Rediscovering Ingredients of Antiquity

What is old—we may be talking millennia here—frequently becomes new again. This paradox is especially true for ingredients, as is made evident by their unfolding story throughout the past centuries and I would think throughout all the years yet to come.

There are several reasons for this. What is a hot trend today can easily help reinvigorate an ingredient once favored by a past civilization long ago. In a current world with rising obesity and diabetes problems, some of these “old” ingredients may provide new solutions or at least help to change the way we traditionally think about our dietary practices as well as the strategies employed to meet these challenges in food formulating.

In the present economy, some of these ingredients may have cost-effective advantages over other alternatives—either because they may be cheaper to begin with or using them can cut down costs in other areas of manufacture. Some, due to technological advancements, may offer improved functionality and taste over some of their ancestors. And some, having already withstood the test of time, just seem better able to adapt and meet present needs (sometimes with a few necessary modifications, of course).

How we use most, if not all, ingredients is probably evolutionary in nature (rather than revolutionary) and as such the directions they take in food formulating will be shaped by several factors. This is especially true for “ingredients of antiquity” not only because they have been around much longer, but because I think they show by their inherent qualities that no ingredient is necessarily good or bad. To see this, let’s take a quick look at two ingredient examples and the directions that they are taking.

Today, with diabetes on the rise, some individuals have to restrict their carbohydrate intake, which frequently means avoiding refined grains. However, whole grains are presenting a healthier alternative, and can be applied to other areas such as weight management. Resistant starches that can provide a number of health benefits also have been developed. And today, diabetes-friendly products, such as pasta, baked goods, and candies, are becoming more and more available, reportedly offering a taste and functionality that has not been compromised.

Salt and its role today is another interesting example as we turn the pages of history. While there is an increasing focus on the reduction of sodium chloride, it still plays an important role in taste and functionality, and it would be impossible to imagine its elimination as an ingredient. I think salt alternatives are only reinforcing this fact. Sea salt may offer a lower-sodium alternative primarily because of its coarser grind. Many salt blends reduce sodium by 25 to 50%, which still allows sodium to provide its essential functionality. As in the case of grains, salt has evolved to meet the needs of the present and by adapting, demonstrates its importance from a number of perspectives. If you’re intent on vilifying any one ingredient, then you’re likely missing the ongoing

Food developers—by being part historian, part formulator, and part discoverer—can use these “ingredients of antiquity” to charter a number of new back-to-the-future courses.

Understanding ‘old’ ingredients such as whole grains, berries, salt, spices, and cheese, to name a few, can make possible the writing of new chapters in the evolving history of food formulating.

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Rediscovering Ingredients of Antiquity continued...

The addition of new flavors to the traditional oil/vinegar mix is reviving the classic dressing, reported Mintel Menu Insights. Providing this new makeover are such emerging vinaigrette offerings as tamarind, black walnut, cranberry, salsa, shallot, and ginger.

New research is also looking at the potential benefits that vinegar may provide in the area of health. For example, a study published in the Journal of Food Science looked at the way saltiness and acidity interacts in low concentrations. Japanese researchers found that the threshold level of salt detection was reduced significantly when vinegar was added to a salt solution at half the concentration of the detection threshold of each panelist. The study showed that the addition of vinegar to salt intensified the salty taste, which may enable food manufacturers to cut the salt content without affecting taste.

V for Vinegar

Vinegar was discovered more than 10,000 years ago, probably when some wine went sour. Past civilizations quickly learned of vinegar’s versatility. Around 5,000 B.C., the Babylonians used it as a preservative and a condiment. Roman soldiers drank it as a beverage. The Greeks pickled meats and vegetables with vinegar. And Biblical references emphasized its healing properties.

Through the process of fermentation, vinegar was made from a number of other materials, as well, ranging from dates to grains. According to The Vinegar Institute, the vinegar produced and used today is much like the product of years past, but with newly discovered flavors and uses. The mainstays of the category—white distilled, cider, wine, and malt have now been joined by balsamic, rice, rice wine, raspberry, pineapple, chardonnay, flavored, and seasoned vinegars.

Over the next few pages of this article, you may feel—at times—like you’re attending an old-fashioned revival meeting. Any hallelujahs you feel like uttering are purely optional, of course, but certainly the spirit may be willing when you consider the impact that these ingredients can have on product formulation. Food developers—by being part historian, part formulator, and part discoverer—can use these “ingredients of antiquity” to charter a number of new back-to-the-future courses.

This article will look at—and ideally put into a proper context—several of these ingredients, including whole grains, berries, tea, spices, salt, vinegar, almonds, cheese, sugar, eggs, and mushrooms. Naturally, we cannot look at every ingredient that has its origins in the far past—otherwise this article could easily turn into a book and a book with several volumes at that.

But hopefully the examples selected will show how important these ingredients are and the continuing role they play in food formulating. And especially worth noting, from the mists of antiquity these ingredients may prove useful in addressing some very relevant challenges in today’s food formulating—both from functionality and health perspectives.

So let’s now go back into time and perhaps in the process get a better look at the future of food formulating.

Grains of Time

Grains were the gift of the gods—a belief once shared by many different cultures from around the world. According to the Whole Grains Bureau, more than 10,500 years ago, people started to cultivate weeds and grasses in fertile regions of the Middle East, producing what we now know mainly as wheat and barley. About 1,000 years later, in China, rice and millet were cultivated from wild grasses. During this period in Central America, corn was the main crop cultivated. And while many of the ancient civilizations eventually disappeared, they clearly left behind an important legacy.

In recent years, the growing popularity of whole grains has opened up opportunities for more novel, flavorful, and lesser-known types of grains. Datamonitor reported that in 2007 more than 500 new food and beverage products were introduced worldwide featuring quinoa, spelt, kamut, amaranth, chia, and other what might be termed “ancient grains” because they were used—and favored—by civilizations thousands of years ago.
of years ago. This statistic is said to represent a five-fold increase over those introduced in 2004, possibly reflecting consumer interest in less-processed foods and the subsequent health benefits of these grains.

An interest in developing gluten-free flours made with these grains is especially helping to fuel this trend along. And the current economy has not stilled this progress, as evidenced by the number of recent whole-grain developments launched by ingredient companies.

For example, a line of flours (amaranth, millet, quinoa, sorghum, and teff), multigrain blends, and whole-grain blends with sunflower and flaxseed inclusions was introduced in 2007 by ConAgra Mills, Omaha, Neb. (phone 800-851-9618, www.conagramills.com). Appropriately named Ancient Grains, this product line offers a consistent, reliable, high-quality supply of specialty grains that in recent times have been underutilized in Western nations because of sourcing difficulties and other challenges. Since the product’s launch, the company has demonstrated a number of ways that these grains, a rich source of fiber and other phytonutrients, can help improve nutritional profiles without compromising quality.

At the 2009 IFT Food Expo, Ancient Grains provided a nutritious and tasty base to a decadent, nine-grain pasta dish prototype, Lobster Mac. Also, a proprietary blend of Ancient Grains and tapioca starch, Eagle Mills® Gluten-Free All-Purpose Multigrain Flour, was used to produce prototype gluten-free pan breads and muffins (and is suitable for tortillas, snacks, coatings, and extruded cereals). Developed for consumers with celiac disease and other gluten sensitivities, the new product provides optimal functionality with whole-grain nutritional benefits. Sensory tests indicate that products made with the flour have desirable taste, texture, and appearance—qualities that were frequently lacking in previous gluten-free products.

Two new blends from Briess Malt & Ingredients Co., Chilton, Wis. (phone 920-849-7711, www.briess.com), offer food manufacturers an easy way to incorporate multigrains into a variety of baked and extruded foods. BriessBlend™ Whole Grain Fine consists of fine particles of wheat, brown rice, oats, barley, and rye, making it suitable for use in sheeted crackers, tortillas, and snack foods. BriessBlend™ Multigrain has larger particles of soft red wheat, rye, triticale, and pearled barley, providing particle identity to baked goods, crackers, snack foods, and other products. Both products are blends of reduced-cook-time ingredients that require no soak or precooking, and can be incorporated directly into the dough. Custom blends can also be developed depending on the customer’s need.

Oats was probably one of the first grains to benefit from the whole-grain renaissance in food formulating. For more than 2000 years, oats were part of the staple diet for human consumption, but in the 19th century they were gradually supplanted by alternative cereals and potatoes and some less knowledgeable types began to associate them with feed. Today, however, oat-based ingredients have been shown to reduce cholesterol, moderate blood glucose and insulin levels, and support better weight control. For example, OatWell® oat bran from Oat Ingredients, Boulder, Colo. (phone 303-818-1117, www.oatwell.com), is a source of both soluble and insoluble fibers with prebiotic properties. It may be used in formulating bars, breakfast mueslis and ready-to-eat cereals, pasta, crackers, cookies, and biscuits.

Companies such as Grain Millsers Inc., Eugene, Ore. (phone 541-687-8000, www.grainmills.com), are currently participating in efficacy studies on oat fiber—the findings of which may enhance claims that fiber can make in the future. The company offers a wide range of whole-grain ingredients, including oats, wheat, barley, and rye. These grains can be milled into flours, flakes, brans, and fibers, or be used to create customized solutions.

And ancient grains can also help enhance a product’s texture (which we will be looking at in next month’s Ingredients section). 21st Century Grain Processing, Kansas City, Mo. (phone 816-994-7600, www.21stcenturygrain.com), can provide a number of texture solutions, including Granola Oat Clusters, High-Protein Coated Mushrooms Deliver U-Blast

Mushrooms Deliver U-Blast

Many of the ancient peoples believed that mushrooms could lead the soul to the realm of the gods. The pharaohs of Egypt decreed that mushrooms were the food of royalty and that no commoner could ever touch them. Civilizations in Mexico and Latin America, Greece, China, and Russia all practiced mushroom rituals.

This affinity for mushrooms, a fungi, probably had something to do with the fact that they are rich in umami. History indicates that people have been aware of umami’s characteristics for thousands of years, although it was only in 2000 that researchers actually confirmed its existence. Sometimes referred to as the “fifth taste,” umami can be described as the taste of many different amino acids (the building blocks of protein) and is characterized as a rich, mouth-filling, meaty, and savory flavor that helps enhance overall taste as well as qualities of aroma and mouthfeel.

Mushrooms in any form—raw, sautéed, sliced, or whole—can add a substantial umami lift to foods. According to the Mushroom Council, foods that are already high in basic umami can also get a flavor boost through either cooking or enzymatic action. Consequently, sautéed mushrooms have more umami taste than raw mushrooms. An increasing exploration of the concept of umami will likely create new opportunities for mushrooms.

Nutritionally, mushrooms are low in calories, are virtually free of fat and sodium, and provide essential minerals and vitamins. Recent studies suggest that mushrooms may be used as a meat alternative in dishes to reduce caloric intake, and that mushroom extracts demonstrate immunity benefits and show potential as a meat preservative.

A variety of specialty mushroom products, such as portabella, crimini, shitake, porcini, and others are available from Phillips Gourmet Inc., Kennett Square, Pa. (phone 610-925-0520, www.phillipsgourmet.com). They are available in a variety of forms including a new sautéed line (Chef’s Advantage).
Grain Clusters, and Coconut Almond Granola Clusters.

Ancient grains can also play a role in providing convenience and possibly cutting costs in terms of new product development. A line of specialty bread mixes from United Kingdom-based Puratos (phone 44 1280 822860, www.puratos.co.uk), has several new additions—all with 25% less salt. Puravita Ancient Grains consists of quinoa, teff, amaranth, and millet—four grains that are said to represent the highest quality of vitamins, minerals, and fiber. Puravita Acai contains the antioxidant-rich acai berry from South America for the creation of flavorful, better-for-you breads. Other mixes include Puravita Whole Grain (which delivers up to 16 g of whole grain in a 50-g serving size and is rich in B vitamins) and Puravita Omega-3 (which provides essential fatty acids that help develop the brain).

In particular, two ancient grains, chia and quinoa, have been emerging in recent months. SK Food Ingredients, Fargo, N.D. (phone 701-356-4106, www.skfood.com), recently added to its ingredient line identity-preserved white and black chia seed (also known as Salvia Hispanica L.) in organic and conventional non-GMO versions. While legend has it that the Mayans and Aztecs used these tiny seeds as an energy food for warriors, more modern civilizations probably became familiar with them through the launching of the Chia Pet back in the 1990s. Today, studies have shown that chia seeds have levels of omega-3s similar to flaxseed, are high in protein, calcium, and fiber, and are very easy to digest. Because of their neutral flavor, they can be incorporated into a variety of foods, such as baked goods, cereals, confections, and snack foods without affecting the overall taste.

Indian Harvest, Bemidji, Minn. (phone 800-346-7032, www.indian-harvest.com), a supplier of specialty grains and legumes to foodservice, recently created a vegetarian “slider” recipe that makes use of two ancient grains—Red Quinoa and Farro. From South America, Red Quinoa is capitalizing on U.S. diners’ increasing interest in white quinoa. It adds an earthy flavor, crunchy texture, and an impressive color, while providing protein that contains a nearly perfect balance of all eight essential amino acids. Quinoa has found its way into a variety of applications, including breakfast cereal, pasta, soups, and snacks. Also contained in the “slider” formulation is farro, an ancient strain of cultivated wheat from Italy. Best described as the heirloom version of spelt, this grain has a slightly nutty flavor that complements a variety of foods. The long grains are pearled, eliminating the need to soak, which reduces prep and cook times.

The developments discussed here suggest at least two important lessons. First, whole grains have seen major improvements, and products made with these grains do not have to compromise their taste and quality. Second, formulators are finding a variety of ways to incorporate whole grains into...
formulations to take advantage of their health benefits. One way might be to blend ancient grains with refined grains. Another way is to customize blends of different whole grains, taking advantage of the benefits of not one grain but nine grains, for example. Following these strategies, innovative formulations can be developed ranging from pastas designed specifically for diabetics to vegetarian dishes to Indian entrees combining exotic flavor with whole-grain benefits.

Passing of Salt?

For millennia, salt functioned as a preservative. It was harvested as early as 6000 B.C., ancient Egyptians used it as a funeral offering, and the Bible frequently made mention of it (“salt of the earth” probably being one of the most familiar references). As we entered modern times, salt played an important role in food processing, and today, it is still one of the most commonly used ingredients in the manufacture of food products. Furthermore, chefs from around the world have their favorite specialty salts to provide a distinguishing color, texture, and taste to their dishes—and trends such as the use of sea salt have crossed over from restaurant dining to processed foods.

From a functionality perspective, salt performs in a way that few other substances can duplicate. Not only does it provide a saline taste, but it plays an equally important role as a flavor modulator, suppressing undesirable taste attributes while rounding out and balancing flavors. In addition to taste, salt provides other essential functions in food processing. It is used as a preservative in meats, poultry, cheeses, and seafood, as well as shelf-stable sauces such as soy and hot pepper. It controls fermentation in products such as cheeses, dry sausages, yeast-leavened breads, pickles, sauerkraut, and olives. Salt strengthens gluten in dough, which provides the proper structure in bread. It is used in processed meats and poultry to extract protein, which aids in binding, contributes to emulsion stability, and enhances water-holding capacity. In the koshering process, salt is required to draw blood from meat or poultry tissue. And salt provides a necessary source of electrolytes in isotonic sports beverages as well as infant formulas.

The individual’s craving for saltiness—as well as the inexpensiveness of salt as an ingredient—has led to what many believe to be an overconsumption of salt in industrialized societies. The average American consumer reportedly ingests about 4,000 milligrams of sodium chloride each day (with an estimated 77% of the intake coming from processed and prepared foods). This is nearly twice the amount recommended by the U.S. Dept. of Agriculture. Studies have linked this excess salt to hypertension, cardiovascular disease, and other health problems. Mintel’s recent data show American consumers are starting to pay more attention to their sodium intake as more than half (52%) are monitoring the amount of it in their diets. Meanwhile, food
product introductions containing a low-, no-, or reduced-sodium claim have increased by nearly 115% from 2005 to 2008. According to Innova, in the U.S., new products with reduced-sodium claims doubled from 286 in 2007 to 584 in 2009.

One of the most recent products to take advantage of less salt is *Campbell’s Tomato Soup*. The addition of sea salt to the formulation has reduced sodium by 32% while maintaining the product’s traditional taste. Until now, the soup’s recipe remained largely unchanged from when it was first developed in 1897, with only slight modifications over the years. According to Campbell, sodium reduction is a strategic priority for the company, which in the past four years has reduced the sodium in more than 90 soups in the U.S., and has cut the sodium content in the majority of its *V8 juices*, *11 Pepperidge Farm 100% Natural Breads*, and *Prego Heart Smart Italian Sauces*.

As more consumers seek out reduced-sodium products, manufacturers are looking for ways to meet their consumer needs. Consequently, in recent years, many ingredient systems are being developed to reduce sodium-chloride intake.

“Despite the continued investigation into salt replacement, potassium chloride is still considered the best alternative to salt,” said Linda Kragt, Technical Services Manager, Morton Salt, Chicago, Ill. (phone 312-807-2513, www.mortonsalt.com). “Potassium chloride provides saltiness, but its metallic note limits its use as a total replacement for salt in food products. However, blending salt with potassium chloride can mask the off-taste sufficiently to ensure high consumer taste acceptance. Potassium chloride has similar physical properties to sodium chloride and can be used to increase ionic strength in lower-sodium formulations. In addition, potassium chloride is a concentrated source of potassium and can be used to enhance the potassium content of food products.”

Kragt added that Morton Salt is one of the food industry’s leaders in sodium reduction, conducting application research in many areas including processed meats and poultry, baked goods, cheese, pickles, and other products. The company began researching this issue in the early 1960s and in the following decade launched *Morton® Lite Salt® Mixture*, a 50:50 blend of salt and potassium chloride. The company also offers USP/FCC Potassium Chloride as well as *Potassium Chloride, Food Grade with a Conditioner*. The latter product contains magnesium carbonate to reduce the tendency for caking.

Cargill Salt, Wayzata, Minn. (phone 952-742-5978, www.cargill.com), recently expanded its portfolio of low-sodium solutions for food processors by adding *Premier™* potassium chloride. This granular, food-grade, odorless, white crystalline salt may be used to partially replace sodium chloride in food products, has a low water activity, and contains tricalcium phosphate as an anticaking agent. In addition to its use in low-sodium foods, it is suitable for ham and...
baking, cheeses, beverages, seasoning blends, bakery products, margarine, and frozen dough.

Another option from the Cargill portfolio is SaltWise® sodium reduction system. Sodium can be reduced by 25–50% while still delivering salty taste to processed meats, meals, soups, sauces, dressings, and salted snacks. The company also offers Alberger® Brand Flake Salt, a coarse topping flake salt for use in sodium reduction.

Wixon Inc., St. Francis, Wis. (phone 414-354-0200, www.wixon.com), developed a salt reduction product, KCLean™ Salt, which contains 50% less sodium than regular salt. “Through technology, Wixon combined sodium chloride with potassium chloride, but added unique proprietary ingredients that removed the bitter metallic after-taste while delivering the salty taste consumers enjoy,” said Mariano Gascon, the company’s Vice President of Research and Development. It can replace regular salt in any application and is being marketed to food processors, meat companies, snack food companies, healthcare facilities, foodservice companies, and others that want to lower the sodium levels in their foods.

The January 2010 Ingredients section will discuss advances in taste modification, and at that time a more complete roundup (or shall we say “shakeup”) of salt replacement systems will be provided.

It’s been sometimes said that salt may be “the next trans fat.” This seems unlikely for several reasons. First, salt’s functionality makes it a very difficult ingredient to replace. Second, as already mentioned in this introduction, although there is increasingly a focus on sodium reduction, sodium is still contained in these systems. That is because there is only so much that you can take out before the effectiveness of the product is compromised. Third, sea salt has become popular for a number of reasons—it provides the functionality of regular salt, appeals to some because it is unprocessed, and its coarse grind can reduce sodium content. According to Mark Zoske, CEO for SaltWorks, Inc., Woodinville, Wash. (phone 425-650-9876, www.seasalt.com), a supplier of gourmet salts, “Manufacturers of soups, chips, nuts, meat, and prepared foods are all beginning the switch to sea salt. I can see a day when refined salt is no longer accepted as an option for salting food.”

Salt continues to evolve. We may not use salt in our funeral offerings as the ancient Egyptians did. But we do use it as a flavoring ingredient or as an enhancer; as an important component in sodium-reducing alternatives; as an unrefined ingredient from the sea that can impact texture, flavor, and even health; and as a very versatile ingredient with special properties that can meet the needs of today’s formulator.

Fruits of Past Labors
Blueberries and cranberries are among the few fruits native to North America and played an important part in history. Berries, which can add color, texture, and flavor to a formulation, are especially being promoted for their antioxidant potential. 

Along with cranberries, blueberries are among the few fruits native to North America and played an important part in history. Berries, which can add color, texture, and flavor to a formulation, are especially being promoted for their antioxidant potential. 

Coconut water concentrate

Replace filler juices high in calories with nutritious coconut water - A 100% juice low in calories
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of the world (with origins shrouded in antiquity) but for the sake of discussion, this article will focus on the native berry and its involvement in American cultural history.

Blueberries (genus *Vaccinium*) were gathered from the forests and the bogs by native Americans and were consumed fresh or preserved. Dried blueberries could be added to stews, soups, and meats. They could also be crushed and used as a powdered flavoring. This powder, when combined with cornmeal, honey, and water, could make a pudding called “Sautauhtig.” Blueberries were also used for medicinal purposes with the juice serving to treat coughs. The colonists learned from the Native American how to use the blueberry, which became an important food source to be preserved and later canned.

Cranberries have a similar colorful history. The North American cranberry (*Vaccinium macrocarpon*) grew mostly in the Northeast but also in other parts such as Wisconsin and the Pacific Northwest, as well as Canada. The Pilgrims learned all about cranberries from the Native Americans, who recognized the natural preservative power in the berries and often mixed them into pemmican, a dried meat mixture, to extend its shelf life. Native Americans also believed in the medicinal properties of the berry as well. (Later, sailors would use cranberries as a source of vitamin C to prevent scurvy.) And legend, of course, has it that Pilgrims served cranberries at the first Thanksgiving. It wasn’t until the 1880s, however, that people began farming cranberries, eventually developing efficient harvesting methods including wet harvesting.

Not too surprising, blueberries and cranberries provide a number of functionality and health benefits, and both are characterized by their rich color.

Blueberries may be used to add sweetness, flavor, color, texture, and nutritional value to a variety of products, ranging from breakfast foods to sauces for savory items to desserts such as ice creams and baked goods. At the 2009 IFT Food Expo, the U.S. Highbush Blueberry Council (USHBC), Folsom, Calif. (phone 650-824-6395, www.blueberry.org), demonstrated the value of blueberries in “Whoopie Pie,” a sandwich-type pastry with two blueberry-studded cookies filled with a blueberry fluffy center. A range of blueberry formats can be used for the application including fresh, frozen, dehydrated, canned, and liquid.

In recent times, blueberries are promoted especially for their antioxidant potential, and with emerging research, this focus continues as strong as ever, according to information provided by USHBC. Also, at the 2009 Wild Blueberry Health Research Summit in Bar Harbor, Maine, leading scientists studying blueberries for their disease-fighting potential gathered to share current findings and advance collaborations into new areas. The Wild Blueberry Association of North America summarized the findings of several of these studies. In one study, “blueberries appear to act as both an antioxidant and anti-inflammatory agent providing a protective effect against cardiovascular disease.” Another study suggested that blueberries may have an anti-diabetic activity.

Cranberries are recognized for their bright red appearance, tangy taste, and versatility. Like their cousin, the blueberry, cranberries are becoming associated with a growing number of potential health benefits. In 2009, Ocean Spray Cranberries Ingredient Technology Group, Lakeville/Middleboro, Mass. (phone 508-946-1000, www.oceansprayitg.com), launched a new health marketing campaign for its cranberry ingredient portfolio. This campaign, “One Berry, Whole Body,” is said to promote a holistic view of the role of the North American cranberry in improving well-being. It is designed to help manufacturers understand this wide scope of health benefits so that they in turn can develop a clear consumer positioning for food and beverage products containing the cranberry. The cranberry is traditionally known for its role in preventing urinary tract infections, but emerging research suggests that the fruit also has health potential throughout the body, including cardiovascular, immune, cellular, oral, and gastrointestinal health. These benefits are derived from the fruit’s dual antioxidant and antiadhesion mechanism. Type A proanthocyanidins (PACs) prevent bacteria from adhering to cell walls,
removing the potential to cause infection, while the high antioxidant content helps fight free radicals that damage cells throughout the body. The cranberry also has a rich combination of other nutrients such as fiber, vitamin C, and quercetin.

New fruit products touting their potential antioxidant health benefits are increasingly appearing in the marketplace. For example, Sunsweet Growers, Yuba City, Calif., recently introduced its Sunsweet Antioxidant Blend, a combination of dried cherries, plums, wild blueberries, and cranberries. This mix of functional fruits may be eaten as a snack or used to enhance or sweeten a variety of products such as salads, baked goods, and ready-to-eat cereals. Another product making its debut is Nestle Cranberry Raisinets, which joins the Nestle® Raisinets® line of chocolate-covered whole dried fruit.

Today’s formulators are also taking advantage of the familiarity and benefits of blueberries and cranberries by pairing them with more exotic berries such as Acai, Goji, and Noni to create flavorful, antioxidant-rich blends. And the possibilities are increasing as more exotic fruits are becoming available.

Ripe Time for Cheese

Cheese has been called “milk’s leap to immortality.” (In an article about ingredients of antiquity, I guess you can’t ask for a better beginning than that.) The origins of cheese probably predate history. As far back as 6000 B.C., cheese was made from cow’s and goat’s milk and stored in jars. Whoever “invented” cheese may have been a careless person, letting his milk turn to curds and whey and all. But that “mistake”—if it was one—would certainly have consequences, becoming in time an act of inspiration. Egyptian tomb murals of 2000 B.C. depicted the making of butter and cheese, and the old Romans took cheesemaking to a fine art. The Roman Empire disappeared but cheese and its practices didn’t. Although the Dark Ages did slow things down a bit, countries such as France and Netherlands developed their own distinctive cheeses and new varieties appeared over the next several hundred years. For example, Roquefort may been developed around 1070, Cheddar around 1500, and Camembert in the late 1700s.

Process cheese—which is made from one or more natural cheeses and blended with other dairy ingredients, water, and emulsifiers—was invented in 1911 by Walter Gerber and Fritz Stettler in Switzerland. In 1916, the first U.S. patent was issued to James Kraft describing melting pieces of Cheddar cheese and stirring while heating to form a homogeneous product. In 1921, the use of emulsifying salts was introduced in a patent issued to George Herbert Garstin of the Phoenix Cheese Co.

Today, the U.S. is certainly a nation of cheeseheads, with cheese
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Tea (and its taxation) provided an important impetus for the ‘Boston Tea Party’ and the subsequent American Revolution. Today, tea continues to act as a catalyst for new developments, helping to shape formulation opportunities and spark new innovations in beverages, frozen desserts, bakery products, savory sauces, and nutritional products. Photo courtesy of Treatt

Tea, from black, green, oolong, and white—are made 5,000 years. Varieties of tea—black, green, oolong, and white—are made as an ingredient in a variety of food formulations, including confections, frozen desserts, bakery products, savory sauces, and nutritional products. Photo courtesy of Treatt

Today, tea continues to act as a catalyst for the subsequent American Revolution. Tea (and its taxation) provided an important impetus for the ‘Boston Tea Party’ and the all-natural process cheese was introduced in 2007 and prior to April 2009 it removed 25% of cholesterol from cheese.

Hispanic-influenced cheeses have been growing in popularity. With a wide variety of functions and flavors, hispanic-style cheeses can add new appeal to entrees, snacks, sauces, appetizers, side dishes, and salads, presenting new market opportunities for cheese processors and food manufacturers.

Another direction that cheese may be taking is a cyber one. Sargento Food Ingredients, Plymouth, Wis. (phone 920-892-354), launched a virtual product development kitchen (www.SargentoIdeaCenter.com) where visitors can create their own cheese concepts using ingredients from the company’s portfolio.

Whatever directions cheese will take in the future, it will remain an excellent vehicle for delivering functionality and nutritional benefits.

Brewing Uses for Tea

“We new tea lovers are the people forcing our sleepy old tea trade to wake up,” said James Norwood Pratt, an authority on tea, at a press conference held by Virginia Dare, Brooklyn, N.Y. (phone 718-788-1776, www.virginiadare.com). His quote could very easily apply to the exciting directions that tea is taking not only as a beverage but as an ingredient in a variety of food formulations, including confections, frozen desserts, bakery products, and nutritional items.

Tea has been drunk for about 5,000 years. Varieties of tea—black, green, oolong, and white—are made

A major research initiative to create consumer-acceptable low-fat natural and process cheeses was launched by Dairy Management Inc., Rosemont, Ill. (phone 847-627-3252, www.innovatewithdairy.com). By bringing together low-fat cheese researchers from California Polytechnic State University, North Carolina State University, South Dakota State University, Utah State University, and the University of Wisconsin, the effort aims to generate results much faster than individual researchers could achieve working alone.

The initiative is conducted through DMI’s National Dairy Foods Research Center and may yield market-ready products in the coming months. According to Raj Narasimon, Vice President of Product Research at DMI, “the challenge is to create low-fat cheeses that appeal to consumers, function well in manufacturing processes, and meet Food and Drug Administration regulations for low-fat cheese (containing no more than 6% fat).”

Cheddar and mozzarella are the focus of the low-fat natural cheese research with various properties being studied, including microbiology, flavor, texture, and chemistry. Under development is a low-fat mozzarella with excellent performance for pizza applications and a flavorful, low-fat Cheddar in block form that processors can shred or slice.

The researchers have found that the novel approaches developed for low-fat natural mozzarella can also be used to make low-fat process cheeses in loaf form. These cheeses contain less sodium and have excellent slice and bake properties. These low-fat formulations flow well and extrude properly in process machinery.

At the 2009 IFT Food Expo, Land O’Lakes held a press conference that discussed the functionality value of process cheese and the advantages it offers over natural cheese in food formulating. (See August 2009 issue of Food Technology.) The company demonstrated how Land O’Lakes Reduced-Fat, Reduced-Sodium Process American Cheese enables the creation of “better-for-you” products that deliver authentic cheese taste. This ingredient reportedly contains 50% less fat and 35% less sodium than traditional process cheese without compromising the authentic, cheese flavor, creamy mouthfeel, and excellent melt characteristics process cheese is known for.

Recently, Alliance Enterprise, Sturtevant, Wis. (phone 262-898-7492), was able to reportedly reduce the cholesterol in Cheddar cheese by 45%. The company uses its proprietary Benelact® process which removes cholesterol from dairy products without altering the original taste and mouthfeel. Nutritional content remains intact, as well as the shelf life of the products. The all-natural process was introduced in 2007 and prior to April 2009 it removed 25% of cholesterol from cheese.

A major research initiative to create consumer-acceptable low-fat natural and process cheeses was launched by Dairy Management Inc., Rosemont, Ill. (phone 847-627-3252, www.innovatewithdairy.com). By bringing together low-fat cheese researchers from California Polytechnic State University, North Carolina State University, South Dakota State University, Utah State University, and the University of Wisconsin, the effort aims to generate results much faster than individual researchers could achieve working alone.

The initiative is conducted through DMI’s National Dairy Foods Research Center and may yield market-ready products in the coming months. According to Raj Narasimon, Vice President of Product Research at DMI, “the challenge is to create low-fat cheeses that appeal to consumers, function well in manufacturing processes, and meet Food and Drug Administration regulations for low-fat cheese (containing no more than 6% fat).”

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Hispanic-influenced cheeses have been growing in popularity. With a wide variety of functions and flavors, hispanic-style cheeses can add new appeal to entrees, snacks, sauces, appetizers, side dishes, and salads, presenting new market opportunities for cheese processors and food manufacturers.

Another direction that cheese may be taking is a cyber one. Sargento Food Ingredients, Plymouth, Wis. (phone 920-892-354), launched a virtual product development kitchen (www.SargentoIdeaCenter.com) where visitors can create their own cheese concepts using ingredients from the company’s portfolio.

Whatever directions cheese will take in the future, it will remain an excellent vehicle for delivering functionality and nutritional benefits.

Brewing Uses for Tea

“We new tea lovers are the people forcing our sleepy old tea trade to wake up,” said James Norwood Pratt, an authority on tea, at a press conference held by Virginia Dare, Brooklyn, N.Y. (phone 718-788-1776, www.virginiadare.com). His quote could very easily apply to the exciting directions that tea is taking not only as a beverage but as an ingredient in a variety of food formulations, including confections, frozen desserts, bakery products, and nutritional items.

Tea has been drunk for about 5,000 years. Varieties of tea—black, green, oolong, and white—are made...
from the leaves of *Camellia sinensis*, a white-flowered evergreen that originated in China. (Lore tells of a Chinese emperor discovering tea in 2737 B.C.) Tea was later (593 B.C.) introduced to Japan by returning Buddhist priests who planted tea bushes in their temple gardens. Matcha, the oldest variety of shade-grown Japanese green tea, became an important part of religious ceremonies. In the early 1600s, the Dutch brought tea back to Europe (it was considered very expensive at that time) and then in 1650 they introduced the American colonists (the first New Yorkers) to what became a very popular drink. In fact, by 1765 tea easily ranked as the most popular beverage in the world.

### History in a Nutshell

Almonds are believed to have originated in China and Central Asia, but they rapidly spread to other ancient worlds. There were references to almonds in the Bible, they were a prized ingredient in breads served to Egyptian pharaohs, Greeks cultivated them, the Romans showered "Greek nuts" on newlyweds as a marriage blessing, and they were considered a valuable commodity in many early economies. Spanish missionaries brought the almond to the shores of the New World, but the moist, cool weather of the coastal missions did not provide optimum conditions. In the 1800s, almond trees were successfully planted inland, and by the early 1900s, the almond industry was firmly established in the Sacramento and San Joaquin areas of California's Central Valley.

A recipe from the *Forme of Cury*, dating back to 1390, uses blanched ground almonds in a gravy for oysters. Throughout the centuries, almonds continue to be a very versatile ingredient. At the 2009 IFT Food Expo, the Almond Board of California, Modesta, Calif. (phone 209-549-8262, www.almondsarein.com), showcased a very versatile ingredient. At the 2009 IFT Food Expo, the Almond Board of California, Modesta, Calif. (phone 209-549-8262, www.almondsarein.com), showcased a very versatile ingredient. Throughout the centuries, almonds have been increasingly promoted. At the 2009 Experimental Biology Annual Meeting, a number of new studies demonstrated the impact that almonds have on the body. Emerging research, in particular, looked at the heart-health impact of including almonds for individuals with type 2 diabetes.

### Spicing History

Throughout the ages, spices have helped define cultures and ethnic diversity, providing fragrance, flavor, color, and medicinal properties. In many cultures, they were worth their weight in gold, serving as a currency or bartering material, as a way to gain the favor of the gods, as a luxury item, and as an incentive for exploration, trade, and even war.

With today’s emphasis on exploring different cuisines from around the world for their flavor and potential health benefits, it shouldn’t be too surprising that spices continue to play an important part in today’s food formulation—a role, I might add, still worth its weight in gold from a functionality perspective.

Take, for example, the Mediterranean way of eating, which epitomizes the rich culture and cuisine of the nations surrounding the Mediterranean Sea, including Spain, France, Italy, Greece, Morocco, and others. (Recently, the Mediterranean Diet Pyramid was updated to showcase the value of spices for their flavor and health-promoting antioxidants.) From a flavor perspective, spices have always played an important flavor role in these cuisines. “But there is also a growing body of research linking herbs and spices, and their high levels of antioxidants, with an array of promising health benefits,” noted K. Dun Gilford, President of Oldways, a non-profit food issues think tank. Spices such as rosemary, oregano, thyme, red pepper/paprika, and other mainstays in Mediterranean cuisines are part of a group of “Super Spices” highlighted by McCormick & Co. Inc., Hunt Valley, Md. (phone 410-527-8753, www.spicesforhealth.com), for their high levels of antioxidants.

For nearly a decade, McCormick has issued its annual Flavors Forecast™ which identifies 10 emerging pairings of spices and herbs with other ingredients and flavors. The report, which draws on...
the expertise of sensory analysts, chefs, trend experts, and food technologists, provides insight on the directions that spices are taking and their potential opportunities in contemporary formulating. Spices are also providing a way to deliver bolder, more authentic flavors from around the world, and in a convenient format. Kikkoman Sales USA, San Francisco, Calif. (phone 415-229-3650, www.kikkomanusa.com), developed three new curry sauces—Tikka Masala, Thai Red, and Thai Yellow—which can help formulators add curry to a variety of dishes without the need to source or prepare exotic ingredients. These sauces, suitable for braising, marinating, stir-frying, dipping, or finishing, can help reformulate mainstream dishes, giving them an Asian flair. At the 2009 IFT Food Expo, the company demonstrated how seasonings can add new flavors to traditional dishes. These included GuacUmami Dip (with Kikkoman Ponzu Citrus Seasoned Dressing), Umami Thai Brittle (with Kikkoman Granulated Soy Sauce), and Umami Mole with Chicken (made with cinnamon, coriander, cloves, garlic, and chili purees).

In the old days (we’re talking about my childhood, not ancient Egypt), I remember only a few kinds of dips, such as French Onion and possibly Ranch. Today, though, spice blends are helping to revitalize this category. Wixon, St. Francis, Wis. (phone 414-769-3000, www.wixon.com), offers a variety of new dip flavors designed to dress up fruits, vegetables, crackers, buffalo wings, and other applications. These include Cheddar Jack Black Bean, Chili con Queso, Peruvian Sour Orange, and Buffalo Wing & Bleu Cheese. Or if you prefer zesty snack seasonings, you can try Spicy Sweet Asian, Raspberry Chipotle, and Refried Bean and 3-Cheese.

An innovator in the seasoning blends and savory flavor systems area, Gilroy Foods & Flavors, a business of ConAgra, Omaha, Neb. (phone 800-921-7502, www.gilroyfoodsandflavors.com), is celebrating its 50th anniversary. In 2005, Spicetec, one of the largest industrial seasoning suppliers and savory flavor system leaders, was added to the company’s portfolio. As part of the celebrations, Gilroy’s latest Food & FlavorCast newsletter is honoring the garlic bulb, which made the company famous. Did you know that the ancient Egyptians were obsessed with garlic, and fed it to the pyramid-builders to increase their stamina? Or that the ancient Romans dedicated garlic to Mars, their war god? Or that Bram Stoker in his book Dracula referred to the long-standing superstition that garlic offers protection against vampires? Well, in addition to revealing the interesting lore of garlic, the newsletter provides a comprehensive guide on the ingredient, including its functionality, health benefits, and potential applications.

### Going Retro

Retro certainly seems to be in this year. This may have something to do with the economy and the desire by food manufacturers to create products that appeal to comfort, tradition, and a sense of security. More than anything, these kinds of products are frequently designed to elicit a sense of nostalgia, helping to bring forth the right mood or memory.

For example, in 2009, PepsiCo launched Pepsi and Mountain Dew in “Throwback” versions—limited-time products sweetened with natural sugar and given a retro-look package reminiscent of the seventies. Dr. Pepper Snapple also released an iced tea version sweetened with sugar that may be taking advantage of this trend, as well. Interestingly, sugar—a key component in these retro formulations—is itself an ingredient of antiquity. The discovery of sugarcane probably dates back thousands of years, while the process for creating sugar (by pressing out the juice and boiling it into crystals), may have been developed as early as 500 B.C.

So, you see, when I say that this article has gone retro, I really mean retro, to a time even well before disco. In fact, I might have called this article “Retro Maximus,” but I didn’t want anyone to think that I was writing about some sweaty gladiators. Although it is true that ingredients of antiquity have gone through many different arenas before reaching this point in time.

And having gotten here today, these ingredients continue to play an important role in helping to write new chapters in the evolving chronicles of food formulating. And that’s the end of our history lesson for now. FT

### Next month’s Ingredients section will look at changing concepts in texture and how ingredients such as starches, gums, whole grains, and inclusions can help shape textures and create new ones.

Once worth their weight in gold as currency or bartering materials, spices still provide immeasurable value from functionality, flavor, and antioxidant perspectives. Photo courtesy of McCormick

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