

**wellmune**  
IN EVERY WALK OF LIFE...  
**WELLMUNE PROTECTS**

The #1 studied immune health ingredient in the USA

**PLT**  
HEALTH SOLUTIONS  
Visit us at SSW2018  
Booth 2863

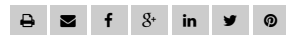


FUNCTIONAL FOODS/BEVERAGES

### Bar Necessities: Formulating Functional Bars That Stand Out in a Crowd

With new bars landing on shelves faster than consumers can carve out cart space, the scene is approaching carrying capacity—and developers must work that much harder to make their products stand out.

Kimberly Decker | Jun 13, 2018



**BOOST CREATINE ABSORPTION UP TO 50 PERCENT WITH OUTLAST®.**

**OUTLAST**

Learn More

Outlast® is an innovative ingredient blend exclusively available through HORN, an IMCD company.

When future historians look back on this time, they may well call it, “The Age of the Bar.”

Okay, maybe they won’t. But if they did, they’d have good cause. Mintel’s “Snack, Nutrition and Performance Bars—US” report (April 2018) valued the sector at US\$6.875 million in 2017—a 2.6 percent increase over the prior year—and estimated that 13 percent growth will bring it up to \$7.735 million by 2022.

So, it’s no wonder retailers dedicate entire aisles to the handy slabs, with formulations that court everyone from aging athletes to gluten-free crumb-chasers. In fact, today’s bars may come as close as you’ve gotten yet to the Greek Isles’ ideal of the “food pill.” (They even

ree grade schoolers. In fact, today's bars may come as close as we've gotten yet to the George Jetson ideal of the 1000 pill. (They even taste good.)

With new bars landing on shelves faster than consumers can carve out cart space, the scene is approaching carrying capacity—and developers have to work that much harder to make their products stand out. While hopping on the bar wagon is “clearly a major opportunity,” according to Michael Bush, executive director at Kerry for GenedenBC<sup>30</sup> and Wellmune®, “the challenge is to generate sales in what’s already a pretty busy space.”

#### Snack's Where It's At

That space is a far sight from the days when granola was about the only bar option shoppers had. But as dramatic as the expansion in bar concepts has been is the transformation seen in the bar shopper.

As Vinti Goel, Ph.D., science manager of VitaFiber, BioNeutra North America Inc., recalled, “The first wave of bar consumers was the health/gym/bodybuilding crowd looking for carbs to provide energy bursts, and to rebuild and refuel muscle after a heavy workout.” By contrast, today’s wave “includes consumers with a range of motivations, from weight loss to a busy lifestyle.”

That broadening of audience perhaps more than anything else has driven bars’ evolution, with the key recent development being “snack bars have emerged from the shadows of the sports-nutrition category to become a product that all kinds of people want to eat,” per Jordan Donohue, business development manager for sports nutrition and health foods, Arla Foods Ingredients.

Consider that while Mintel identified the greatest 2012-through-2017 bar growth in the nutritional and performance segments—43 and 46 percent, respectively—the snack segment continues to dominate by virtue of its sheer size.

To understand why, “it helps to put yourself in the shoes of today’s health-conscious consumer,” Donohue said. “You’re on the go and hungry. Do you want a sugar treat like chocolate or candy, or a high-fat, salty snack like potato chips? Probably not.” Enter snack bars, which he said are “the preferred option for a lot of people because they exist outside the ‘junk food’ space. They tend to be made with wholesome ingredients like fruits, nuts and seeds—and, of course, protein. And consumers’ perception of snack bars is that they provide a healthier choice when feeling hungry. Now that they’re so widely available, they’re much easier to find and the category just continues to snowball.”

Snack bars also fit the way consumers eat today. “They’re the ultimate portable food solution with no mess and minimal waste,” Bush said. “They’re there for emergencies, as a treat or as a meal replacement when sitting down to a full meal is out of the question.” And best of all, “they stay fresh and tasty even when stored for weeks in a cupboard or desk drawer, or kept at the bottom of a bag.”

#### Innovation Vanguard

That’s the hope, at least. In any event, “the past decade has seen a snack-bar revolution,” Bush asserted. “New snack bar products are launched on a regular basis, and food companies big and small are jostling for shelf space and sales.”

Some are breaking ground in the process. “There’s a lot to admire in the category today,” Bush observed. “Some really creative, inventive brands are out there—many quite new to the food industry. Often, they’re smaller companies, with nimble product development operations that can move more quickly than some larger organizations.”

Philip Caputo, marketing & consumer insights manager, Virginia Dare, credited brands that recognize the demand for personalized nutrition and “made-for-me formats” for creating bars that “connect with specific lifestyles and need states while continually improving taste, flavor, texture and positive claims.” Exhibit A: RXBAR, which succeeds “by highlighting clean label bona fides while still offering a large serving of protein for those seeking it,” he said.

For her part, Trish Elking, marketing industry leader—bars, snacks, cereal, DuPont Nutrition & Health, said “innovative shapes, textures, protein bites and balls, resealable packaging, decadent dessert-inspired flavors and novel functional ingredients” are keeping the category fresh. And don’t forget transparency—literal or figurative. KIND Bar, she noted, uses its clear packaging to signal, “in essence, they have nothing to hide.”

#### Standing Out in a Crowd

But transparency only goes so far. “Customers are coming to us asking a consistent question,” said Jim Komorowski, chief science officer, Nutrition 21 LLC. “How do we differentiate our products from the rest of the market?”

Jennifer Stephens, vice president of marketing, Fiberstar Inc., regularly witnessed this dilemma in action at trade shows. “At the last few shows I walked, I noticed that the bar category is saturated with startups,” she said. “The barriers to entry are quite high in the category in

shows I wanted, I noticed that the bar category is saturated with startups," she said. "The barriers to entry are quite high in the category in the traditional sense, so I was curious what was driving this plethora of startups. Some speculate that the food industry is the next tech industry for investors—so there is investor money fueling this phenomenon. However, some of these startups are actually gaining traction despite weak differentiation points." How? Social media and online sales help, but the bars that truly do best "are those with a defined product positioning and differentiation versus what else is on retailers' shelves," she concluded.

Getting to that point takes knowing your consumer, Bush said. "This is true across age groups and includes market trends and taste and nutrition preferences within the region where the product will sell," he noted. "Pay close attention to the ingredients you're including in your bar. Ask yourself: Why am I using this? What will our target consumers think? Is there another ingredient I should consider using instead? And then ask about your point of difference: Are you creating a 'me too' product, or are you bringing something new to the snack bar aisle?"

As Donohue put it, "Consumers buy snack bars for a variety of reasons and occasions, so it's important to understand who you're making a bar for and what their motives are for choosing a particular bar over another. Get this right and you could have a hit on your hands."

#### Fat Chance

One clear motive: nutrition. According to Packaged Facts' 2017 report, "US Retail Market Trends and Opportunities," of the 39 percent of consumers who reported buying nutrition bars, 67 percent look for high-protein content, 53 percent sought low-sugar levels, half wanted high fiber and 36 percent welcomed "healthy" fats.

Healthy fats? Once an oxymoron, the notion that fats can be healthful—rather than the culprit behind weight gain, dyslipidemia, type 2 diabetes, cardiovascular disease and more—is finally sinking in with the scientific community and the public. This acceptance of fats as favorable has encouraged bar formulators to rebalance their nutrient profiles in favor of strategically chosen lipid content.

Omega-3 fatty acids from marine, algae and flaxseed sources have long enjoyed a high—and positive—profile, as have monounsaturated fats found in many nuts and seeds. But evidence suggests that medium-chain triglycerides (MCTs) might also confer benefits in cognitive and sports performance, while boosting metabolism, fat oxidation and reduced food intake, said Alice Hirschel, Ph.D., technical business director, ABITEC.

Her company supplies Captex MCT oils from coconut and non-palm sources, and powdered Nutri Spense MCTs—both of which contribute healthy fats and "enhance texture and mouthfeel" in bars, she said. "Primary questions when formulating bars with high-quality lipids involve inclusion rate and moisture content," she continued. "Moisture content is a critical consideration in bar manufacturing, and when oils can't be included, our powdered lipids provide very little additional moisture to support the bar's nutrient profile, texture and stability."

#### Workhorse Ingredients

North Americans consume, on average, 15 g to 18 g of fiber per day—half the 38 g and 25 g recommended for men and women, respectively. "I think there's a recognition that adding fiber to bars is full of pluses," Goel said. She called fiber "a digestive workhorse," and underscored prebiotic fibers feed good-for-you gut bacteria. "Fiber helps with weight management by filling you up so you eat less, and some may also help with calcium absorption and cholesterol management," she added. "It's really one of nature's nutritional powerhouses, and one of the best 'sugar blockers' we have."

Fiber ingredients can play nuts-and-bolts functional roles in bars, too. "Bars tend to dry out over time, so developers look for water-management ingredients like fibers. Fibers that can bind water and remain heat-stable during processing are ideal," Stephens noted.

According to Elking, polydextrose is "a highly digestible fiber source with a clean, neutral flavor that also helps manage bar shelf life while delivering binding qualities in sugar reduction." She described it as "very complementary" to other syrup ingredients, and added that because it exhibits fairly low sweetness, "it's a good option for savory bars."

Another functional fiber is Fiberstar's Citri-Fi. A byproduct of citrus juicing, it undergoes a physical process that opens its structure and increases its surface area, exposing hydrophilic and hydrophobic regions so it binds not only water—"without adding gumminess or toughness," noted Kurt Villwock, Fiberstar's director of research and development (R&D)—but fats and oils, as would an emulsifier, obviating, in some cases, the need for ingredients like lecithin or mono- and diglycerides.

The upshot: The citrus fiber keeps a bar matrix softer and more plasticized over its shelf life, restricts fat migration and yields a cohesive—but non-sticky—dough in bars formed via pressing or cold extrusion. "In forced-air-dried bars," Villwock explained, "it provides a tender bite, reduced browning and reduced chalky or dry textures, particularly in low-fat and low-sugar variants." It works well with less functional bulking fibers and usually improves the mouthfeel of oft-challenging, high-fiber applications. He added, it's "a great way to simplify an ingredient declaration."

## Team Protein

While fiber and healthy fats both boost a bar's nutritionals, perhaps no macronutrient gets the attention—in bars or elsewhere—that protein does. Mintel's recent bar report called the focus on protein "evident among product launches," with 23 percent of bar consumers choosing bars that pack 20 g or more protein per serving, and suggested "differentiation is important for bars to stand out from the pack of high-protein options, perhaps through a focus on protein source."

For bars, that source has long been dairy, with whey protein a popular choice. Aside from its full complement of amino acids, whey carries a "pleasant taste that makes it acceptable to most consumers," Donohue said. "Many plant proteins, by contrast, present taste challenges, which can limit their inclusion in snack bars, or necessitate the use of masking agents that can compromise clean labels." And while he tipped his hat to plant options for goosing protein's strength as an ingredient, "one thing that hasn't changed is dairy proteins, like whey, have superior nutritional quality and numerous health benefits documented in scientific literature spanning decades."

Yet for Elking, "soy is still the best option." Her company's 90 percent soy proteins are flexible in formulation, deliver good texture and come in variable sizes and shapes, "giving manufacturers the ability to create a differentiated product that's simple and clean," she said.

But these days, soy faces competition not only from pea, legume, seed, grain and other plant proteins that appeal to consumers' fondness for clean, green ingredients, but from some animal-based options, as well, including collagen, which Heather Arment, marketing coordinator- North America, GELITA, called "one of the hottest ingredients of 2018."

With roughly 30 percent of the human body's protein content comprising collagen, it's the key protein making us, us. And though formulators have successfully included collagen peptides in topical products for years, "recent scientific evidence confirms the highest efficacy can be achieved when collagen is ingested orally," Arment said, paying dividends ranging from musculoskeletal and joint health to improvements in skin condition and metabolism.

Better yet, collagen peptides are neutral in taste and odor, helping formulators offset "the 'icky' attributes of other protein ingredients," especially plant-based proteins from pea or soy, Arment continued. Collagen's binding properties help improve bar texture, too. "And as pure proteins with no allergenic potential, sugar, fat, cholesterol or additives, collagen ingredients contribute to that oft-sought 'clean label.'"

Stephanie Lynch, vice president of sales, marketing and technology, IDF, noted the company is fielding requests for allergen-free ingredients "to support healthy, protein-rich snack bars." IDF's chicken-derived ingredients, she said, "allow snack-bar formulators to incorporate the nutritional benefits of real chicken protein and support allergen-free claims."

Chicken protein has a natural home in the growing herd of "meat bars" staking a claim in the sector. "The meat snack category has and will continue to see impressive growth, according to [GlobalData]," Lynch said. "However, consumers want more than jerky-style meat snacks, and this has led to the introduction of meat bars—a convenient way to deliver protein and other nutritional benefits that aligns with the popular keto and paleo diets."

IDF's hydrolyzed CHiKPRO chicken protein isolate powder and bone broth proteins are neutral tasting, texturally smooth and "easily incorporated into protein-rich snacks and bars," Lynch said. CHiKPRO, a complete protein fully derived from chicken, supplies not only protein but nutrients like zinc and iron. The bone broth is low in sodium, rich in type II collagen and available as a frozen concentrate, dehydrated protein (88 percent) powder and shelf-stable concentrate.

## Form Follows Function

With protein from any source now so ubiquitous in functional formulations, "one ingredient that can help formulators give protein bars an edge is Velositol," Komorowski said. A chromium/amylopectin complex that interacts with protein to safely stimulate insulin activity and increase muscle cells' sensitivity to the hormone, Velositol enhances amino acid uptake, stimulating muscle protein synthesis (MPS).

When added to just 6 g of whey protein, the ingredient appears to double MPS compared to protein alone, according to one study Komorowski noted (*J Int Soc Sports Nutr.* 2017;14:6). Per a preclinical study, its addition to pea protein significantly increased MPS by 43 percent, compared to pea protein alone. "For formulators looking to create a bar that does more with less, it could be the ingredient they need," he said.

And it's not alone, as a host of "specialty" functional ingredients add value to snack bars. "Branded functional ingredients offer an excellent point of difference that food companies are beginning to consider more seriously," Bush said. Interest in immune health is bringing attention to his company's patented Wellmune beta glucan from bakers' yeast, with clinically demonstrated immune action that lets bar makers "differentiate their products via a unique functional ingredient that offers health benefits consumers want," he said.

Stacy Dill, marketing director, Kemin Human Health and Nutrition, predicted immune-boosting bars will gain momentum in coming years. Her company's nutrient-dense, whole-algae fermentate, BetaVia Complete, and its algae-sourced beta glucan, BetaVia Pure,

years. Her company's nutrient-dense, whole algae fermentate—*Detavia Complete*—and its algae-sourced beta glucan, *Detavia Pure*, “provide nutritional support for a healthy immune system,” she said, and are “great for bars because they’re heat stable.”

Kemin also formulated brownie-bite prototypes containing its spearmint-based functional ingredient Neumentix, which Dill said has clinical support for its ability to enhance “cognitive and physical performance related to multitasking with continued use.” And weight management bars continue to thrive, drawing attention to Kemin’s Slendesta, a satiety-inducing ingredient, Dill said.

Relatively new to shelf-stable bars are probiotics, which had heretofore been restricted mainly to chilled applications like yogurt. The development of shelf-stable ingredients like Ganeden’s flagship *Bacillus coagulans* GBI-30, 6086 means “with the right strain selection, it’s now possible to formulate shelf-stable bars that contain probiotics,” Bush said. Unlike *Lactobacillus* and *Bifidobacteria* probiotics, *Bacillus* strains aren’t vegetative; they form spores under harsh temperatures and pH, and vegetate when conditions improve. *Bacillus coagulans* and *Bacillus subtilis* are the prime genus and species for shelf-stable end uses, Bush said, but stresses not all *B. coagulans* and *B. subtilis* are probiotic. “Therefore, it’s crucial to choose a *Bacillus* strain backed by research.”

#### Sweet Solutions

While consumers generally appreciate seeing functional ingredients on bar labels, “one factor’s essential,” Bush said: “natural.” A Kerry-commissioned survey of more than 700 consumers found 82 percent considered clean labels with short lists of recognizable ingredients important. “This demonstrates that clean label is no longer an emerging force,” Bush said. “It’s the new normal.”

Judie Giebel, AIB-certified master baker, technical services, Briess Malt & Ingredients Co. added, for some consumers, the flipside to being “clean” is being “free from” ingredients such as gluten, genetically modified organisms (GMOs), and excess sweeteners both artificial and “natural.” Yet natural sweeteners contribute mightily to bar formulations, lending not just sweetness and flavor, but texture and binding.

“One of the biggest hurdles in formulating bars is controlling texture and moisture migration,” Giebel said. “Using all natural ingredients and reducing sugar levels eliminate important barriers to moisture migration. So, keeping the right bar texture and good shelf stability requires a balance of inclusions to binder. To troubleshoot this, formulators must analyze all ingredients and find the correct viscosity versus overall water activity. Determining the dextrose equivalent of sweetener and sugar profile is critical to the final product.”

Paul Verderber, vice president of sales, Carolina Innovative Food Ingredients Inc. (CIFI), agreed “sugar reduction is one of the most critical industrywide trends, and it’s very pertinent to bars.” CIFI’s sweet-potato-based sweetener, Carolina Sweet, “is an innovative clean label solution” for sugar reduction that helps bind bar ingredients in formulation, he said. “It also has great mineral content, making it especially beneficial for a healthy lifestyle.” With its nutritional and functional cred, he said it’s “a natural sweetener, with extra benefits.”

#### Beyond Clean

CIFI harvests a number of ingredients from sweet potatoes, and many are finding a home in bars. With more consumers avoiding gluten, its sweet potato flour “is seeing strong interest for its potential to support gluten-free bars,” he said. Because its dried sweet potato ingredients contain soluble and insoluble fibers, formulators can “increase the fiber content of bars using a vegetable that consumers already frequently enjoy.”

Which is no small matter. “Consumers know and love sweet potatoes,” Verderber said. The fact that they’re “real,” “whole” foods lets ingredients made from them occupy a position in consumers’ esteem that may be even higher than ingredients they deem “clean.”

Noted Don Trouba, senior director, go-to-market, The Annex by Ardent Mills, 22 percent of consumers think bars contain too many artificial ingredients, per Mintel. “So the trend in consumer demand is for more nutritious bars made with ‘real’ ingredients like natural sweeteners, whole grains, nuts and more. Consumers want to read the package and see ingredients they know and love.”

They also want to see eye-catching colors like the ones they find at farmers markets, and Ardent Mills’ colored barleys—purple, blue, black—“provide bursts of color in traditionally beige-colored foods,” Trouba said.

Grains further enhance a bar’s appeal by lending “chew, crunch, crisp pops and other textural interest,” Trouba continued. Angela Ichwan, senior director of research and technical solutions at Ardent Mills, recommended mixing different grains and forms thereof “to find that ‘sweet spot’ in flavor, texture and visual appeal.” For example, while whole sorghum flour fits high-moisture applications, above a certain level it can impart grittiness. “So it’s important to conduct a lot of trial and error to achieve the best ratios for each grain and finished product,” she said.

Mark Stavro, senior director of marketing, Bunge, also suggested ancient grains like millet, sorghum and quinoa “have trend appeal, flavor and nutritional benefits and can be used as alternative to wheat-based grain for gluten-free applications.” Stavro noted his company’s extrusion capabilities turn not only grain-based ingredients, but vegetables, legumes and more into bar-friendly extruded inclusions “featuring a variety of flavors, colors and shapes.”

## The Best Kind of Blues

Tom Payne, industry specialist for the U.S. Highbush Blueberry Council, said the color and shape of real blueberries never go out of style in bars. “Wise innovators specify real fruit over simulated bits containing no fruit,” he said. And bar formulators have plenty of real-blueberry ingredient formats to work with.

Whole berries “provide excellent piece identity” while crushed product looks nice swirled throughout a bar, Payne said. Blueberry concentrate lends intense color, and freeze-dried berries “provide crisp flavor notes, tang and real fruit-flavor bursts.” Dehydrated blueberry ingredients suit formulations with low moisture and water activity, are easy to integrate into intermediate-moisture bars and “can enhance products where fruit size and individual piece identity is needed.” Formulators can blend blueberry powder into compound bar coatings, and osmotically preserved blueberries “provide fruit size typical of fresh, whole, plump berries while needing no refrigeration,” he said.

All formats lend natural sweetness that can translate into lower sugar levels. Blueberries have become “almost synonymous with good health, thanks to all the good news about antioxidants and health benefits,” Payne added. “The coming year promises to see an increase in formulations that team dried blueberries with other antioxidant-rich ingredients such as crunchy grains, chocolate chips, walnuts, pecans and cashews.”

### Kernel of Truth

Almonds aren’t just for snacking. Noted Jeff Smith, director of marketing, Blue Diamond Almonds Global Ingredients Division, “No matter the form—whole, diced, sliced or butter—almonds offer maximum versatility for bar formulations.” Whole forms pay off in “crunch factor” and “often take the ‘hero’ position in a bar,” he said. Almond butter adds flavor and textural contrast. “Diced almonds can easily be mixed into energy and nutrition bars for texture, flavor and crunch.” And almond flour “contributes to the base formulation and still delivers all the health and nutritional benefits of almonds in other forms.”

Along with those nutritional benefits come a gluten-free pedigree and “cleanliness,” Smith said. “Almonds’ ‘healthy halo’ combined with consumers’ growing preference for plant-based and all-natural ingredients can give nutrition bars containing almonds a real advantage in the market.”

### All in Good Taste

Besides, they taste great. And as the bar market has matured, that’s more important than ever. “Bars aren’t just for protein or sports enthusiasts anymore,” said Andrew Wheeler, corporate director of marketing, FutureCeuticals. Now that they’ve “moved from the fringes to center-store,” he said, “gone are the days of bland, hard-to-stomach products. As with other foods, consumers have a more sophisticated palate today and look for the bar ‘trifecta’: flavor, texture and function.”

Yet, Caputo said, “it’s no secret that, especially when compared to more traditional snacks, bars can struggle to deliver the taste consumers expect.” Bars rife with plant protein “can introduce musty off notes, which creates challenges for formulators,” for instance. Even when the target flavor is something as simple and classic as vanilla or chocolate, “often we find that added complexity helps conceal the off notes of the protein in question,” he said. “So we might deepen the chocolate to make it richer and fudgier, or we might use a specific blend of vanillas to achieve an especially aromatic profile.”

What’s more, Caputo continued, “opportunity exists for brands to introduce bars that appeal to consumers with new, interesting profiles—perhaps combinations of the familiar and surprising, like chocolate chile or dirty chai.” For now, though, he said bar flavors “remain largely familiar;” vanilla, chocolate and peanut butter are mainstays.

Mastering the bar may not be rocket science after all. Said Wheeler, “Don’t overthink it. Look to real, whole-food nutrition and manufacturers or suppliers who can partner with you to design something consumers will love to eat. Tell consumers what’s in it and how much; show them where it comes from; keep the ingredient deck small; demonstrate corporate responsibility; and deliver on your nutritional promise for goodness sake.” Done deal!

*Kimberly J. Decker is a Bay Area food writer. While her love of eating led her to study food science at the University of California, Davis, her love of the written word prompted her to minor in English. Since then, she’s worked in product development for the frozen sector and written about food, nutrition and the culinary arts, getting her hands into everything from cookbook projects for local chefs, to corporate communications and regular appearances on the pages of industry journals. Reach her at [kim@decker.net](mailto:kim@decker.net).*

---

## Raising the Bar: A Co-Manufacturer’s Perspective

As a contract manufacturer of bars and nutrition products with more than 20 years in operation under its belt, Nalleo LLC has probably

As a contract manufacturer of bars and nutrition products with more than 50 years in operation under its belt, NELLSON LLC has probably seen it all. The company makes bars for a variety of segments—sports performance, active nutrition, health and wellness, weight management and medical nutrition, to name a few—and serves brands available through retail, ecommerce, direct-to-consumer, network marketing and closed distribution. **Natural Products INSIDER** sat down with Bart Child, Nellson's senior vice president of commercial development, to get his take on where bars have been, and where they're headed.

INSIDER: How have bars changed over the years?

Bart Child: The initial iterations of nutrition bars were simple recipes with few ingredients offering a balanced supply of carbohydrates, fat and protein marketed for energy and meal replacement. Over the years, formulations became more complex in an attempt to achieve longer shelf life, meet evolving regulatory claims and differentiate through new formats and ingredients.

INSIDER: Give us some examples.

Child: A weight management product might seek ingredients that promote satiety, digestive health and energy, whereas products marketed for overall health and wellness might include ingredients to achieve specific claims like organic, non-GMO [genetically modified organism], vegan, etc.

One change that stands out the most is the manipulation of carb, fiber and fat ratios to achieve unique functional claims. For example, brands trying to appeal to athletes steered from a balanced nutrition approach to a focus on higher protein, promoting muscle growth, sustaining mass and helping with recovery.

Another notable change is the desire for a "cleaner" label. Consumers not only want a shorter list of ingredients but are also seeking a bar that provides some nutritive value with ingredients perceived to be non-artificial.

INSIDER: You've probably seen a lot of bars succeed—and fail. What qualities point toward the former and not the latter?

Child: Brands that succeed offer a consistent consumer experience encompassing flavor, taste, texture and availability. Maintaining these expectations throughout shelf life requires a scientific approach to product development that considers everything from ingredient pairing, strategic sourcing and manufacturing scalability to distribution.

So we're receiving more requests from customers asking us to co-develop, and are working more collaboratively with us during the formulation phase. This is important, as a small change to a formula can have a big impact on taste, texture, manufacturability, shelf life and cost.

INSIDER: What bar projects are customers bringing to you lately?

Child: The concepts range from familiar bar types—extruded and slabbed—with new functional benefits to new formats like mini bars, bite-sized and ball shapes that convey on-the-go convenience and portion control.

INSIDER: What sticking points keep emerging when creating bars?

Child: A significant hurdle is shelf life, particularly as consumers demand more extreme nutritionals while brand owners and distributors continue to expect nine to 18 months' life. Very high protein or fiber levels might lead to significant hardening over time, whereas low-sugar formulations might prove more difficult to flavor over time, as flavor delivery falls flat without the required sweetness or mouthfeel of sugar.

Fortunately, suppliers have made great strides in improving the functionality of ingredients like proteins, fibers and nonnutritive sweeteners by targeting them toward specific manufacturer and consumer needs. For example, while proteins A and B might share the same labeling and nutritional contribution, a supplier might optimize A for stand-up during manufacture, and B for a softer texture over shelf life.

INSIDER: All this happens after a customer engages your services. What homework are they doing before they get to that stage?

Child: One vantage point for brands today is the ability to use channels like various media platforms to validate a product idea prior to launching it. This allows them to pool positive and negative feedback to make product improvements ahead of time.

RELATED



SupplySide West podcast: Exploring the state of the organic industry  
OCT 23, 2018



The relationship between sleep aids and stress management  
OCT 22, 2018



Children's health finalists for 2018 SupplySide CPG Editor's Choice Award -  
image gallery  
OCT 19, 2018



What's Hot at SupplySide West 2018  
OCT 19, 2018

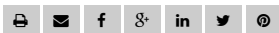


[BUSINESS RESOURCES](#) > [OPERATIONS](#)

## SupplySide West podcast: Regulatory women are backbone of nutrition industry

Women that advise on legal and manufacturing matters in a traditionally male role show strength of character

Sandy Almendarez | Oct 25, 2018



Natural Products INSIDER

SupplySide West podcast: Regulatory women are backbone of nutrition industry

SOUNDCLOUD

Share



A regulatory consultant in the food and supplement industries must be confident and knowledgeable to navigate the murky waters of laws that are often not black and white. When a woman takes this role, she is acting outside of gender norms in a field dominated by men. In this Healthy Insider podcast, Rena Cohen-First, director of sales, Western Region, [The Wright Group](#), talks with Denise Webster, regulatory consultant, [Food Brand Protection](#), about her career as a Gen X female leader. Sandy Almendarez, editor in chief, **INSIDER**, shares a bit of the Millennial perspective.

They discuss:

- The type of personality it takes to be a regulatory consultant in the food and supplement industries, and Webster’s successful career path;
- The perks and flexibility a company can provide to attract female leaders;
- Where the next generation of women in the health and nutrition industry can find mentors and solidarity.

Links and resources

- Cohen-First will be speaking at the SupplySide Workshop “[Boosting Your ROI: Secrets to Business Success](#),” Thursday, Nov. 8, 9 to 11 a.m. At the workshop, she’ll provide insights she gleaned from conversations like the one on today’s podcast.

Got feedback? Email Sandy at [Sandy.Almendarez@informa.com](mailto:Sandy.Almendarez@informa.com), or tweet to [@NatProdINSIDER](#) using the hashtag #INSIDERPodcast

TAGS: [MANUFACTURING](#)

#### RELATED



[Leveraging the Influence of Influencers](#)  
OCT 25, 2018



[Top happenings at SupplySide West 2018](#)  
OCT 23, 2018



[What's Hot at SupplySide West 2018](#)  
OCT 19, 2018



[SupplySide West podcast: Driving forces affecting the nutrition industry](#)  
OCT 18, 2018

[Next Article](#)

[Previous Article](#)

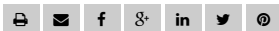


[BUSINESS RESOURCES](#) > [LABS/TESTING](#)

### Utilizing inhibition assays to determine probiotic stability

Inhibition assays can help determine whether an active ingredient supports probiotic viability in a combination formula.

[Jeremy Bartos](#) | Oct 25, 2018



Creating a successful innovative probiotic dietary supplement can be achieved via many pathways, including wisely choosing the probiotics strains based on clinical substantiation; highlighting the type of packaging chosen; using finished product modalities such as gummies, fast-melt powder, chewing gum and chewables rather than traditional tablets and capsules; and by adding synergistic non-probiotic ingredients. Of the options, the one that proves to be the toughest to execute is combining probiotics with non-probiotic ingredients, particularly botanicals.

Just like the animal kingdom, plants have evolved elaborate defense systems to help prevent invasion by bacteria, molds, yeasts, viruses, etc. And not coincidentally, the phytoconstituents that help make up this aspect of a plant's defense system are often the same ones that are isolated to address specific health concerns, which makes them potentially harmful to the stability and integrity of probiotics when combined in a condition-specific product. Take turmeric, for example; some of the vast health benefits that have been published on its curcuminoid phytoconstituents are due their potent antimicrobial activities. So how can one determine which ingredients are safe to combine with probiotics in the same product? Two words: inhibition assays.

Inhibition assays modify traditional plating techniques used to measure bacterial colony-forming units (CFUs) in such a way as to determine the manner by which an ingredient affects the growth and integrity of a probiotic. Inhibition assays can quickly help determine if an ingredient truly harms (kills) the probiotic, or if the probiotic colony growth is just delayed in the presence of the ingredient as the growing conditions become less than optimal.

The method is simple: A mixture of bacteria and ingredient are made and rehydrated in standard broth (with a positive control that does not contain the chosen ingredient). A sample is removed from the solution and plated immediately on agar. The remaining solution is kept at room temperature for 2 hours, then remixed and plated. The plates are then incubated in an anaerobic environment for 72 hours. After incubation the plates are counted and the colonies per gram compared between T=0 and T=2 hours.

What sort of information do inhibition assays reveal? If growth does not happen at T=0 or T=2 hours, it is a good bet that the chosen ingredient either kills the probiotic or inhibits it so badly that it will not grow (meaning its presence in the finished product cannot be confirmed). If growth at T=0 is higher than at T=2 hours, it is likely the ingredient can kill off the probiotic over time and, thus, may not be a good match. If growth at T=0 is stymied but growth at T=2 hours compares favorably to the expected CFU count (less than 25 percent difference), it is likely the ingredient of interest inhibits/delays growth of the probiotic but does not kill it. If growth at both T=0 and T= 2 hours compares favorably to the expected CFU count—congratulations on finding a probable match! It is important to note that inhibition assays do not take the place of traditional real-time stability studies for probiotics; rather, they complement stability studies, allowing the team to troubleshoot pilot formulations before they become commercialized product.

Going back to turmeric as a working example, our team found not all turmeric ingredients show negative results with inhibition assays, and not all probiotics are inhibited/killed in the presence of turmeric. Although not all probiotics fared well, a particular strain of *Lactobacillus acidophilus* thrived, especially in the presence of microencapsulated turmeric ingredients designed to improve bioavailability of the curcuminoids (a “wall” between “bad neighbors” per se). So choose probiotic and non-probiotic ingredients wisely and confirm the choice with inhibition assays to prevent stability trouble down the road.

Jeremy Bartos, Ph.D., is the vice president of research and development (R&D) at [MeriCal](#). MeriCal is presenting a session, “The Art of Manufacturing an Innovative Probiotic Product,” on Thursday, Nov. 8, as part of the [IPA Probiotics Resource Center](#) at SupplySide West.

TAGS: [PROBIOTICS](#) [HERBS & BOTANICALS](#)

#### RELATED



**What's Hot at SupplySide West 2018**  
OCT 19, 2018



**SupplySide West podcast: Effectively partnering with contract labs**  
OCT 17, 2018



**Selecting a contract lab to ensure valid lab results**  
OCT 09, 2018



**SupplySide West podcast: Effectively partnering with a contract laboratory**  
OCT 01, 2018

[Next Article](#)

[Previous Article](#)

Sign up for the Natural Products Insider newsletter.

SIGN UP >

 NATURAL PRODUCTS  
**INSIDER**<sup>®</sup>  
an **informa** business

[About](#)

[Advertise](#)

[Sitemap](#)

[Privacy Policy](#)

[Terms of Service](#)

[Cookie Policy](#)

Follow us:



© 2018 Informa USA, Inc., All Rights Reserved