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Candy Bars You Can Feel Good About

By Kimberly J. Decker, Contributing Editor

Paul Frantellizzi thinks we should all just give up the guilt and make like the ancients. The founder and CEO of Good Cacao, Boise, ID, notes the “many recent articles and studies now surfacing to confirm what the Mayan culture knew all along: Chocolate is good for you." To those of us who always considered a premium bar a bit of an over-the-counter “wonder drug, “this comes as little surprise. But to others—enamored of the notion that whatever tastes good must be bad for you—it flies in the face of conventional wisdom.

But convention isn’t what it used to be, as more of us accept that a judiciously savored (and strategically formulated) candy bar need not oblige one to do penance. “The response we’ve gotten has been huge," Frantellizzi says of his company’s organic “functional" chocolates. But no shine from a healthy halo can supplant what’s made candy bars so irresistible all along: pure sensory pleasure. As he says, “I have always believed that acceptance of chocolate’s health benefits will come with a great-tasting, quality product." Now consumers can believe right along with him, as manufacturers crank out confections that put the health in the healthy indulgence.

Benefits without borders

The glow surrounding functional candy bars is one more symptom of the weakening link between product category and presumed health benefits. As Richard Mueller, chief executive officer, Biothera, Eagan, MN, says: “We’re seeing every type of food and beverage being developed to deliver benefits, like immune support. In chocolates, for example, why not make this sweet indulgence functional through ingredients that provide health?"

Kerry Johnson Anthony, president, Xan Confections, Irvine, CA, credits consumer education with increasing acceptance. “Customers love the idea of being able to eat a great-tasting chocolate that has the added benefits of ingredients such as Wellmune WGP; DHA; CoQ10; folic acid; vitamins A, C, D3 and E; iron; and calcium," she says. “Healthy doesn’t have to be boring or medicinal. You can mix indulgence and daily vitamins without sacrificing taste or healthful benefits."

Mixing indulgence with nutrition appeals to Gen Xers like Johnson Anthony herself. “We’re at the age when maintaining good health has become a reality, but we still believe that some things, like chocolate, should never taste bad," she says. Xan’s CocoPreggers truffles, fortified with vegetarian DHA and folic acid, target expectant moms, while CocoBrain, also made with vitamins and DHA, is popular with moms looking for a snack to give Junior. “Kids enjoy the chocolate," Johnson Anthony says, “and parents can be happy knowing that their children are

consuming a blend of healthy vitamins."

The mommy market, in fact, may be a key driver of healthful candies. “Mothers searching for healthy alternatives for their kids are the biggest target group of consumer," says Bill Bonner, senior vice president, R&D, Viterra/21st Century Grain Processing, Kansas City, MO. “They’ve grown up in the shadow of cereal bars and are very familiar with the products and claims for whole grains, fiber and protein delivery." In his experience, whole-grain oats, multigrain blends, ancient grains, fiber and protein are among “the most-often-requested components that we deal with," which doesn’t surprise him: “This isn’t much of a stretch when you consider that expanded rice has long been a component in chocolate bars."

Candy, or energy?

With grains, vitamins and nutraceuticals slipping into souped-up candy bars, it becomes tougher to distinguish them from their sports-nutrition cousins—or vice versa. So who’s influencing whom? Bonner sees makers of energy, granola and cereal bars as raising the stakes for their confectionery counterparts. “By means of bottom enrobing, a top drizzle or even, in some cases, total enrobing, these manufacturers have continued to blur the line," he says. “That requires typical confectionery marketers to react with similar products."

The back-and-forth dates back to 1986, when Mars introduced its Kudos cereal bar. “That was designed to be pretty close to a Snickers-type bar, but made with healthier ingredients," says Robert Boutin, executive vice president and co-owner, Knechtel Research Sciences, Inc., Skokie, IL. And indeed, the varieties in Kudos’ current lineup—M&Ms, Snickers, chocolate chip and peanut butter—make no apologies for their sweet-shop inspirations.

The bottom line, Boutin says, is that “there is no line anymore" between purportedly good-for-you bars and candy. A look at each category’s typical calorie and fat contents underscores this. As granola bars continue to evolve, “consumer appeal and taste in some cases are put ahead of nutritional values," he notes. “Some candy bars are better for you than nutraceutical bars." Consider Snickers, he suggests. “It has milk in the chocolate, milk or dairy protein in the nougat center and the caramel, and peanuts with protein."

The food of the gods

As Frantellizzi notes, chocolate has plenty going for it even without the help of peanuts and nougat. Among nutrition-savvy consumers, its mere mention calls to mind polyphenol antioxidants, flavonoids, catechins, phenylethylamine (a.k.a., “the chocolate drug"), heart-healthy compounds, mood enhancers and more.

Frantellizzi considers chocolate nature’s original sports-nutrition vehicle. “The body craves real fuel," he says, and chocolate makes for “an amazing delivery mechanism that, when done properly, can be a superfood carrier of many other superfood ingredients." His company hosted a booth at a recent women’s 5K and he “was amazed to hear the comments from 20-somethings to 70-year-old women, all touting the belief that chocolate, like wine, is good for you in moderation," he says.

Not all chocolates elicit the same positive associations, notes Scott Harris, marketing director, sweet goods, Givaudan, Cincinnati. “Dark chocolate, in particular, garners the most value in a

holistic sense with consumers," he says. And research—such as a study documenting the positive effects of polyphenol-rich dark chocolate on blood pressure (JAMA, 2007; 298(1):49-60)—backs up the healthy associations with dark chocolate.

Regardless, the category still has a ways to go before it truly qualifies for apple-a-day status. “Consumers do not seem to be using chocolate as a vehicle for functional benefits just yet, although there is a slow movement toward this," says Harris. For example, he sees some interest in delivering the benefits of epigallocatechin gallate from green tea via chocolates. But this trend “tends to be more of a justification for the added indulgence than a true belief in the benefits in and of themselves," he says.

Finicky formulating

As consumers gradually warm up to the idea of healthful chocolate bars, manufacturers can keep busy figuring out how to formulate the things. “For a bar to be a bar," Boutin says, “you have to use certain basic components: binders, fillings, sweetening agents. Those are the components that hold this matrix together, and they probably constitute some 40% to 60% of the bar." Start adding fibers, proteins and other nutrients, “and the problem becomes that, while you’d like to make something higher in protein or fiber, there’s only so much that you can pack into this delivery system," he says. “And really, that’s what a bar is—a convenient delivery system."

We can’t always predict an ingredient’s compatibility with a chocolate matrix in advance. “Stability, from the standpoint of both the product itself and the bioactivity of the functional or nutritional ingredients, must be validated before a product can be approved for production," says Neil Widlak, director, product services and development, ADM Cocoa, Milwaukee. “Interactions between chocolate or confectionery ingredients and the functional or nutritional ingredients may not be immediate, and will require adequate shelf-life testing to simulate conditions anticipated during distribution and to ensure the product will maintain its physical and functional properties through its anticipated shelf life."

Even an inclusion as innocuous as a cereal piece or grain cluster can suffer if not formulated with an eye toward stability. As Bonner points out, “The high fat levels in chocolate allow for fat migration into cereal pieces, making it hard to maintain the initial textural differentiation." As a solution, he suggests using a cereal cluster “formulated with a thick oat flake and high level of reducing sugar—say, brown rice syrup—as the binder." The reducing sugar not only promotes Maillard flavor development, but hardens on the piece to slow oil transfer. Creating such a shield “is very difficult to do," he admits, but it’s still worth trying. Another smart move he advocates: incorporating the pieces as late in bar makeup as possible to further protect from physical breakdown and fat transmission.

According to Widlak, another major challenge to formulating functional chocolates in solid form involves changes to the product’s viscosity. “Even a small amount of free moisture in the functional or nutritional ingredient can increase the viscosity of a chocolate or confectionery coating significantly," he says. And that can mean problems all down the line. “A change in a product’s viscosity will change its flow properties and, therefore, impact processing conditions," he notes. This affects production rates for molded products like chips, chunks and drops, he says, and may require adding more cocoa butter or other oils to the formulation to bring viscosity back into line.

Watch your temper

Viscosity swings may also necessitate changing tempering conditions “to account for changes in heat transfer related to viscosity," Widlak adds—as if tempering wasn’t tricky enough already. Alas, it’s essential to an optimal chocolate-eating experience.

“Typical tempering of dark chocolate is defined as heating and cooling your chocolate base until you form what is typically known as type-V crystals," Frantellizzi explains. “This happens somewhere between 88 and 90°F. If done properly, your chocolate will be very glossy, and will have the signature snap that’s associated with quality chocolate. You also create a chocolate that will melt at body temperature and have a wonderful mouthfeel."

It doesn’t take much to muck this process up. “Imagine adding a blend of plant sterols at cool or room temperature" to the heated chocolate, Frantellizzi says. “Imagine adding a blend of nutraceutical powders that thicken the chocolate while it is tempering. Any or all of these inclusions can mess with your ability to heat and cool the chocolate properly and, thus, ruin the process of crystallization and temper."

Punning aside, chocolate is a temperamental substance, “and it doesn’t like too much heat, too much moisture, fast cooling, etc.," Frantellizzi says. “It is a dance, and all parties have to be in sync." Thus, due diligence is in order. “We spend untold hours on the R&D bench and in front of our iMacs researching the ingredients, their chemical constituents and possible interactions. We also rely heavily on our ingredient partners and their lab teams. Do your R&D and then run trials and shelf-life tests. Look for anomalies, sudden changes, off colors or temper. If you achieve a quality end product, you should be able to package and store it as you would any chocolate."

Tastes can be deceiving

Just as important as preserving bar stability is preserving its irresistible candy identity—a challenge that can leave manufacturers squaring the circle of “formulating a chocolate product with an additional ingredient at a level that provides a benefit, while maintaining chocolate attributes that drive consumer acceptance," says Widlak. “If a satisfactory and identifiable chocolate flavor or mouthfeel is compromised, the consumer will not accept the product, regardless of the health benefit."

This is why Bonner urges “a commonsense approach" to fortifying candy bars. “There is only so much that we can pack into a single serving," he says. “It makes more sense to introduce lower levels of fortification and build over time as the consumer adjusts to a new concept, than to aim immediately for ‘good’ or ‘excellent’ claims."

Either way, flavor manipulation is unavoidable. “Using encapsulated powders always helps with flavor and stability," Frantellizzi points out. “The right balance is crucial to ensuring proper temper and mouthfeel. Know your limits." But while encapsulation can help mask notorious nutraceutical off flavors, strategic deployment of flavor ingredients is ultimately more effective.

“A lot of functional ingredients carry negative taste attributes," Harris says. “As a flavor company, our challenge continues to be to negate these, or to offset the undesirable character and let the product deliver the health benefits while still delivering on consumer expectations." One way of doing so takes them right to the source of sensation: taste receptor cells. “By working

with receptor cells and understanding the functionality and physiology of taste," he says, “we have developed methods to overcome these challenges in a variety of different applications."

Other companies tackle the bitter, metallic and astringent notes via other means. “Natural modulators, enhancers and maskers are the go-to flavor solutions," says Emil Shemer, director, food solutions, Sensient Flavors LLC, Indianapolis. “These products can enhance sweetness or mask bitterness and other off notes, and function as a method for smoothing out a finished flavor profile."

If wisely chosen, they can also reinforce the healthful theme. Consider the superfruits that some confectioners are working into their bars: layering superfruit flavors atop them only strengthens the impression. “Pomegranate, goji, blueberry and yumberry are still relevant flavors for the category," Shemer says. “Chocolate bars are being formulated to include specialty ingredients that have a healthy connotation, such as superfruit flavors, floral flavors that give a ‘spa’ feeling and tea flavor profiles that capitalize on the healthy association with tea beverages."

How sweet it is

When it comes to maintaining sweetness in the face of nutritional additions—or sugar substitutions—product developers have their work cut out for them, as well. “Sugar, corn syrups, high-fructose corn syrup and crystalline fructose are commonly used in candy bars," says Sanjiv Avashia, senior food scientist, Tate & Lyle, Decatur, IL. But in bars that aim for a lower calorie count, high-intensity sweeteners may need to stand in their stead. When these alternatives have off tastes of their own, they may require flavor adjustment.

Sometimes, the alternatives actually improve the sweetness profile. High-potency sweeteners, such as sucralose, when used at a low level, have the potential to mask unpleasant aftertastes," Avashia says. And, while a 50:50 blend of his company’s crystalline fructose and sugar “provides sweetener synergy and increases sweetness perception by 28% when compared to the sweetness contribution of the individual components," he says formulators can achieve a similar effect with combinations of the crystalline fructose and high-potency sweeteners like sucralose.

When replacing sugar with high-intensity options, manufacturers have to replace bulk. Avashia recommends a bulking agent like polydextrose, which is both low in calories and prevents crystallization. Polyols, as well as inulin and fructooligosaccharides, provide bulk sugar replacement, he adds, but “when formulating with low-calorie bulking agents, it’s important to consider the digestive tolerance of each."

What about woebegone high-fructose corn syrup (HFCS)? ’Tis a pity it’s currently in the perception doghouse, as it’s awfully handy in candy bars.

“Besides being a cost-effective nutritive sweetener, HFCS provides benefits like ease of handling, clean sweetness, humectancy, chewiness, browning and flavor development," Avashia says. By contrast, sugar, and sucrose, specifically, “has a tendency to crystallize and dry out in a high-solids environment, thus becoming less cohesive than HFCS."

Ultimately, candy bar sweetener choice comes down to time-intensity profile, sweetness perception, solubility, the quality of the sweetness—how pleasant is it, really—and any interactions with other formula ingredients, Avashia says. Further, formulators must consider

whether the sweetener is heat stable, and whether and how it contributes to mouthfeel and flavor release.

Some tradeoffs—sweetness versus calories; fortification versus stability—are inevitable.

“The fortunate thing for the formulator," Boutin says, “is that we’re getting more tools now to make better and better-tasting products."

It doesn’t hurt that they’re better for you, either. As Johnson Anthony says: “The world today thrives on constant change, so anything new and proven to be beneficial has a place in this market. Nowadays, so many people are aware of what goes into their bodies that it’s our responsibility to give them new, refreshing and delicious healthy products." Even if they’re candy bars.

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