



Amaz!n™ Plums

SUNSWEET  
INGREDIENTS

## Formulating Premium Burgers, Meatballs and Sausages

**Learn how new whole food ingredients can assist with making better-tasting, better-for-you formed meats**

**There's** no doubt that the comminuted and formed meat sector has been given new life. Meat processors are embracing innovation and exploring opportunities to create flavorful, premium products made with simple, easy-to-understand ingredients.

Once considered an outlet for meat scraps and a means to preserve meat, sausages have evolved into culinary creations. The same is true for meatballs, which are being retooled as appetizers and entrees, not just spaghetti toppers. These prepared meat products mirror the trend in burgers, which has more chefs experimenting with blending in mushrooms to reduce the total amount of meat in each patty.

What all of these new forms of classic foods have in common is an innovative mix of better-for-you whole food ingredients. It's the result of consumers' growing appetite for higher-quality processed protein

that began more than a decade ago when the first chicken-apple sausages debuted in the retail sector. Meat processors found a market for sausages that were lower in sodium and fat but high in flavor. They continue to embrace this opportunity and the market shows us that their creativity is infinite.

"Sausages don't have to be only an outlet for inferior meats that get mixed with fillers and nitrates," says Lance Appelbaum, founder and owner of Fossil Farms, Boonton, N.J. "I believe sausages are a great way to introduce consumers to new meats and new flavors. It's not hard to make a great-tasting sausage. What makes the product good is the ingredients you use."

The Washington, D.C.-based National Restaurant Association annually surveys around 1,300 professional chefs on food and beverage trends.



## House-made sausages made the National Restaurant Association's top-20 hottest food trends for 2017.

Among the National Restaurant Association's ranking of the top-20 hottest food trends overall for 2017, sausages ranked twelfth. Within the protein category, it's third, right after new cuts of meat and sustainable seafood. Gourmet burgers continue to have momentum, according to the survey. Menu trends that are cooling down include vegetarian and vegan cuisines, while concept trends centered on local, clean and sustainability are growing in popularity. Overall, the results of the survey indicate that chefs are continuing to experiment with a broad base of flavors and from-scratch preparations.

When it comes to sausages, meatballs and burgers, there are flavor and texture advantages to exploring the addition of non-meat ingredients, but there are many variables to consider, too. The pH of the ingredients must be taken into account. Changes in acidity can impact color, flavor and texture. For example, if the ingredients added are highly acidic, they may drop the pH of the meat matrix. This could reduce cook yields due to diminished water-holding capacity. Lower pH can also cause textural issues. This is because when meat gets comminuted, formed and cooked, the goal is to denature the protein because that is what gives the meat its cooked texture and water-holding capacity. However, if the protein

denatures too quickly due to a rapid drop in pH, it will decrease the functionality of the protein, causing the meat matrix to crumble or not retain its desired form.

Yet while some ingredients can adversely impact the texture of formed meat products, others can enhance it. While using puree from prune plums has been shown to increase the flavor and juiciness of sausages, Sunsweet Ingredients has also found that other prune plum ingredients can assist in the development of a variety of better-for-you formed meats.

For starters, because prune plum ingredients are used in small, yet high-effective quantities, they do not dramatically change the pH of the protein. Approximately 50% of the weight of a dried prune plum is sugar, yet unlike most dried fruit, much of that sugar is sorbitol—a sugar alcohol—that acts as a humectant. This attribute is one of the reasons that prune plum ingredients can attract and hold moisture in meat and poultry, in particular in burgers, meatballs and sausages. They also contain fiber, which absorbs moisture, holding it in place. This makes them clean-label alternatives to phosphates, the traditional moisture-binding ingredients.

Prune plum ingredients are a concentrated source of antioxidant phenolic compounds, which help prevent the formation of warmed-over flavor in meat and poultry. This is paramount for heat-and-eat products as well as formed meats kept in warming trays or under heat lamps, such as those encountered in foodservice. In raw proteins, the high levels of antioxidants can lengthen the display life by maintaining desirable color and slowing the growth of spoilage microorganisms. In some instances, the rich color of prune plum ingredients eliminates the need for formulators to use caramel color or other artificial additives to enhance appearance.

Prune plum ingredients have also been shown to accentuate flavor in meat and poultry preparations, allowing for lower salt and sugar levels. This heightened taste level makes it possible for formulators to cut back on total herbs and spices, possibly reducing cost without lowering impact. Prune plum ingredients especially complement the hot and spicy trend currently driving product innovation. They have the ability to round out flavors while enhancing other herbs and spices so it's not only heat that is tasted.

Processors recognize that prune plum ingredients are a whole food, clean-label tool to assist in the formulation of next-generation burgers, meatballs and sausages. Depending on the application, the ingredient and the usage level, Sunsweet Ingredients may enhance the flavors, appearance, shelf life, nutrition profile and overall taste experience.



### **Dried Plum Puree**

Made from a blend of dried plums and prune juice concentrate, this puree is high in sorbitol, a natural humectant, and has a tangy flavor similar to molasses. When used in sausage formulas, dried plum puree lowers drip loss while imparting rich mouthfeel. Its high level of antioxidants also suppresses lipid oxidation. The suggested usage levels for moisture binding in sausages is between 1% and 3% of the weight of the meat.

Sorbitol: 14.73%

Fiber: 4.53% soluble; 1.17% insoluble

pH: 3.7-4.2



### **Fresh Plum Concentrate**

Made from the juice of fresh prune plums, fresh plum concentrate can be used in ground meat and poultry items for moisture binding. It is especially good for lighter-colored foods, such as chicken sausages. Its high level of antioxidants suppresses lipid oxidation, helping to extend display life and prevent the formation of off flavors. The suggested usage levels for moisture binding is between 0.5% and 1.1% of the weight of the meat.

Sorbitol: 14.42%

Fiber: 1.54% soluble; 0.23% insoluble

pH: 3.4-3.9



### **Dried Plum Powder**

Ground from whole prunes, this deep, reddish-brown plum powder is hygroscopic and slightly tacky to the touch. In meat and poultry, it looks like ground black pepper. It also has the capacity to enhance flavors without imparting much of its own flavor. The powder retains moisture and absorbs purge. When used in ground meat products, it also enhances caramelization while staving off lipid oxidation. Use up to 0.5% of the weight of the meat.

Sorbitol: 17.65%

Fiber: 7.3% soluble; 4.5% insoluble





## Q&A: Culinary Insight

**Learn how prune plum ingredients contribute nutrition and function to comminuted and formed meats, including burgers, meatballs and sausages.**



**Chef Rick Perez**

**Developing new burgers, meatballs and sausages to meet the needs of today's flavor-adventure-seeking health and wellness consumer is more of an art than a science, according to Rick Perez, research and development chef and spokesperson for Sunsweet Growers Inc., Yuba City, Calif. *Meat+Poultry* spoke with Chef Perez to better understand how prune plum ingredients can assist with formulating next-generation comminuted and formed meats.**

***Meat+Poultry:*** What differentiates Sunsweet's ingredients from other products in the marketplace?

**Chef Rick Perez:** Our ingredients are derived from the French D'Agen prune plum variety. They are farmed, harvested and processed using proprietary technology to produce an array of non-GMO ingredients. Our Amaz!n™ Plums are distinguished from common table plums by their high levels of natural sorbitol, desirable acids, fiber and antioxidants. Eaten fresh or dried, they are among the world's healthiest foods. At the same time, their rich flavor, deep color, smooth texture and bright acidity inspire a range of culinary applications, including burgers, meatballs and sausages. That's why we call our plums nature's richest fruit. We recognize their exceptional levels of flavor, nutritional components and antioxidant phenolic compounds (up to 150 milligrams per 100 grams). What also differentiates our ingredients is the variety

we provide. By processing prune plums into juice concentrates, powders and purees, we turn this rich fruit into a hard-working ingredient for any foodservice or research and development kitchen.

***M+P:*** How do prune plum ingredients allow for the removal of phosphates in comminuted and formed meat products?

**RP:** Prune plums can be used as an alternative to phosphates in meat and poultry processing. The probable cause is the unique chemical compositions of prune plums, which have high levels of sorbitol and fiber. As a humectant, sorbitol attracts moisture. Meanwhile, fiber absorbs moisture, holding it in place. Prune plums also do not dramatically change the pH of the protein, which can also impact moisture binding. Removing phosphates from an ingredient statement and adding prune plums helps clean up the label. Consumers know



## Mushroom-Beef Blended Burgers with Prune Plums

The combination of ground beef blended with mushrooms yields a heart-healthy variation on the classic American burger. Adding approximately 2% of dried plum puree helps bind the meat to the mushrooms, ensuring the patty stays juicy and caramelizes evenly. Because the puree also staves off warmed-over flavor, the patties can be cooked and rewarmed without reduction in flavor and aroma. They can also be formed and refrigerated a few days before cooking.

what prune plums are, while many are not sure about phosphates.

**M+P:** How do you add prune plums to sausages?

**RP:** Dried plum puree works best and it gets added directly into the meat matrix prior to encasement. It aids in moisture binding and emulsification when utilized at 1.5% to the weight of the meat block. A higher percentage (up to 3%) may be preferred for leaner sausages. For light-colored sausages, use fresh plum concentrate in place of the puree. For sausages that have a high percentage of fat, use 0.75% dried plum powder with 1% fresh plum concentrate. The powder helps absorb more moisture while imparting flecks resembling black pepper.

**M+P:** How do you add prune plums to ground meat, like that used to make burgers, meatballs and even meatloaf?

**RP:** Prune plums keep ground meat products juicy while lowering the incidence of warmed-over flavor and enhancing browning. In this way, they can replace caramel color, which helps clean up ingredient statements. For a cooked, lean patty (10% fat), use 0.75% dried plum powder to the weight of the meat block. For a cooked, regular patty (20% fat), use 0.5%. About the same amount can be used in uncooked patties intended for the consumer to prepare at home. Here the dried plum powder not only holds water and keeps it in place during grilling, baking or stove-top cooking, the powder also gives the raw meat a speckled appearance suggestive of seasoned ground meat.

**M+P:** How do prune plums assist with extending product shelf life?



**RP:** Lipid oxidation is the major cause of quality deterioration in meat and poultry products, especially those that are fully cooked. When the unsaturated fatty acids in meat oxidize, they develop warmed-over flavor. Exposure to air and light are the main causes of lipid oxidation, but iron and salt can trigger it as well. While lipid oxidation can occur before or after meat is cooked, its presence is most noticeable after reheating cooked meat. Meat with a greater amount of unsaturated fat, such as poultry and pork, is more susceptible to warmed-over flavor than beef or lamb. Synthetic agents, such as butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT), suppress warmed-over flavor. However, antioxidants also prevent the development of off flavors. Studies have shown that the high levels of antioxidant phenolic compounds in prune plums—mainly neochlorogenic and chlorogenic acids—suppress the formation of warmed-over flavor.

## Creative Condiments Add a Layer of Flavor

Today's consumers crave flavor adventure while also being mindful of nutrition. One of the easiest ways for culinary professionals to address consumer demand for variety is with sauces.

The same meatball recipe can travel the world when served with a different cooking sauce. Go to Tuscany with heavily seasoned marinara and then to Southeast Asia with masala. Along the way, explore the many variations of U.S. barbecue. The Carolinas skew tangy and spicy with the generous use of vinegar along with cayenne, black pepper, crushed red pepper, hot sauce and yellow mustard. In contrast, St. Louis barbecue tends to be quite sweet with a bit of acid because its tomato base is blended with apple cider vinegar, onion, garlic and honey. Kansas City barbecue uses a similar base but adds more layers of flavor with smoke and molasses. Meanwhile, Texans favor spice and heat, with just a hint of sweetness. Here you will find sauces made with tomato and vinegar seasoned with an array of chiles, onions or garlic, and Worcestershire.

Sausages and burgers, too, become an entirely different menu item through the use of flavorful condiments and toppings, such as fruit chutneys and mole. Latin America-centric condiments emphasize chiles and cilantro, while in Asia toppings are often based on soy sauce, with sesame, ginger and sugar.

Manufacturers of cooking and condiment sauces have become very aggressive in exploring global cuisines, using authentic ingredients to deliver robust flavors and textures. Many have also



started considering consumers' desires to make better-for-you dietary choices, such as sauces with lower sodium and sugar contents.

Sunsweet Ingredients improve the healthfulness of all types of sauces. A number of prune plum ingredients have been shown to enhance existing natural flavors, allowing for lower salt and sugar levels in sauce formulation. In many cases, their rich color and sheen also eliminates the need for formulators to use caramel color or other artificial additives to enhance appearance.

Rick Perez, research and development chef and spokesperson for Sunsweet Growers Inc., Yuba City, Calif., and his team developed a number of no-added-sugar sauces ranging from a marinara with 2% prune plum ingredients to a barbecue sauce with more than 25% prune plum ingredients, with variations in between. It all works because of the prune plum's acidity, richness and well-rounded sweetness.

## About Sunsweet Ingredients

Sunsweet Ingredients are produced by Sunsweet Growers Inc., a grower-owned cooperative founded in the valleys of Northern California in 1917. Headquartered in Yuba City, Calif., Sunsweet has evolved into a global company with wide international distribution of branded retail products and dispersed production operations in California, Chile and Argentina. All of the processing takes place at the company's 22-acre factory in Yuba City, which is the largest dried plum processing facility in the world.

Even after 100 years in business, the core of Sunsweet's mission has always been the same: to

provide consumers great eating experiences and good health. The practices of Sunsweet's growers ensure the best flavor, nutrient levels and consistency in the industry.

**For more information about Sunsweet Ingredients, visit [SunsweetIngredients.com](https://SunsweetIngredients.com).**



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