvania and in the "top ten" of egg producers in all of the U.S.

Which is the primary breed Kreider uses for laying white eggs?

We exclusively use four Leghorn varieties – Hyline, DeKalb, Lohmann and H&N – with the same extensive breeding background, all of which produce white eggs.

How does Kreider maintain the purity of its Leghorns?

The birds used at commercial level to produce table eggs are a cross of 4 pure lines – A, B, C and D. The *purelines* are always reproduced within the same line, so AxA, BxB and so forth. A *crossline* bird performs better than the average of two parental purelines. The four-way cross – AxB + CxD – is necessary to achieve hybrid vigor, or *heterosis*. In heterosis, the offspring of genetically distinct parents exhibit superior traits, such as increased size, fertility and yield.

At what age do the hens arrive at the Kreider Egg Farm?

They arrive at the hatchery when they are a few days old and are sent to a pullet house where they are raised until they reach 18 weeks. At that point, they are mature enough to lay eggs.

How long do the hens produce eggs?

Typically, 80 weeks. However, with a careful diet and a healthy environment, we can extend their egg-laying capability to 100 weeks.

We know Kreider puts great effort into keeping their cows happy. How do you keep chickens happy?

Chickens are happiest in a dim light, which they find the most soothing. Our chicken coops, which can house upwards of 100,000 birds, are designed to receive 16 hours of controlled daylight per day, after which the lights are

dimmed. While light triggers egg laying, if the lights are too bright, the chickens become aggressive and start pecking each other.

What is the difference between cage-free and free-range?

We have both cage-free and free-range chickens and there are important distinctions between the two. *Cage-free* birds are free to roam but remain within the henhouse enclosure. They have nests on perches which is where they go when they are ready to lay eggs. *Free-range* chickens wander outside, but that makes them more susceptible to avian flu, which is airborne. Obviously, we find it is more advantageous to house our chickens indoors to prevent them from being exposed to this deadly virus.

Some Kreider chickens are white and some are brown. What are their differences?

Our white chickens are Leghorns and the brown ones are Rhode Island Reds. Their earlobes indicate the color of their eggs – the brown ones lay brown eggs and the white ones lay white eggs. We need to keep them separated for their own good; when they are together, they start exhibiting aggressive behaviors which often lead to serious injury, or worse.

Do you ever experiment with different breeds of chickens, or do you stick to the basic rule of "if it ain't broke, don't fix it"?

The gene pool is a closed nucleus to avoid the introduction of any foreign genetic material. Genetic variability is maintained through a permanent mating regime to avoid inbreeding matings. We are passionate about maintaining the genetic purity of each line. ☆



SILKIE



COCHIN



EASTER EGGER



BRAHMA



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A gas grill with a *blech* would be permitted for use on Shabbos similar to the way we use an oven. The knobs should be covered and a *blech* placed over the fire. The gas may not be adjusted or turned on or off on Shabbos, and all the food must be placed on the grill before Shabbos. Food may not be placed on the grill on Shabbos.¹⁴

YOM TOV GRILLIN'

Since cooking and grilling are permitted on Yom Tov for *ochel nefesh* (food preparation), a grill may be used, but only as follows:

- The grill – whether charcoal or gas – may be lit from a pre-existing flame; an electric igniter may not be used.
- A gas burner may be adjusted on Yom Tov as needed for food preparation, but one may lower the flame only for the food's benefit (i.e., to prevent food from burning).
- Vents may be adjusted as needed, again, for the food's benefit.
- One may not turn off or extinguish the flame completely.

Using electric or electronic grills or smokers is not feasible since some are quite complex and adjusting them can create a new fire.

RUBS, SAUCES AND MARINADES

With the rising popularity of grilling and smoking, even though it's likely that all you need is salt, pepper and garlic powder, there is an ever-expanding universe of rubs, sauces and marinades claiming to be the perfect accompaniment to our favorite meats. These products present all kinds of kashrus issues.

All rubs, sauces and marinades require reliable kosher certification. These are heated during the production process on equipment that might be shared with non-kosher items. Additionally, they may contain dairy, meat, fish or other sensitive ingredients.

Spice blends are no different, as they often contain problematic ingredients or are made on equipment which pose a kashrus issue. In addition, even though they may be from a brand that also produces kosher products, they might actually be treif. Consumers must always check for a reliable kosher symbol on these products.

CONDIMENTS WITH FISH

Even kosher certified sauces may contain fish. As mentioned above, one should not cook meat and fish together. This is true even if there is sixty times as much meat as there is fish, or sixty times as much fish as there is meat.

This halacha applies to the use of Worcestershire sauce, which contains fish. If the rest of the ingredients in the sauce are sixty times as much as the fish – so that the fish is *batul* before cooking with meat – then the sauce may be cooked and eaten with meat. If this is not the case, the sauce may not be used with meat. Sauces that are marked "Fish" beside the kosher symbol indicate that the fish is not *batul*.

You are now all set to fire up your barbecue. Happy grillin'!

¹⁴ It may be prudent to install an automatic gas shutoff timer to extinguish the grill after it is no longer needed. These are commonly available online and in BBQ specialty stores and come either with a one- or three-hour automatic shutoff.

A Scientific Insight into the Cooking Methods of Korbanos

The Korban Pesach, as noted in the article, involved roasting the meat of a young animal, which produced an appealing smell. Not so for an *ayil nazir* – which had to be at least a year old and have signs of maturity (*Zevachim* 69b) – and so had to be cooked in water instead. What accounts for these differences in cooking methods?

The distinctive and at times unpleasant odor of mutton (older lamb and goat) when grilled is the product of a set of volatile branched-chain fatty acids and related compounds that increase as sheep age. By contrast, these compounds are present in very low amounts in young lambs or kid goats.

Here are the key molecules responsible:

4-methyloctanoic acid (4-MOA) and 4-methylnonanoic acid (4-MNA): The primary contributors to the meat's "barnyard" or "gamey" smell. They form in the fat tissue of older sheep through microbial and enzymatic metabolism of branched-chain amino acids (particularly leucine and isoleucine).

3-methylnonanoic acid (3-MNA) and related compounds: Similar in structure to 4-MOA and 4-MNA. They add to the musky, waxy odor.

Skatole (3-methylindole) and Indole: Produced in the rumen and intestines from tryptophan breakdown. These accumulate in the fat of older ruminants and intensify with age and certain diets (especially high-fiber pasture).

Phenolic and sulfur-containing volatiles: These can develop during grilling as these fatty acids and indoles break down or oxidize, amplifying the sharp, rancid or "lanolin-like" notes characteristic of mutton fat.

Yearling lambs and young goats have much lower levels of these compounds because their fat metabolism and rumen microflora are not yet fully mature. Their fat contains more shorter-chain and unsaturated fatty acids which produce a sweet, mild aroma when grilled instead of a strong "muttony" odor.

This explains why the *korban Pesach* had to be roasted and the *ayil nazir* had to be cooked in water. ☆

The author is indebted to Dr. Shalom Kelman of Baltimore for pointing out the science behind the appealing aroma produced when roasting a young lamb versus the unpleasant odor when cooking mutton.

INDUSTRIAL PRODUCTS

Refer to letter of certification

AL SALEM CONVERSION

United Arab Emirates
ALUMINUM PRODUCTS

AZAI EZ DATTES

Tunisia
DRIED FRUIT

BARDISAN HOLDINGS

Cheyenne, WY
POPCORN

BENMOUSSA DATTES

Tunisia
DRIED FRUIT

CARMI FLAVOR AND FRAGRANCE

Commerce, CA
FLAVORS & EXTRACTS

CELLUTECH PHARMA

India
CELLULOSE

CEYLON EXPORTS & TRADING

Sri Lanka
COCONUT PRODUCTS

CHENDAYAD GRANITES

India
HERBAL EXTRACTS

CORVEXXE

Springboro, OH
DETERGENTS & CLEANSERS

DANGSHAN XUXING FOOD

China
CANNED FRUIT

EMERALD GREEN TECHNOLOGY

Eldersburg, MD
FLAVORS & EXTRACTS

ENCAPSCIFI LIFESCIENCES

India
VITAMIN COMPONENTS

ENOVATE BIOLIFE

India
HERBAL EXTRACTS

FIL INDUSTRIES

India
JUICE & JUICE CONCENTRATES

GHANTOUS WALEED BROTHER

Israel
ALUMINUM PRODUCTS

HEBEI FENGCHU FOOD

China
SWEETENERS

HEBEI ZHONGHENG FOOD

China
COCOA PRODUCTS

HEBEI ZHONGLI FOOD

China
NUTS AND SEEDS

HENAN MEIKANG FOOD

China
CANNED VEGETABLES

HENAN SIWEI BIOTECH

China
LECITHIN

HOTI HIMALAYAN SALT

Pakistan
SALT PRODUCTS

INNOVATIVE NATURE PICKS

India
PICKLED PRODUCTS

JDW SUGAR MILLS

Pakistan
ETHANOL

JIANGSU BAOSHENG LONGCHENG PHARMA

China
AMINO ACID

KINGS DEHYDRATED FOODS

India
DEHYDRATED VEGETABLES

NAVIN FLUORINE INTL

India
INDUSTRIAL CHEMICALS

OASIS DATE PROCESSING

Yuma, AZ
DRIED FRUIT

OMILCO EXPORT

Sri Lanka
COCONUT PRODUCTS

PREMIER SOLVENTS

India
INDUSTRIAL CHEMICALS

PRO NATURA GMBH

Germany
NUTRACEUTICALS

QIAN SHENG (NINGBO) TECH

China
PROBIOTICS

QINHUANGDAO SHUANGYU FOOD MFG

China
FROZEN VEGETABLES

SANA TRADERS

Pakistan
SALT PRODUCTS

SANCT CORP

Japan
AMINO ACID

SHAANXI TIANBEN KANGYUAN BIOTECH

China
HERBAL EXTRACTS

SHANDONG HUIGUANG TECH

China
CELLULOSE

SHANDONG JIUFANG BIOTECH

China
VEGETABLE PEPTONE

SHEIKHOO SUGAR MILL

Pakistan
ETHANOL

SINO-EURO BIOTECH FOOD

China
BAKERY ADDITIVES

ST VALANTINE DC FACTORY

Sri Lanka
COCONUT PRODUCTS

SUNNY HOUSEHOLD ESSENTIALS

Thailand
PACKAGING MATERIALS

SUZHOU KEHAN FOOD

China
CANNED FRUIT

TAIXING SHILONG BIOLOGICAL

China
HERBAL EXTRACTS

TIANJIN TIANCHENG NEW MATERIAL

China
GLYCERINE

WUDI LVQI BIOLOGICAL

China
NUTRITIONAL COMPONENTS

XINXIANG XIANFENG PHARMA

China
INDUSTRIAL CHEMICALS

YOJANA LIFESCIENCE

India
INDUSTRIAL CHEMICALS



INDUSTRIAL PRODUCTS

Refer to letter of certification

GF FERMENTECH

South Korea
VITAMIN COMPONENTS

SHENZHEN READLINE BIOTECH

China
AMINO ACID

CONSUMER PRODUCTS

Only when bearing STAR-D symbol

LIVE KAIZEN

Sacramento, CA
GLUTEN-FREE PRODUCTS

MIXED NUTS

Pico Rivera, CA
DRIED FRUIT | NUTS & SEEDS

VENCHI

Italy
CHOCOLATE

CONSUMER PRODUCTS

Certified when bearing STAR-K symbol or meet conditions in letter of certification

AZAI EZ DATTES

Tunisia
DRIED FRUIT

BENMOUSSA DATTES

Tunisia
DATES

CAFFE UMBRIA

Seattle, WA
COFFEES

FRESHSTATE

Denver, CO
TEAS

LANCASTER KOSHER CATERING

Lancaster, PA
CATERER

MAC SPECIALTY FOODS

Staten Island, NY
SAUCES & DIPS

OASIS DATE PROCESSING

Yuma, AZ
DRIED FRUIT

OLD SCHOOL SNACKS

Cairnbrook, PA
SNACK FOODS

SAZERAC COMPANY

Louisville, KY
ALCOHOLIC BEVERAGES

SINCEREAL FRANCE

France
BREAKFAST CEREALS

TARAZI SPECIALTY FOODS

Chino, CA
GLUTEN-FREE PRODUCTS | TEHINA

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STAR-K Participates at International Kashrus Event

At this year's Association of Kashrus Organizations (AKO) convention in Yerushalayim, which was dedicated to the memory of Rabbi Zecharia Senter, OU CEO Rabbi Menachem Genack was honored for his forty-plus years of leadership. STAR-K Kashrus Administrator **Rabbi Dovid Heber** (left) spoke on behalf of STAR-K and shared his personal recollections of Rabbi Senter and his relationship with Rabbi Genack over the years, followed by a shiur on *zmanim* when flying. STAR-K Kashrus Administrator **Rabbi Sholom Tendler** (right) delivered updates on *bedikas tolayim* and *yoshon*.



STAR-K KOSHER CERTIFICATION

A non-profit agency representing the kosher consumer in promoting kashrus through education, research and supervision

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STAR-K SABBATH MODE OVEN NOTICE

The Sabbath Mode feature on ovens does not permit cooking or reheating food on Shabbos.

Download the **STAR-K Guide to Using Ovens on Shabbos** at star-k.org/ovenguide or scan the QR code at the right.



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