Health and wellness are increasingly in the spotlight, and people are more attuned than ever to making healthy choices. What started years ago as a “health kick” has evolved into established knowledge based on scientific evidence: the importance of a health-promoting diet and exercise are critically important to a long and healthy life. Consumers are making smarter food choices and incorporating regular exercise as key components of their daily lives.

As consumers take note of research and news reports about the benefits of a healthier diet and lifestyle, they become more proactive in making healthier choices. Their demands for healthy food choices have expanded into the bakery category, where the desire for better nutrition is driving innovation in nutritious snack and breakfast foods. In fact, health is one of the top two trends for new product launches across the entire bakery category (6).

Increasing Demand for Healthy Cereals and Snack Bars

Health is an increasingly important component of the bakery category. In cereals, health dominates, accounting for 50% of new product launches in breakfast cereals and 42% of new product launches in snack bars (1). In addition, this trend overlaps both indulgence and convenience trends as consumers seek products that are wholesome, decadent, and convenient.

Consumers continue to drive development of new products that provide health benefits, with increasing demands for natural ingredients and functionality that deliver added value. This is a change from previous years when consumers were overwhelmingly interested in low-fat and low-calorie foods; desired features now include natural, fiber enriched, whole grain, organic, and no additives/preservatives added. These features have been identified as the leading product claims in both the cereal and cereal bar categories.

The Pros of Prebiotics

Consumers have become increasingly knowledgeable about the importance of dietary fiber in maintaining a healthy digestive system and now look for ways to increase fiber in their diets. A growing area within the healthy foods arena is prebiotics—natural plant fibers with beneficial properties. Prebiotics help prevent digestive disorders, and there are indications that they also play an important role in slowing the aging process and increasing longevity.

Unlike sugars, prebiotics cannot be digested in the small intestine and, therefore, do not increase the amount of glucose in the blood—a benefit for diabetic consumers. Incorporating these fibers into foods can provide lifelong health benefits—benefits that can easily be incorporated into daily diets. According to a 2009 report by Frost and Sullivan, prebiotics are expected to drive the digestive health ingredients market, with bakery and cereal products expected to be among the most successful.

In response to numerous studies illustrating the effectiveness of prebiotics in improving health, these plant-derived fibers are now included in product portfolios as functional ingredients that possess both nutritional and technological advantages. BENEÖ’s functional ingredient line, for instance, includes ingredients derived from chicory root (inulin and oligofructose), sugar beet, wheat, and rice (including rice starches, proteins, flours, and concentrates). For this article, we will focus on two key prebiotics—inulin and oligofructose.

Inulin and oligofructose are among the most effective and most researched prebiotics. These natural food ingredients, which are extracted from chicory root, work in tandem with health-promoting “good” bacteria in the body’s digestive system.
system. While inulin occurs naturally in many plants and vegetables such as asparagus, onions, garlic, and artichokes, chicory root is an especially good source of inulin.

Although many food ingredients are easily digested, prebiotics are healthy, nondigestible ingredients. Unchanged by the digestion process, they stimulate growth of healthy bacteria such as bifidobacteria and boost resistance to pathogens. In turn, bifidobacteria promote production of pH-lowering fatty acids, allowing the body to increase absorption of calcium and magnesium. Through the collaboration of 75 universities and research centers worldwide, the health benefits of inulin and oligofructose have been well documented, with more than 125 studies published in peer-reviewed publications (5).

Prebiotics should not be confused with probiotics, which are living, “healthy” bacteria found in the foods we eat. Prebiotics such as inulin and oligofructose can actually help increase the amount of beneficial bacteria found in the digestive system. Although each has its own health benefits, prebiotics can work in conjunction with probiotics. Because of the symbiotic nature of these ingredients, products that include both a prebiotic and probiotic are being developed as functional foods.

Unlike probiotics, prebiotics are not living bacteria and, therefore, do not require refrigerated storage. This enables both ease of formulation and technological advances in creating products enriched with fiber, resulting in enhanced nutritional benefits for consumers.

A number of leading manufacturers within the cereal market worldwide have begun incorporating prebiotics into their products, including branded cereals in Europe. Adding prebiotics to staple foods provides consumers with functional food alternatives that can help them meet their dietary fiber requirements without requiring that they overhaul their existing diet.

Food Industry Responses—and Opportunities

Fiber and Whole-Grain Products.

Cereal products carrying whole-grain claims continue to be popular with consumers. In the breakfast cereal category, whole grain was the leading claim in 2010 and accounted for 25% of all cereal product launches. Whole grain was also a leading claim in new breakfast cereals at 34%, while it was third in the cereal bar category, accounting for 12% of new product launches (2). These figures cover 2010 to 2011, and each represents an increase over 2009 figures for cereal products with whole-grain claims. Whole grains remain positioned as one of the top trends driving growth in the bakery and cereal categories, presenting an interesting opportunity for food producers.

Because of the large variety of possible applications, as well as technological advantages, for inulin in foods and beverages, food producers can incorporate this health-promoting ingredient into a wide range of breakfast foods and snacks. In addition, by incorporating functional ingredients to provide fiber enrichment food producers can not only avail themselves of the all-important fiber claim that consumers seek, but also benefit from improved texture and shelf life. Rice bran is another functional ingredient that can be added to foods to augment the nutritional content of products and enhance nutritional claims. Gluten-free bakery goods, for instance, could tout the added value of being enriched with fibers such as inulin and oligofructose.

“Natural” Products.

The trend toward more “natural” products that is seen in the bakery category continues to influence the cereals market, with an increasing number of product claims for “no additives/preservatives.” Claims such as “no GM [genetically modified] ingredients” or “GM free” are also becoming more prevalent and visible to consumers. Rice derivatives, prebiotics, and sugar alternatives are often produced from pure, natural ingredients such as rice, chicory, sugar beet, and wheat. This feature enables food manufacturers to promote “clean label” ingredients when marketing natural foods within the bakery and cereals categories.

Weight-Management Products.

Also found within the bakery and cereals categories, in keeping with consumer interest in health and nutrition, is the increased development of innovative weight-management products. Figures show that cereals and cereal bars collectively account for almost one-third of the total number of new product launches carrying a weight-management claim (4). Corresponding with this trend, product launches with satiety claims have been increasing over the past few years despite the fact that only a third of consumers have heard much about the connection between fiber and satiety (3).

Many ingredients in cereal and bakery products, including the prebiotics inulin and oligofructose, support weight management. Interestingly, increasing scientific evidence suggests that inulin and oligofructose, as a single ingredient, can potentially decrease energy intake. This feature provides substantial opportunities for food manufacturers to formulate bakery and cereal products that could potentially help people to more efficiently manage their calorie intake. Clinical studies with a proprietary form of oligofructose-enriched inulin (Orafti Synergy1) showed that it lowered the body mass index of teenage adolescent girls at a dosage of 8 g/day. The recommended dosage on a per-serving basis equates to 2 g/serving.

From a functional point of view, inulin and oligofructose offer advantages in weight-management formulations. Inulin and oligofructose contribute fewer calories (2 kcal/g) compared with sugar (4 kcal/g). Because of its bulking properties, chicory inulin also may be used for partial sugar replacement. Furthermore, inulin has fat mimetic properties, enabling it to replace higher calorie fats in certain bakery applications. Inulin products with chain length distributions that produce longer, higher molecular weight products also have enhanced textural benefits and fat-replacement properties.

Carbohydrates: They Can Be a Good Thing

Here a carb, there a carb, everywhere a carb…. In magazines, on television, and nearly everywhere consumers turn, news of good, bad, and too many carbs abounds. Consumers are more aware than ever of the effects of “good” carbs, such as dietary fiber, versus “bad” carbs, such as naturally occurring and added sugars, as well as those contained in refined or processed foods such as white bread and white rice.

Healthier eating is here to stay, and informed consumers have responded to reports on the health benefits of different foods by altering their purchasing behaviors. They are now specifically seeking out products containing more good carbs and steering away from products loaded with unhealthy carbs.

Here too yet another opportunity has arisen for progressive food manufacturers offering functional food products with alternative ingredients to benefit by capitalizing on inclusion of product claims for improved metabolic balance. An added bonus for manufacturers developing fiber-enriched foods is that prebiotics do not negatively affect taste or texture and alternative ingredients such as inulin and oligofructose, for example, may even contribute to good taste, appealing texture, and improved moistness. In addition, oligofructose-enriched inulin (Orafti Synergy1) with prebiotic properties has been shown to promote absorption of dietary calcium.

Alternative, Nutrient-focused Food Ingredients that Truly Perform

Inulin/Oligofructose.

Inulin and oligofructose have been scientifically proven to offer health benefits, as well as functionality. Oligofructose provides excellent bind-
ing properties in products such as cereal bars, as well as good moisture retention. By reducing product hardening, it also extends the shelf life of products. In addition, it provides easy handling as either a powder or liquid and has high solubility. Its viscosity and molecular structure are similar to those of sugar, and it provides a well-balanced, round flavor, with a sweetness profile akin to sucrose. Oligofructose also offers nutritional benefits. With sugar-like physical and sensorial properties, it can be used to replace sugar.

Chicory fiber ingredients provide added benefits in many breakfast cereal products. Chicory inulin can also be incorporated into products such as milk and yogurt beverages to fortify them with fiber. Oligofructose delivers a double bonus in a variety of products, including those targeted toward children: it can be used to reduce sugar in chocolate and other flavored milks, while increasing fiber content.

Furthermore, oligofructose syrups can be used in snack food applications as a coating or glaze on snack or cereal products. Inulin and oligofructose may also be used for calorie reduction and prebiotic fiber enrichment in low-moisture filling applications.

**Rice Derivatives.** Rice derivatives can be used to replace sugars, gluten, and other ingredients in a product. Innova tracked 8,000 new products positioned as either gluten- or lactose-free in 2010 compared with more than 6,000 in the previous 12 months, demonstrating the increase in this trend (6). New products launched in 2011 as part of this trend ranged from gluten-free breakfast cereals to waffles. These food ingredients can also offer a “clean label” for a product, allowing a claim of “no additives/no preservatives.”

Rice ingredients can also be included in foods to influence the hardness of cakes and contribute to extended shelf life. Rice starches can be used to reduce breakage levels in products such as cookies while improving crispness. Combinations of rice starches and/or rice flour with inulin can be used to replace fat in products such as muffins, crackers, and pastries. Finally, for consumers who don’t like or can’t consume dairy products, flavored vegetable drinks made with rice derivatives can include alternative ingredients that help increase absorption of calcium from foods.

**Isomaltulose.** Isomaltulose is a multifunctional carbohydrate ingredient with functional benefits such as improved texture and mouthfeel. This ingredient is useful in creating coatings such as glazes or frostings that improve both the shelf life and appearance of cereals and cereal bars. It also provides long-lasting energy in the form of glucose, with less effect on blood glucose levels than other sugars. When used as a sugar substitute, isomaltulose also has the benefit of producing less caramelization in a product.

**Prebiotics and Convenience Foods.** We’ve all heard that breakfast is the most important meal of the day. For many people, however, sitting down for that all-important breakfast is simply out of the question during a hectic morning schedule. They may gulp down a quick bowl of cereal or, if time doesn’t allow for even that, they may grab a cereal bar on their way out the door.

Knowing that consumers are increasingly busy and are living in a society where convenience is key, leading cereal manufacturers have expanded their brands to bars. Whether cereal bars are consumed as a breakfast alternative or later in the day as a snack, consumers are looking for healthy ingredients and nutritional value. Prebiotic ingredients enable manufacturers to create tasty cereal bars that provide more than empty calories.

Inulin and oligofructose are versatile ingredients that can be incorporated into foods such as cereals, cereal bars, yogurts, and baked goods, including low-calorie, sugar-free, and reduced-sugar versions. Their versatility makes them suitable for use in numerous foods as snack or meal components throughout the day.

**Gearing Up for Fast-moving Changes in Health Trends**

The trend toward healthier eating is not only here to stay—it’s growing quickly and spreading widely. Natural, healthy, and wholesome are key expectations in today’s food market. Many informed consumers recognize the direct correlation between their food choices and physical well-being and no longer grab meals on the run or snacks without considering their nutritional value. Armed with information from scientific research and studies, informed consumers are consciously seeking nutritious foods that are appealing and that deliver health benefits.

This health trend has expanded from basic daily foods such as breads and beverages into the large categories of breakfast foods and snacks. As expectations rise, proactive food producers are meeting the challenge by incorporating functional ingredients into cereals, cereal bars, yogurts, and baked goods. Prebiotics such as inulin and oligofructose provide the health benefits as well as the flavor and texture qualities that consumers desire. At the same time, using these functional ingredients provides manufacturers with benefits such as ease of processing and extended product shelf life, as well as the opportunity to market enhanced health and nutrition claims for their foods such as fiber enhanced, natural, and low in sugar.

By staying in tune with health trends and availing themselves of important functional ingredients for food formulations, manufacturers will stay ahead of the competition, and consumers will reap the health benefits.

**References**


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