The Role of Flavors in the Good-for-You Trend

➤ Today’s consumers demand old-fashioned taste and cutting-edge nutrition.
➤ Good-for-you formulations often require new, alternative ingredients, such as stevia.
➤ Smart flavor companies make these new formulations palatable and thus practical.

A. WEISZ
Comax Flavors
Melville, NY, U.S.A.

As professionals in the food and flavor industries, we have a rare opportunity to work toward positive change by helping to lead the march back to healthier eating through advances in new technology and overall healthier, better-for-you attitudes. We can and should work toward helping rid our society of obesity, disease, and behavioral shifts in eating habits that have had a negative effect on our health and the health of our children.

While there are many flavor trends in operation today, from local to global, transient to enduring, none is more important to the present and future of food-related industries than the ongoing effort to improve the nutritional profiles of popular food and beverage products and, conversely, to improve the organoleptic qualities of healthier, good-for-you, and more nutritionally sensible alternatives.

Seasonal or short-term trends in food, beverages, flavors, and other ingredients come and go like the latest runway fashions or new car designs. Today, there is a growing demand for exotic and spicy flavors, new tropical fruit combos, discordant blends of sweet and savory, funky ethnic fusions, and the warm embrace of familiar old favorites, such as cinnamon. Tomorrow it will be something different; just wait and see. Yet even these “flavors of the moment” speak to a heightening awareness of back-to-basics food values that can be seen as part of a greater movement toward a generally heightened dietary health consciousness.

Of course, making the most of industry trends means more than reacting; it means staying a step ahead and whenever possible, helping to lead the trends, markets, and industries, and subsequently consumers in healthy, productive, and sustainable directions.

It’s an exciting time to be on the front lines of the flavor industry’s key supporting role in this major long-term trend. Using our organizational powers of innovation to help people find and make healthier choices appears a very worthy objective. Doing so while helping to lead our industry into a promising future feels like the natural and right thing to do.

Still, being a leader in this area requires a great deal from a flavor company, among other things: a commitment to conducting continuous research on the state of consumer awareness, preferences, and interests; the capability to fine-tune flavor ingredients to a manufacturer’s specific needs; and the follow-through to diligently deliver what each customer requires. Most of all, this trend requires individually designing each flavor solution to one particular application at a time.

Working in the area of good-for-you foods and beverages involves developing flavors, blends, and systems that can optimize the consumer appeal of reduced-fat, low-sodium, sugar-free, and high-fiber formulations. Every day, we are working to innovate, develop, and refine new solutions that meet “product health v. product taste” challenges not only with conventional flavors but also through cutting-edge, high-performance flavor masking, enhancing, reducing, eliminating, and management systems.

Trends and Solutions

So how did the industry get where it is today? To a place where a trend toward healthier alternatives represents only the very beginnings of a long and much-needed process of returning to common-sense nutritional values of the past, enabled and enhanced by futuristic food technologies?

The history of food consumption over the past century or so is a story of major transitions. So much of the human experience has changed immeasurably in that time; dietary habits are one of many obvious signs of those changes. Not so long ago, people mostly grew their own food or else obtained it locally. At one time, you knew your local farmer; later, you knew your local grocer. Today, in most nations of the world, advertising and packaging are all people know of the majority of their foodstuffs and their suppliers. No surprise then that we came to judge the products we were consuming chiefly by how they pleased us; until very recently, that was all the information we had at our disposal.

New and emerging industrial economies have led to the exportation of many of the bad so-called Western dietary habits to more of the world, even as the West itself begins to discover the errors of its ways. More people are joining the ranks of the working class every day, and more people work at sedentary jobs than ever before. With each passing day, more meals...
are eaten away from home, many of them obtained and consumed on the run. At the same time, consumers’ expectations of their food choices are becoming more complex. The more people can afford good food, the more the definition of good food or good-for-you food becomes stretched and blurred.

The more people work at a distance from home, the more they consume packaged and processed foods and beverages. In order to compete in a busy marketplace, these often contain unhealthy levels of fat, salt, and/or sugar, and relatively few vitamins and other healthy nutrients. Naturally, this is contributing to a well-documented, worldwide epidemic of overweight and obesity. Along with an aging world population, these forces factor into a rising incidence of chronic ailments, such as diabetes, cardiovascular disease, and GI disorders.

It’s not as if people are not aware of the links between diet and health. After all, the weight loss and supplement industries are also growing by the day. It does seem that a great many people find themselves trapped in a lifestyle rut from which it is difficult or impossible to effect positive changes in their diets.

It’s not for lack of information, as in the form of healthy-alternative food and beverage advertising and promotions. For its part, the worldwide news media continuously report on advances in the medical, dietary, and nutritional sciences, spurring consumers to seek out healthy products and even specific healthy ingredients for purchase. Nowadays, many people not only expect certain foods to be tasty and provide basic nutrition but to also contribute to their enjoying longer, healthier lives.

This is a good thing for everyone involved—foods fortified with nutritional ingredients that target specific health conditions are helping to invigorate the food industry. Formerly limited to specific health-conscious consumers, the market for healthy, good-for-you food is expanding rapidly, and is increasingly targeted at the mainstream public.

It’s far from a universal value, but today many food and beverage manufacturers specialize in the creation of products that aim to correct the dietary mistakes of the past half-century. Many of these nutritionally improved products employ ingredients that had never been used in traditional food or beverage formulations. Among other constituents, newly designed consumer products may contain fish oil (omega-3 and -6 fatty acids), vitamins and minerals, tea polyphenols, various protein concentrates, hydrolyzed whey protein, various forms of dietary fiber, and/or exotic-sounding herbal supplements.

Some of these ingredients have a bad smell and unpleasant taste, including vitamin B1, fish oil, and hydrolyzed whey protein. Some ingredients taste unnatural or bitter, such as polyphenols, polypeptides, herbal supplements, or soy protein concentrates. Food formulators are also removing sugar from food and beverages and replacing it with nonnutritive sweeteners and/or sugar alcohols. They are removing fat from food to reduce calories and cholesterol, and they are removing much of the salt or sometimes all of it.

As a result, many healthy food products desperately need taste modification to find consumer acceptance. Food and beverage manufacturers are finding solutions to this demand from their customers by using customized taste modifiers, such as masking flavors and flavor enhancers, to help their nutritionally smart products taste good.

Flavor Modification

Formulating healthy alternatives that taste great requires that we cover up and correct unfamiliar or unpleasant tastes and smells. The key to flavor modification is to keep all factors in harmony and make sure that no one flavor note stands out in an unexpected way. Because of the complexity of taste, developers need the help of flavor experts to accomplish this balancing act in the form of flavor modifiers, such as masking flavors and flavor enhancers.

Masking flavors are unique proprietary blends of GRAS ingredients, specifically designed to mask the off-notes or undesirable tastes of certain ingredients in foods and beverages. They act upon taste receptor sites by competing with undesirable attributes and enhancing the desirable attributes of a particular food.

This is an area where consumer demand and governmental actions are key drivers of product development. A lot of product development, and thus a great deal of flavor companies’ creative energies, is being directed by often controversial factors, such as consumers’ heightened sensitivities relating to high-fructose corn syrup and sugar. Thus, we pursue the challenge of reducing and replacing these with a strategic selection of artificial sweeteners, which almost always requires flavor adjustment or balancing.

Sugar has been the preferred sweetener in food and beverages for centuries, but with the rising demand for calorie- and sugar-free products, high-intensity artificial and natural sweeteners and sugar alcohols are being used instead.

The problem is that the sweetness profile of sugar substitutes is somewhat different from that of sugar.

Masking flavors, customized to the particular food and sweetener blend, can help modify the taste of sugar substitutes and bring them closer to sugar and thus closer to the traditional definition of “good tasting.”

Natural masking flavors are very effective at adapting the taste of artificial sweeteners, such as Acesulfame K in beverages, rounding the sweetness and covering the bitter aftertaste. The sweetness of stevia has a slow onset and a somewhat green and lingering licorice aftertaste. A natural stevia-masking flavor can bring the sweetness forward and cover the unpleasant finish.

Because stevia extracts may be 300 times sweeter than table sugar, careful management is required in their use. As more and more food and beverage manufacturers look to stevia as their sweetener of choice, there is a wider variety of applications in which issues with the bitterness and lingering sweetness of stevia need to be controlled. Also, as with any high-intensity sweetener, stevia functions a bit differently in each application.

The addition of stevia extracts to a beverage necessitates a two-pronged approach:
first, improving sweetness (rounding and enhancing for taste and cost targets) and second, masking bitterness and off notes. The flavorist must account for other factors as well. Will the product be added to an acidic environment? Will the product be heated? Will the stevia be used in concert with another sweetener, such as sugar or high-fructose corn syrup? What grade of stevia is being used? Different grades of stevia have a different taste. The lower the grade used, the more finesse that’s required. The purest stevia is easier to use and mask, but because different brands of stevia can taste a bit different, it is best to customize the masking flavor precisely to the final product and the exact stevia being used.

Customized masking flavors can also cover off-notes of bitterness and dryness in protein concentrates when they are used in beverages or nutritional bars. One masking flavor can cover the bitterness of caffeine in an energy beverage, but a different one will have to be used for a chewing gum that contains caffeine. Herbal supplements can be astringent and bitter, but masking flavors can cover these defects.

Today, many foods are being formulated with high amounts of soy or whey protein in order to improve satiety. Highly acidic whey protein beverages often need to be improved by natural acid-masking flavors. The astringency and bitter aftertaste of soy protein can be improved by the use of natural soy-masking flavors.

Meanwhile, salt-masking flavors can greatly improve the taste of sports hydration beverages fortified to be high in electrolytes and vitamins. On the other hand, many products are being offered in reduced-salt formulations. Potassium chloride and potassium lactate, used as substitutes, may not be salty enough, or may impart a metallic aftertaste. Leading flavor companies will be able to offer potassium-masking flavors and salt enhancers to cover up the metallic taste of salt substitutes and enhance saltiness. They work especially well when they are formulated into soups and nutritional bars or dusted onto snacks.

A flavor enhancer is another type of flavor modifier that benefits manufacturers of healthy food and beverages. For example, reduced-calorie and -sugar foods and beverages can be improved by the use of sweetness enhancers. At the same time, fat-replacer flavors, which mimic the taste of butter or animal fat, are available to help manufacturers develop fat-free or lower-fat and -cholesterol foods.

A combination of several unique ingredients can add sweetness reception by stimulating a variety of taste receptor sites simultaneously. The latest sweetness enhancers provide notable competitive advantages for food and beverage formulators by combining the appeal of traditional sweeteners with sensible nutritional improvement. Sweetness enhancers can help balance a product’s taste with fewer calories, enhanced mouthfeel, and pleasant sweetness, using flavor ingredients that are colorless and aroma free. These enhancers can also lower the sweetener level—a proven advantage for alcoholic and fruit beverages, among other applications. These have already yielded outstanding results for manufacturers whose products have been improved by reducing levels of high-fructose corn syrup or sugar.

Available in liquid or powder form, a sweetness enhancer’s usage level is also very application specific due to the functional roles of sugar or corn syrup, for example, in creating bulk, mouthfeel, or caramelization. In a product such as a carbonated or juice drink, these concerns are less at issue. In baked products or candy, they are more important because there is also a functional role for the sweetening system.

In order to obtain the best finished product, food and beverage manufacturers need to seek out a flavor partner with advanced expertise and technology in the specialized area of masking flavors. It is important to supply the flavor chemists with samples of the food product with its unique defect and processing conditions in order to obtain the best masking flavor or enhancer for the most acceptable finished product.

**In Favor of Flavor**

Beyond masking and enhancing flavors, there are numerous other ways in which trend-savvy flavor companies can help manufacturers formulate healthy-alternative products. For instance, when it comes to dairy, today’s consumers are looking for reduced-fat, fat-free, and reduced-sugar options that don’t sacrifice the rich, full, creamy, and familiar taste of the products they crave. Fortunately, we have found ways to offer butter, cream, and milk flavors that effectively replicate dairy fat in a wide range of products, including organic-compliant flavors well suited to a full range of dairy applications, including those that replace butter with trans-fat-free vegetable oil.

In a similar way, the flavors of savory foods have traditionally depended on the mouthfeel of animal fats to achieve full impact. But today, cutting-edge flavor technology allows for the replacement of animal fats with just the pure flavors of beef or chicken fat, while offering the stability and performance characteristics needed to meet the demands of heat processing and rewarmed of savory foods.

To aid in the formulation of vegetarian products made with nonmeat protein from sources such as soy or wheat, there are a wide range of hearty, true-to-life meat flavors that are strong enough to stand up to highly absorbent vegetable proteins that appeal both to strict vegetarians and those who more casually select a meatless product.

**In Summary**

Masking, enhancing, and other good-for-you food flavors help forward-thinking consumer product manufacturers give their customers everything they want and need, while leaving out everything they don’t. When we do our jobs right, we can actually see to it that consumers never feel as though they are making a sacrifice. That potentially represents a very positive contribution toward improving consumers’ choices, improving their diets, and enhancing their lives. In this way, the flavor industry is not only responding to changing demand, we’re finding new ways to profit from it—making this a trend that is healthy for businesses and consumers at the same time.

**Agneta Weisz** has been in the flavor business for nearly 40 years. Starting her career as a food technologist at Monsanto Flavor Essence, she would train to become a certified flavor chemist there. She later worked for Globe Extracts, Florasynth Inc., Felton International, Bothwicks Inc., and Manheimer Inc., both as a flavor chemist and eventually as a senior flavor chemist. She holds a B.S. degree in chemistry and an M.A. degree in organic chemistry from Brooklyn College, has a Restaurant Management and Control Certification from Cornell University, and has taken graduate coursework in marketing. Weisz has been with Comax Flavors for more than 15 years. As vice president of flavors and technology, her responsibilities include overseeing the Creative Flavor, Application, Quality Control, and Analytical Labs. She is also a technical advisor to their Regulatory Department. She can be reached at aweisz@comaxflavors.com.