

Health & Indulgence in Sweet and Snack Applications

Meeting consumer sensory expectations while fulfilling rigorous demands to cut ingredients such as salt and sugar.

Global consumer spending on snack foods totaled \$374 billion between 2013 and 2014, according to a report released by Nielsen (www.nielsen.com), led by Europe (\$167 billion) and North America (\$124 billion). Meanwhile the markets of Asia-Pacific, Latin America and the Middle East/Africa totaled \$46 billion, \$30 billion and \$7 billion, respectively. Latin America posted the greatest increase (9%), followed by the Middle East/Africa (5%).

Global Opportunity

Worldwide, Nielsen found that the most popular snacks included chocolate (64%), fresh fruit (62%), vegetables (52%), cookies/biscuits (51%), bread/sandwich (50%) and yogurt (50%). However, not all regions snacked the same. According to Nielsen, confectionery dominated Europe (total: \$46.5 billion), though dips and spreads grew the most (6.8%). While confectionery dominated the Middle East/Africa (total: \$1.9 billion), meat snacks was the fastest-growing segment (25%). Salty snacks lead North America (total: \$27.7 billion), with meat snacks growing by 15%. Asia-Pacific was topped by the refrigerated snacks segment (\$13.7 billion), with products such as yogurt, cheese snacks and pudding rising 6.4%. In Latin America, baked goods such as cookies and snack cakes topped the region (total: \$8.6 billion), though its fastest-growing category was savory snacks (21%).

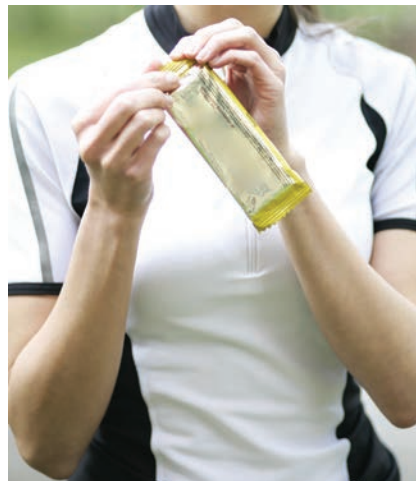
Boosting Healthfulness

Taste and health concerns drive consumer expectations in the snack space. While sodium and added-sugar concerns continue to grow, consumers do not want to sacrifice taste. Flavors must be more true-to-life than ever—and just as indulgent.

“Consumers want to have indulgence on one side, as well as products that are perceived as healthful,” says Tom Sheehan, senior flavor chemist with Kerry Ingredients & Flavours (Americas). “If you can design a product that’s both healthy and indulgent, you’re going to have a winner.”

Flavors must also be authentic. While many of the most popular flavor types in various categories have remained the same over many years—chocolate, vanilla and strawberry, for example—what has changed is the consumer expectation of the flavor profile’s sophistication. Scott Harris, segment head, sweet, Givaudan, explains that in the past a flavor such as strawberry was balanced and non-characterizing, whereas today every facet of the fruit comes to the fore in a flavor formulation, including green, fresh, seedy and jammy notes.

“Consumers want it as close to experiencing the real fruit as they can,” Harris says. In addition to indulgence and health,



Bars have become an aisle of their own, with many new introductions containing high protein levels.

consumers demand more products that eschew ingredients with negative (if unfounded) connotations, including GMOs (genetically modified organisms), gluten and artificial ingredients. And product developers are infusing proteins, fiber and whole grains into products in order to boost satiation, provide meal alternatives and increase health perceptions. The flavorist and product developer’s challenges have never been greater.

The Sweet Factor

Sheehan has experience in the development and optimization of non-caloric natural sweeteners. He explains that sweetening products such as yogurts and baked goods with rebaudioside A involves a number of technical and sensory challenges, requiring a close, cooperative relationship between flavor creation and applications staff to develop the finished product, flavor and modulation in a holistic manner.

The emergence of stevia sweeteners was a key moment in the world of flavor/taste development, Sheehan says: “That was a big push in the direction the consumers were looking for. They were looking for natural, and they were looking for sugar-reduced or sugar-free [products].” Today, he adds, “Removing or reducing sugar seems to have surpassed even fat [concerns] as our customers are responding to consumers’ awareness of sugar’s negative association with diabetes and obesity issues.”

The opportunity in sugar substitutes is massive, targeted to reach \$13.76 billion by 2018, according to a Markets and Markets report. Stevia alone is forecasted to grow 17.6% annually through 2018. However, there remain significant sensory challenges with stevia, particularly off notes and modulation of sweet impact.

That said, Sheehan says, “It [stevia] holds the promise that consumers are looking for ... It is a sugar or sweetener substitute. The problem is that when you work at the bench it’s not as [optimal] as some of the synthetic sweeteners that have been on the market. Therein is the real challenge.”

As a result, it is no surprise that many companies have invested R&D resources into the areas of taste modulation. For example, within the last year Firmenich expanded its taste innovation unit in Asia, which focuses on healthy ingredients for the region. Meanwhile, Senomyx Inc. has extended collaborations on sweet-taste technology with PepsiCo and Firmenich through 2016.

“It’s a story that’s going to continue to evolve,” says Sheehan. “The thing working in our favor in this day and age is ... there are hints of other sweeteners on the horizon that may hold some promise.”

Today, says Sheehan, “You’re still faced with some challenges. Sugar has so many properties besides its sweetening capacity—mouthfeel, bulking and textural.”

Companies have gradually reduced excess sugar and other caloric content from their products over the years in order to avoid disrupting consumer expectations, says Harris. Flavor company knowledge is more important when sugar’s functionality is removed, he adds.

In the case of cereal, flavor is typically added to a sugar slurry that is then applied to the exterior of cereal. This flavor-delivery system also creates a barrier against liquids in order to preserve cereal’s crucial crunch factor. And so removing sugar from a formulation is more than a simple taste issue—it is a texture issue, one upon which consumers are unwilling to compromise. They want the reduced sugar and the crunch.

Harris notes that there is no perfect replacement for the sugar-glass matrix. As a result, the flavor industry is working to optimize flavor in a reduced-sugar environment, employing high-intensity sweeteners and other technologies and methods. The currently available technology gets formulators closer to sugar, but no substitute is perfect.

Pro Protein

While consumer attitudes toward salt and sugar have soured, Sheehan says, “People seem to feel good about protein.”

According to Mintel, 70% of consumers who snack believe snacking is a weight-management tool. As such, high-fiber and -protein products can lend appeal for more health-conscious markets.

Greek yogurts have recently been the emblematic high-protein offering in the snacking world. However, Euromonitor points out that “the protein badge graces tubs and packets in virtually every packaged food and beverage category, swiftly expanding its geographical spread.” This is significant as many traditional breakfast foods such as cereals and toast are low-protein, as are snack foods like potato crisps/chips. Euromonitor notes that this dynamic explains the 9% value growth for nuts in the sweet and savory space, far outpacing chips/crisps, as well as the rise of legume snacks like roasted chickpeas.

The infusion of protein into foods can be a challenge, but product developers and flavor chemists are getting better at formulating some exceptional products, notes Sheehan.

“Some of the soy and dairy proteins [we worked with in the past] were difficult to

work with,” he says. “The quality of the proteins that we are asked to work with has improved over the last decade or so.”

Companies have invested heavily in protein-based projects. For instance, Mane has launched its trademarked Sense Capture Soy technology as part of its larger vegetable and animal protein activities. Archer Daniels Midland Co. (ADM)/Wild has partnered with Burcon NutraScience Corp. to facilitate the manufacture and marketing of Clarisoy, a transparent and soluble soy protein.

Meal-replacement and breakfast drinks certainly benefit from high-protein profiles, but there is also space for cereal bars and indulgent high-protein products, says Sheehan. He notes that product developers are squeezing more protein into products without sacrificing flavor: “The attraction for formulators and our customers is that protein calories displace those that would typically come from sugar and fat, while imparting



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satiation. What I am excited about is that these products can be both indulgent and healthy, and are a step in the right direction in our efforts to reduce dietary sugar intake.”

Harris explains that dairy and nutritional beverages are two of the biggest potential growth areas in North America. For instance, he says, yogurt has room to grow in the United States. However, the country is a “refrigeration society” when it comes to dairy. As a result, Harris says resolving portability via drinkable or other formats is key.

The introduction of savory yogurts could perhaps create a bridge into afternoon snacking, says Harris. But what is savory yogurt? While bacon- or chicken-flavored yogurts are unlikely, savory notes could instead be introduced in unique combinations such as strawberry-basil. Other types of savory crossovers could be paired with vegetables, creating new snacking paradigms.

Non-traditional proteins such as soy, almond and rice milks could transition beyond drinkable formats, says Harris, perhaps in the form of products such as coconut milk yogurts. While

these products may not have the monolithic impact that Greek yogurt has achieved, collectively they could create significant opportunities. The flavor profiles for these products would likely be similar to those of traditional yogurts, but would require the expertise of flavor houses to compensate for the taste, off-note and texture attributes of these novel bases.

Grains & Bars

Traditional breakfast cereals continue to decline, though some hot cereal options have growth potential, says Harris. Some ready-to-eat oatmeals containing fruits can solve cereal’s traditional portability problems. They could also be introduced in savory variations, similar to risotto. Product developers are also experimenting with adding grains to yogurts, though texture is an issue.

On the other hand, bars offer high portability and the capacity to carry an increasingly large protein load for meal replacement and satiation. As Harris says, bars are a grocery aisle unto themselves, offering many different grain forms and infusions of minerals and proteins. The flavor profiles, meanwhile, have transitioned from kid-friendly chocolates and peanut butters to savory, adult-appealing Thai chili, barbecue or even honey mustard, creating a new challenge to traditional salty snacks.

Meeting the complex tastes of global consumers while improving the healthful profiles of formulations will keep innovators busy for the foreseeable future.

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