Creating Healthy and Innovative Kid-Preferred Flavors for Breakfast Cereals and Baked Goods

Kids represent a unique market set with specific challenges and preferences.
Successful flavor solutions meet consumer expectations and manufacturing requirements.
Improved nutritional value and taste in breakfast cereals can help kids build a healthier diet.

For the purposes of this article, we chose to focus on breakfast cereals and baked goods created especially for kids. Kids represent a unique market set with challenges and preferences specific to their age group (5–18 years old). With pressure both from parents and the government for greater oversight of the marketing of foods to children (particularly in the United States), food companies are attempting to increase the nutritional value of their products while maintaining their appeal to a young audience. The challenge for manufacturers is to maintain the desired flavor profiles in high-fiber, low-sodium, or low-sugar ready-to-eat (RTE) cereals for some of the pickiest eaters around.

Background
The breakfast food most popular with children is cereal. The convenience of RTE cereals make them a popular breakfast choice for time-strapped families. RTE cereals, one of the original fortified packaged foods, also provide a range of vitamins and minerals for a healthy start to the day. However, many cereals targeting kids are also high in sugar. With the escalating epidemic of obesity in kids, health concerns cannot be taken lightly.

As mentioned earlier, even the healthiest product will not be consumed if it doesn’t taste great, and this goes double for kids. Some of the most popular and accepted flavors for kid-targeted cereals include fruit, honey, cocoa, marshmallow, and apple and cinnamon. International Flavors & Fragrances (IFF) has conducted extensive research on the flavor preferences of kids through its Eye on Kids research program and has found that today’s kids are exposed to and are sampling many different foods and flavors and, therefore, have more sophisticated palates than previous generations of young kids and teens. In addition, research has identified several new flavors in breakfast cereal applications that are well liked by certain segments of kids, including berry smoothie, blue raspberry, orange cream, watermelon, coffee, and caramel.

For more than 20 years, IFF’s kid-focused research program has been the foundation for the creation of innovative kid-friendly flavors for a wide range of food and beverage applications. To create these flavors, its marketing and consumer insights teams utilize a variety of qualitative and quantitative research techniques for kids aged 5–18 years, including Internet surveys, home use tests, and central location tests, focus groups and creative ideation sessions, to generate new product and flavor concepts. IFF continually modifies research techniques to ensure that it obtains the most valuable and up-to-date insights from a kid’s point-of-view.

Role of Consumer and Sensory Understanding in Flavor Innovation
Challenges such as sugar reduction in kid-targeted breakfast cereals require the development of innovative approaches to consumer research. The major objective is to provide clear direction to the creative flavorist (the terms flavorist, creative flavorist, and flavor scientist used in this article refer to the scientists responsible for creating flavor formulas for specific customer products and applications) and applications teams, which allows them to develop consumer-preferred flavor solutions and to validate those solutions. To create successful flavor solutions, it is very important to understand the target consumer. For example, flavor profiles tend to be more fantasy-driven for kids. In terms of flavor preferences for kids, fantasy-driven generally refers to a sweet fruity flavor that is not specific to or characteristic of any one fruit. However, although a flavor is not specific to a particular fruit, it can have a
powerful brand association for the consumer and is frequently considered a “signature” flavor for the brand in question. In addition, while adults tend to have an optimal point for sweetness, beyond which their liking decreases, for kids sweeter is usually better.

Sensory and consumer research methodologies consist of two key components: understanding product differences through sensory testing and understanding consumer needs. Differences among products are typically assessed by asking a group of trained “tasting experts” to evaluate different products based on a set of sensory attributes. Discrimination tests can be used to assess the degree of differences among samples. Information on consumer needs is collected through qualitative methods, i.e., talking with consumers, and quantitative studies. The key for any sensory and consumer research organization is to bridge the information obtained from these two types of studies—sensory and consumer—to generate meaningful, actionable insights that can guide flavor development. When the preliminary studies are complete, selected flavor solutions can be tested among target consumers (children and/or their parents) to verify that they are acceptable.

Although the addition of parents to the testing protocol may be a surprise, it is important to understand that not all kid-targeted breakfast cereals are consumed by kids, and adults and kids may have very different preferences regarding the same set of samples. It is critical to understand the preferences of multiple family members, especially the reactions of those who make purchase decisions (often mothers) to flavor solutions. Although the kids have to like the cereal, it also has to appeal to the parents who purchase it and who are likely to be motivated by factors other than flavor.

On the project level, the approach must be tailored to the manufacturer’s objectives. In the case of a reduced-sugar application, this usually requires either a sensory match to the full-sugar product or, alternatively, an improvement in product preference. In a situation where product improvement with sugar reduction is requested, a combination of sensory and consumer research is used to understand which features drive consumer preference for that particular product. The flavor scientist and applications team then attempt to optimize the preferred sensory attributes. If the desired changes are successfully achieved, a study with target consumers is conducted to evaluate the new product against the existing market control product. Acceptance that is equal to or higher than that for the control among target consumers is considered a successful prototype.

There are common formulation challenges across the kid-targeted breakfast cereals industry, as well as unique challenges for each project. Understanding the needs and wants of both the target consumer and the manufacturer is the key to providing consumer-preferred flavor solutions.

**Technical Challenges**

When creating flavors for young children and teens, the process starts with an understanding of the intended audience for the product, as well as an understanding of the manufacturer’s desired outcome and the technical challenges associated with the product. Creating a flavor for a breakfast cereal versus a baked good, for example, requires different approaches to flavor creation.

Breakfast cereals present a unique flavor challenge due to the choice of grain and
other ingredients used for fortification and digestive health. Because refined grains have less natural flavor and fewer nutrients, they are somewhat bland. This base creates a better blank canvas for the flavorist and, therefore, is somewhat easier to flavor than a whole-grain base. Whole grains are rich in nutrients, including vitamins, minerals, protein, etc., and because of the complexity of their components, they present greater flavor challenges. Whole-grain wheat, oats, rice, etc. each have a distinct nutty note, and many people report a slight lingering bitterness compared with their refined-grain counterparts. Flavor scientists have several options they use to overcome this. One method is to use specific ingredients that mask bitterness, enabling the developer to create a product with a desirable grain flavor without a bitter aftertaste.

Another popular trend is the addition of fiber, both soluble and insoluble, to breakfast cereals. Fiber is very beneficial for digestive health, and its addition makes a breakfast cereal a more complete food product. The addition of fiber to a breakfast cereal often mutes or decreases its impact and overall flavor. To overcome this, flavor scientists rely on their experience to formulate the specific flavor required. Sweet brown, citrus, berry, fruit, and tropical are all possible options. Utilizing natural extracts, botanicals, essential oils, and other ingredients, a signature flavor is created and applied to the breakfast cereal and often becomes the defining product attribute.

Breakfast cereal products require high heat during the baking process, and fruit flavors often have a “backbone” of volatile esters that “flash off” when heated. Minimizing the use of these types of ingredients is essential. As a substitute, flavor scientists may use less volatile ingredients that are still perceived as fresh by the consumer. Botanicals, essential oils, and juice concentrates are examples of materials with less volatility and, therefore, an increased likelihood of remaining stable throughout baking at high temperatures.

When no loss of flavor is desired, alternate forms of flavor delivery must be considered. Certain types of encapsulation technologies that utilize extrusion processes (e.g., IFF’s CapLock process) can help protect otherwise vulnerable flavors. It is important to use an ingredient that provides premium storage and flavor quality for a period that is longer than is typical for liquid or dry flavors, such as an ingredient with a matrix specifically designed to overcome the rigors of high-temperature baking. The use of the right encapsulation technology can ensure that the desired flavor is released at the optimum time in the baking cycle.

There are literally thousands of molecules, ingredients, extracts, botanicals, etc. available to flavor creators that can help developers maintain consumer preference for even the most challenging breakfast cereal applications. Although there is a wide array of choices, it is often the end product that dictates what ingredients to use and in what ratio to use them.

**Summary**

Breakfast is arguably the most important meal of the day. Continually improving the nutritional value and taste of breakfast foods for kids is one way to start to build a healthier diet. Achieving this important goal takes a flavor partner with a thorough understanding of the manufacturer’s needs and consumer preferences through the use of the effective methodologies and protocols. Once this critical information is obtained, it is up to the creativity and technical expertise of flavorists and application specialists to take this knowledge and translate it into flavor solutions that result in consumer-preferred flavors and products that will succeed in the marketplace.

What is the future for breakfast cereal and baked good flavors for kids? A number of market forces, including regulatory changes, global and regional flavor trends, the exposure of kids to these trends, the constant market demand for new and unique flavor experiences, and future health concerns, will determine the answer to this question. All of these pressures will drive innovation in breakfast cereals as we continue to strive to meet the changing demands of the market.