Hope in a Bottle

Are things looking up for the mood and stress supplements market? p. 30
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From the Editor

NY AG, GNC reach agreement. But is it a mistake?

Are health food stores still relevant?

Who is today’s dietary supplement shopper? What Big Data tells us.

Are probiotics explore some new marketing platforms.

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Freedom to Operate

In the nutraceuticals space, “borrowing science” is the polite way to refer to the practice of wrongfully using another company’s ingredient science to substantiate your own. But if we’re being less polite, “borrowing science” is “stealing science,” and it’s a crime. Unfortunately, as nutraceutical players increase and supply chains globalize, IP infringement is a growing problem and one that’s harder to untangle.

For a branded-ingredient supplier these days, it’s not enough to hold a valid patent. One must be diligent about protecting that patent. But suppliers may find it difficult to track infringement to the source, especially when a case involves a guilty party based on foreign soil. Not only must the patent holder comb through a product’s supply chain in order to find the infringer, it also must deal with foreign patent offices and court systems, all of which can be “clogged up and extremely slow,” says Rakesh Amin of law firm Amin Talati & Upadhye (Chicago). “There are additional logistical issues and discovery hoops that you have to go through,” he says, “and then even if a U.S. company is awarded a judgment, it’s still hard to enforce unless [the infringing company] has assets here in the United States.”

Small suppliers purposefully skirting the law are even harder to pin down, he adds. “If it’s a major European company that is committed to doing business in the United States, it’s much easier. If it’s a fly-by-night company in Asia, it’s going to be much more challenging.”

With all this in mind, it’s notable that ingredient supplier Sabinsa Corp. (East Windsor, NJ) recently prevailed in two of four patent-infringement cases over its Curcumin C3 Complex ingredient. In March, ingredient suppliers HerbaKraft and Prakruti Products Private Ltd. agreed to cease sales of related curcumin ingredients, with the settlement submitted to the New Jersey District Court confirming Sabinsa’s patent valid and enforceable. (At the time this article was published, Sabinsa’s other two Curcumin C3 Complex cases were ongoing.)

Following its victory in the Prakruti case, Sabinsa’s founder Muhammed Majeed, PhD, said in a press release, “This settlement sends a clear message to all suppliers on foreign soil that Sabinsa is very serious about defending its patents. This win clearly shows that sitting in India while violating our curcumin patent does not mean you can escape IP theft consequences. We also see this as a win for our customers and their consumers alike…”

And although Sabinsa’s marketing director Shaheen Majeed describes pursuing cases against foreign companies as “an uphill battle,” it’s a battle he says is nonetheless crucial that more patent holders take on.

Sabinsa isn’t the only firm pursuing IP offenders. Nutrition 21 LLC (Purchase, NY) successfully defended its Cromax chromium picolinate patent against Schwabe North America and Nature’s Way. And then there are the IP battles over krill and algae. In fact, Amin says more companies these days are protecting IP rights, both seeking protection and defending their own. “I see more companies concerned about IP protection and more companies concerned about not infringing on a patent or trademark. Back in the day, you didn’t see that many clients seeking freedom-to-operate opinions, but currently you’re seeing it all the time because companies realize that an ounce of prevention is nowadays worth even more than a pound of cure.”

Marketers aren’t protected either just because they may be unknowingly purchase ingredient from a supplier that’s treading on another supplier’s ingredient IP. “If they’re offering an infringing product for sale, then there is exposure. It doesn’t need to be intentional,” Amin says.

At the end of the day, engaging in the IP fight is about teaching a lesson, Shaheen Majeed says. “There’s only so much you can tolerate” when it comes to companies borrowing your science, he says. “Hopefully, others who are being infringed upon can look at this [Sabinsa victory] and say, ‘Hey, we’re also not going to sit down and take this.’”

And there’s only so much the industry at large can tolerate, too, says longtime industry member Suzanne Shelton, Sabinsa’s PR representative. Simply put, she says, “borrowing science” is not sustainable for the business of industry. “More voices are saying, ‘Cut this out,’ because it hurts the entire industry for short-term monetary gain. Given the fact that innovation is what moves our industry forward, and demonstrated health benefits are going to be having everything in the world to do with protecting the industry…the companies that have science-backed products with innovative technologies supported by patents are going to be the ones left standing.”

If industry wants to build a reputable, science-backed image, then companies who make the financial investment in research and quality must be protected—not only at home but also abroad. Gloves on.

Jennifer Grebrow
Editor-in-Chief
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NY AG, GNC Reach Agreement. But Is It a Mistake?

New York Attorney General (NY AG) Eric Schneiderman has reached an agreement with one company, GNC, amidst the AG’s ongoing investigation of dietary supplements. On March 30, GNC publicized a letter to the NY AG’s office documenting the agreement’s terms, which allow GNC products back on New York State store shelves. While the agreement acknowledges that GNC’s investigated products met all FDA current Good Manufacturing Practices (GMP) regulations, GNC’s letter says the company “agrees” with the NY AG’s position that DNA barcoding holds great promise for further authentication. The company agreed to adopt a number of initiatives for its Herbal Plus line with regard to DNA barcoding.

During this time, the NY AG will discontinue its investigation of the Herbal Plus line, but it can bring action against GNC over other products. The NY AG’s investigation “did not reach a final determination that the tested supplements were fraudulent.” In its letter, GNC says it disagrees with the NY AG’s allegations that current FDA GMP testing requirements are not sufficient to protect consumers.

Although its products meet federal testing requirements, GNC says it agrees with the NY AG “that DNA barcoding holds great promise for further authentication.” The company agreed to adopt a number of initiatives for its Herbal Plus line with regard to DNA barcoding. Among them, GNC will “implement source material traceability standards that utilize DNA barcoding to confirm the authenticity of the ‘active’ herbal/botanical ingredients prior to extraction, for all GNC Herbal Plus brand products, except in circumstances where no DNA barcode is available for the relevant species.” (Emphasis added.) The company will also share the scientific methods and DNA barcodes it uses in a publicly available DNA Barcode Library database. It will also require all facilities manufacturing the Herbal Plus line to be third-party GMP-certified and that all of its ingredient suppliers use “a randomized allergen testing protocol” on all raw materials used in Herbal Plus products.

“We’re Disappointed”

In an interview with Nutritional Outlook, Steve Mister, president and CEO of dietary supplement association the Council for Responsible Nutrition (CRN; Washington, DC), called the agreement between GNC and the NY AG “a mistake,” stating that the association is “disappointed in this outcome.” In particular, he criticized the NY AG for continuing to mandate DNA testing in its agreement with GNC.

“I think it’s bad for consumers as well as industry because it perpetuates the notion that DNA barcode testing is appropriate for dietary supplements,” he said. In the past two months, some DNA experts have claimed that DNA testing is not a suitable method for testing finished products, and a recently published white paper commissioned by CRN further explains why the method may also not always be suited for raw materials either.

Mister also criticized conditions that behold GNC to report to NY AG on a semiannual basis a list of materials rejected as a result of DNA barcoding, as well as the results of allergen testing. Because any rejected materials are excluded from product in the first place, this requirement “sounds like the New York Attorney General wants to do a twice-a-year press release to embarrass the industry,” Mister said. “If the material was rejected, it did not end up in the supply chain. It’s not something that consumers would have access to. So why is that relevant? It’s basically substituting a state attorney general’s office for things that should properly be with the FDA.”

Most of all, Mister said, it’s unclear why the NY AG is setting such requirements for a company whose products were found to meet all federal regulations. “The company hasn’t been found to have done anything wrong, and now the state wants to impose requirements that go above and beyond what the company would do for FDA. That doesn’t make sense to me.”

GNC’s agreement with the NY AG hints that the AG’s office has retreated on some of its earlier positions, including its stance on using DNA testing on finished products, because the agreement says that GNC will apply DNA testing to raw material, not extracts. “When you read between the lines, the NY AG seems to be conceding that DNA testing is not the appropriate way to go about doing this, and that it got it wrong, but yet it’s plowing ahead and demanding DNA testing rather than admitting that maybe it is using the wrong test,” Mister said.
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Watching sales trends in nutritional supplements is always great theater. The ebbs and flows in response to media flashes on studies either indicting or vindicating supplement claims and use are enough to leave anyone's head spinning. And how about the swinging-pendulum debate over supplementation versus diet and which is the best way for consumers to optimize nutrition?

When the dust clears and we cut through the noise by looking at the data, IRI sees the following:

- Nutritional supplement sales are growing—faster in years when innovative products are introduced.
- To get their vitamins and minerals, consumers are increasingly using meal replacements versus traditional delivery systems like tablets, capsules, etc.
- Shifts are beginning to show in the data in terms of where consumers buy their supplements—and portend changes to come.

Consumers Are Buying Supplements—but Less So in Health Food Stores Lately

Despite the very nature of the category, health and vitamin stores—referred to collectively as health food stores—have seen declining sales since 2011, an outcome of a dwindling shopper base. Why? IRI believes that consumers are relying less often on the resources these specialized stores provide, for a few reasons.

Health food stores have seen declining sales since 2011, an outcome of a dwindling shopper base.

IRI believes that consumers are relying less often on the resources these specialized stores provide.

Traditionally, health food stores were the first retail outlet where supplement manufacturers chose to debut new products because the store owners or managers were steeped in the knowledge required to teach consumers about the value of using those supplements, thus encouraging shoppers to try a product. In addition, because these stores specialize in supplements and health items, retailers purposefully sought a broad product selection, throwing the door open to a broader group of manufacturers.

Enter the Internet, which provides consumers easy access to information about nutrition and nutritional products, wherever they are. Today’s consumers are willing to do their own online research before even setting foot in a brick-and-mortar store. They can also get and take heed of product ratings online and in social media—something consumers put a lot of stock in. As a result, health food stores’ main reason for being is rapidly diminishing. Navigating what used to be a complex category of products has become

Continued on page 18

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WHAT ARE CONSUMERS BUYING? MORE THAN MULTIS

Over the past few years, consumers have broadened their view of nutritional supplements. Traditional products like multivitamins; single-entity vitamins like vitamin B12, D, or E; and mineral supplements like calcium remain the foundation of the consumer supplementation repertoire. However, healthy and/or functional foods such as oatmeal and kale, meal replacements such as Ensure, mineral supplements like magnesium and selenium, and products with health claims such as maca root and acai berry are also now part of a consumer’s consideration in their quest towards a healthy lifestyle.

Recent focus group research we conducted revealed a fascinatingly wide range of products consumers viewed as falling under the definition of supplements, from Flintstones multivitamins for kids to protein powder.

Because consumers now take a broader view of what they define as nutritional supplements, IRI now monitors a more extensive array of products in the category. Based on IRI’s broader definition of “mineral and other supplements”—which in addition to such minerals as calcium, magnesium, and iron also includes such nutrients as omega-3 fatty acids, pre- and probiotics, joint-health supplements, and even melatonin—we estimate that total category nutritional supplement sales at retail in 2014 amounted to $12 billion, up only 1.3% from 2013. (See Figure 2 below.)

Comparatively, total category sales in 2011 and 2012 were higher than normal due to innovation—in particular, the widespread introduction of the gummy dose form, which certainly has had initial appeal for adults and children alike. In 2013, after the excitement from the launch of this new dose form by several manufacturers dwindled, category growth reverted to its average annual pace of around 5%.

Continued on page 18
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1) Enhanced glutathione levels in blood and buccal cells by oral glutathione supplementation. J.P. Riche.
Published in the European Journal of Nutrition, May 2014

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In 2014, however, the category rate of growth diminished precipitously due mostly to sales losses versus a year ago for multivitamins. Multivitamins took a hit largely due to widespread negative media coverage on the category, which started in late 2013.

“Minerals and Other Supplements” Lead, but Meal Replacements and Liquid Vitamins Growing Fast
Looking at the segments of products which make up this broader definition of nutritional supplements, we see that sales of “mineral and other supplements”—which, again, in IRI’s categorization also includes items like probiotics, chondroitin, omega-3s, as well as minerals like calcium—and meal replacements are both larger than sales for multivitamins, which as recently as 10 years ago was a much more robust segment of this overall category. Specifically in 2010–2014, sales of “mineral and other supplements” accounted for 38% of the total, followed by meal replacements (27%), multivitamins (18%), single-entity vitamins (11%), and liquid vitamins and minerals (5%). The overall nutritional supplement category saw a strong compound annual growth rate of 5% in 2010–2014, with meal replacements and liquid vitamins/minerals leading that growth, including products like Emergen-C and pedi-atric liquid vitamins. (See Figure 3 above.)

Continued from page 14

Easier. Many consumers do not require or make use of the advisory and educational role once owned by the health food store. Further, consumers can shop the Internet for a broader array of products than can be found in most health food stores.

Competition Growing from Other Channels
The growth of the health food “store-in-a-store” concept at Wegmans, Whole Foods Market, and select stores within drug and mass chains is also accelerating consumer flight from the quintessential health food store to these more convenient outlets which offer one-stop shopping. Consumers shop there after conducting their own product research. Customary channels such as Walmart, grocery, and drug and mass today make up approximately 70% of category dollar sales, IRI data show. (See Figure 1 below.)

Figure 1
2010-2014 U.S. Nutritional Supplement Sales Growth by Outlet
($ Million and % CAGR)

<table>
<thead>
<tr>
<th>Outlet</th>
<th>2010-2014 Sales ($M)</th>
<th>2010-2014 CAGR %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walmart</td>
<td>$2,830</td>
<td>4.7</td>
</tr>
<tr>
<td>Drug</td>
<td>$2,655</td>
<td>4.7</td>
</tr>
<tr>
<td>Club</td>
<td>$2,420</td>
<td>6.6</td>
</tr>
<tr>
<td>GroceryX</td>
<td>$2,186</td>
<td>6.1</td>
</tr>
<tr>
<td>Internet</td>
<td>$615</td>
<td>12.3</td>
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<tr>
<td>Mass</td>
<td>$546</td>
<td>4.8</td>
</tr>
<tr>
<td>Health/Vitamin</td>
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<td>-4.7</td>
</tr>
<tr>
<td>Specialty</td>
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<td>2.0</td>
</tr>
<tr>
<td>Dollar</td>
<td>$109</td>
<td>4.1</td>
</tr>
<tr>
<td>Other</td>
<td>$113</td>
<td>18.2</td>
</tr>
</tbody>
</table>

Source: IRI Consumer and Shopper Insights Advantage; Total U.S. All Outlets - 52 weeks ending December 2014

Figure 2
2010-2014 U.S. All-Outlet Total Nutritional Supplement Sales Growth ($ Million and % CAGR)
* “Mineral supplements” include “other supplements” such as omega-3 fatty acids, pre- and probiotics, joint-health supplements, melatonin, etc.

<table>
<thead>
<tr>
<th>Category</th>
<th>2010-2014 Sales ($M)</th>
<th>2010-2014 CAGR %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meal Replacements</td>
<td>$3,203</td>
<td>8.2</td>
</tr>
<tr>
<td>Multi-Vitamins</td>
<td>$2,172</td>
<td>3.0</td>
</tr>
<tr>
<td>1 &amp; 2 Letter Vitamins</td>
<td>$1,331</td>
<td>5.0</td>
</tr>
<tr>
<td>Liquid Vitamins/Minerals</td>
<td>$613</td>
<td>7.0</td>
</tr>
<tr>
<td>Mineral and Other Supplements</td>
<td>$4,544</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Source: IRI Consumer and Shopper Insights Advantage; Total U.S. All Outlets - 52 weeks ending December 2014

Figure 3
2010-2014 U.S. All-Outlet Total Nutritional Supplement Sales Growth
($ Million and % CAGR)

* “Mineral supplements” include “other supplements” such as omega-3 fatty acids, pre- and probiotics, joint-health supplements, melatonin, etc.

Figure 3. Consumers are driving growth in meal replacements and liquid vitamins and minerals, many with energy and immunity claims.

All charts and data from IRI’s consumer panel research practice.
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Though relatively small in size, sales of nutritional supplements through the Internet and dollar stores/value stores are also rapidly growing, underscoring convenience and value as key consumer needs.

Speaking of dollar stores/value chains, the story here, although still from a small base, is about the new frugality exhibited by consumers post-economic breakdown of 2008. As consumers increasingly gravitate to the value chains as their main "go to" stores, they will expect to find and are open to buying products like supplements from those stores. IRI is seeing this trend not only for supplements but for other over-the-counter healthcare items as well. The trick here is to provide the supplement product at the right price point.

Consumers Will Continue to Cross Over
IRI believes that the shift in sales from traditional outlets like health food stores to mass, Internet, and value chains will continue. Consumers are expected to get even more comfortable and accustomed to the convenience of researching and shopping online for regimen products like supplements. And as the practices of the value-conscious shopper continue to be “fashionable” as well as necessary for some, such consumers will be open to purchasing supplements in dollar store outlets to an increasing degree.

Consumers can shop the Internet for a broader array of products than can be found in most health food stores. IRI believes that the shift in sales from traditional outlets like health food stores to mass, Internet, and value chains will continue.

To some extent, IRI believes the health food store still plays an educational role. In IRI’s recent focus group sessions, consumers spoke of stopping by their local health food store to learn about a product and perhaps even buy it there the first time. But once the product becomes part of the consumer’s supplement regimen, they look to buy succeeding supplies based on price and convenience. To encourage repeat purchases and combat crossover to other channels, brick-and-mortar health food stores going forward will need to battle the challenge of getting the consumer to interact beyond just “showrooming”—that is, browsing, not buying.

Robert Sanders, executive vice president and Healthcare Practice Leader for IRI brings more than 30 years’ experience to the marketplace, sets the strategic initiatives for IRI’s Home and Healthcare Practice, and is a frequent keynote speaker at healthcare industry events.
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What Big Data tell us about consumer priorities.

BY KIMBERLY J. DECKER

Is there a singular supplement shopper out there? To an extent, no. “There really isn’t a ‘typical’ supplement shopper,” Michele Michielini, senior director of consumer insights, NBTY Inc. (Ronkonkoma, NY), points out. “Shoppers vary based on many factors, including gender, age, income, and individual need states—such as those trying to support heart health or eye health.”

If drawing a fine bead on your target consumer seems a daunting task, that’s because it is. But with Big Data in hand, today’s supplement marketers do know more about who their customers—plural—are. Nutritional Outlook spoke to a few industry experts who shared their insights on just what’s trending in the supplement world, and with whom.

It’s My Generation

The Council for Responsible Nutrition’s (CRN; Washington, DC) 2014 Consumer Survey on Dietary Supplements revealed a clearer demographic sorting of supplement-use patterns. Michielini says that though the survey found equally high multivitamin use among all age groups, for instance, “specialty” supplements skewed more toward elders—age 65-plus—while sports nutrition and weight management skewed more toward Generations X and Y.

Mature shoppers—those born before 1945—“are more oriented toward supplementation for specific issues,” agrees Steve French, managing partner, NMI (Natural Marketing Institute; Harleysville, PA), sharing insights from NMI’s Supplements/OTC/Rx Database, a survey of 2,300 general-population adults in the United States. Omega-3s appeal to these folks concerned about heart health, and glucosamine gains traction with those tending to aching joints. As for Baby Boomers, French says, “They index high for antioxidants and probiotics as well as joint health and cholesterol.”

Then there are the Millennials, whose impact on the industry could be as significant as it is on society at large. According to French, supplement use between 2009 and 2013 increased among all generations, but Millennials showed the largest growth. The share of Millennials who used a supplement in the past 30 days rose from 50% in 2009 to 68% in 2013.

Millennials have upped their average intake more than other generations, too, going from 1.8 supplements per day in 2009 to 2.8 just four years later. And as for which supplements they’re turning to, French points to “a wide array of supplement categories, including single vitamins and minerals, herbs/botanicals, condition-specifics, homeopathics, and ayurvedics.” Versus the general public, Millennials index high for antioxidants and energy supplements and are also more likely to take supplements for detoxification purposes.

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Today’s youth-driven infatuation with social media also influences supplement choices, with 18% of all supplement users and fully 45% of Millennial users giving social media some credit in swaying purchase decisions.

The Gender Gap Is Closing

Gender gaps still persist among supplement shoppers, who still by and large are women. Both NMI’s database and the CRN consumer survey confirm this fact. “Women are significantly more likely to be heavier users,” French says, because women tend to be more proactive in maintaining health overall.

But NBTY’s Michielini notes that in the three years between the latest CRN survey and the survey the year before, that gap shrank as purchases by women declined from 74% to 71% and purchases by men increased from 62% to 65%.

Socioeconomic Factors

While supplement usage patterns track more closely with education than income—32% have at least a college education, and median user income is $63,900, per NMI numbers—the economy has impacted
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supplement purchases, French concedes.

As Michielini notes, supplements are often discretionary purchases and unfortunately take a hit if higher priorities prevail. “So if a family needs to make a choice between a necessity—food, for example—or a supplement, the food, of course, takes priority,” she says.

**Delivery Preferences**

That may not be the only case in which food takes priority. “Consumers overwhelmingly prefer to get nutrients from the foods they eat rather than take a supplement in pill form,” French says. Indeed, the percentage in this camp rose recently to 60% from 54% in 2011.

But this preference hasn’t upended the supplement market, Michielini insists. The emergence of functional foods and beverages—not to mention novel supplement delivery options—may have actually broadened supplements’ audience by providing consumers with alternatives. NMI’s database bears this opinion out, with 38% of Millennials and 35% of “energy managers” driving the fortified-beverage and shot market, French says. And the increase in preference from 2009 to 2013 for other delivery formats pans out thusly: soft gels up from 30% to 37%, chewables from 22% to 26%, and soft chews from 18% to 24%. Other formats with more stable growth include liquid-filled capsules at 28%, gummies at 22%, liquid at 18%, fast-dissolve tablets at 18%, nutritional bars at 16%, and ready-to-drink beverages at 16%.

**Wellness Overall**

If there is one obvious commonality broad-scale supplement users share, it is that they take supplements for overall health and wellness. No wonder so many see even the good ol’-fashioned multivitamin as a “nutrient ‘insurance policy,’” as French says. “Self-responsibility for health is high as consumers look to take back control of their own health,” he says. Tellingly, NMI’s research says that 83% of the general public claims to be “taking more responsibility for their health” than the percentage that made that claim 10 years ago. Even better, the past half-decade has seen more supplement users believing that they can manage their health issues through supplementation, “revealing a stronger integration of supplements into maintenance of a healthy lifestyle,” he continues.

The more we plumb the data and the better we get at turning it into actionable knowledge, the more empowered we’ll be to meet all of our shoppers where it matters most.

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Probiotics Opening New Doors

Probiotics turn to new marketing platforms.

BY INNOVA MARKET INSIGHTS

Probiotic dairy products were among the earliest innovators of functional foods in Europe. As the market developed, probiotic products expanded to other western markets and grew increasingly sophisticated with specialized and often branded cultures and blends. But the European market position for probiotics is considerably complicated these days by the ongoing refusal of the European Food Safety Authority (EFSA) to approve probiotic health claims, despite extensive scientific dossiers presented by a number of major multinationals. Probiotic health claims issues also persist in the United States.

Still, about 1% of global food and drink launches recorded by Innova Market Insights still used probiotic claims in 2014; in the United States, nearly 6% of 2014 launches featured a probiotic claim. With unresolved struggles over health claims, there is more evidence that marketers continue moving toward general health and fitness positioning for probiotic products and away from specific health claims. Here’s some of what we’re seeing.

Yogurt

Probiotic yogurts are now repositioning themselves on taste and general health. Probiotic yogurts went mainstream in the United States in early 2006 with the national launch of Dannon’s Activia spoonable yogurt, which the company claimed clinically proven to help regulate the digestive system. (Dannon’s exclusive *Bifidus regularis* strain had already been available in Europe for about 10 years, having started out in France in 1987 under the Danone Bio name.) The Activia brand achieved almost instant success in the United States, with sales reaching over US $150 million in the first year, officially taking probiotic yogurt out of the specialist dietary supplements market and into the mainstream. Numerous other brands followed Activia into the probiotic yogurt market over a period of years.

Since then, interest has turned to other types of yogurt products—most notably Greek yogurt. Most Greek yogurt is also probiotic in nature, but many brands don’t particularly emphasize the fact.

Brands like Activia are also trying to take note of where new interest lies, maintaining focus on good taste and “feeling good inside.” Activia launched its own Greek line, Activia Greek, in mid-2013, closely followed by Activia Greek Light. The Activia range now encompasses classic Activia Light, Activia Greek, Activia Greek Light, Activia Fiber, and Activia Drinks. New flavor options launch regularly to help keep interest high.

KeVita’s latest innovative way to showcase probiotics without making overt health claims is its new Cleansing Probiotic Tonic, promoted as “brimming with powerful functional ingredients.”

Drinks

The probiotic dose-delivery drinks market has had more difficulty maintaining consumer interest, and sales have suffered in many countries. Dose-delivery drinks did not even appear on the European market until the 1990s, despite high penetration levels in parts of Asia. They have yet to make any significant impression on the potentially huge U.S. market—but not for lack of trying.

Dannon has tried to promote its DanActive single-serve probiotic drink in the United States for some years (sold as Actimel outside North America). Despite the ongoing lack of mainstream interest in DanActive, the Japanese brand Yakult, which pioneered the European probiotic drinks market, continues to hone its U.S. position. It began U.S. production in California in the spring of 2014. The company also extended its U.S. product range with the introduction of the 100% natural Yakult+ beverage range.
of a Yakult Light variety in 2012; still, in the United States there is no sign yet of the company's Yakult Plus line (featuring added fiber and 70% less sugar) that launched in a number of European countries in 2013 and 2014.

Other companies also continue exploring new product activity in probiotic drinks. Kefir, for instance, benefits from its probiotic content and has become more mainstream in recent years.

Lifeway Foods is a major driver of the U.S. kefir market and now markets an extensive range of products, all featuring a blend of 12 live and active cultures. In 2014, the company's new product activity focused on extending appeal through additional launches. The company first added three savory vegetable-based smoothies under the Veggie Kefir name (Beet, Cucumber, and Tomato). Each 8-oz bottle contains one serving of vegetables as well as the brand's standard 12 probiotic cultures. Following this, Lifeway launched the four-product Perfect 12 range in dessert-style flavors sweetened with stevia and offering 12 g of carbohydrates as well as the 12 probiotic cultures.

Where Are the Opportunities Now?
There is clearly still interest in probiotic products, as reflected by ongoing levels of new product activity. Marketers are still seeking opportunities to showcase probiotic ingredients in new, appealing ways that may not always have to do with the heavy lifting involved in today's restrictive regulatory climate.

Bill Moses, CEO and founder of KeVita, a brand that pioneered sparkling probiotic beverages, describes how forward-thinking has made KeVita successful, with products selling in U.S. markets such as Whole Foods and mainstream retailers nationwide. Here’s how: "First, KeVita established the 'sparkling probiotic drinks' segment within the functional beverages category," Moses says. "That innovation play[ed] a large role in growing the probiotics and the functional beverages categories overall. Second, because KeVita is positioned as much as a great beverage experience as it is a probiotic, we do not have to push regulated claims that may come under scrutiny."
The U.S. market for mood-supporting dietary supplements clocks in at roughly $500 million–$550 million, according to Julian Mellentin, director of global nutrition insights firm New Nutrition Business (London). But if you’re thinking, “Not bad,” Mellentin is quick to point out that the value “looks impressive until you remember that sales of pharma products are over $28 billion.” And though mood-supplement sales are growing, the wide berth between supplement and pharma numbers “really puts the two different approaches in perspective,” he says.

So Mellentin classifies mood supplements as a niche category, accounting for less than 2% of U.S. supplement sales and “likely to stay that way for some time.” Standing in the way of breakout velocity are issues like safety, efficacy, and, most importantly, tangible consumer benefits, he adds—all of which are “just too big” for the category to reach full speed, at least for now.

Just consider that last point. How many times have we been told that in order for a health product to be successful, consumers need to be able to “feel the benefit”? When consumers take a supplement for the express purpose of feeling less stressed or melancholy, Mellentin says, “they want to feel the benefit—and fast.” By contrast, consumers taking supplements as a hedge against, say, poor heart or bone health may be more inclined to accept that they may see results down the road.

But in the mood aisle, consumers expect to feel the change. Perhaps that’s why antidepressant and antianxiety medications so dominate the landscape—they work for many, and expediently so. Supplements that address the same needs, Mellentin says, just don’t yield the same rapid results.
But Is There Hope?

But results delayed aren’t necessarily results denied—at least not for consumers growing weary, and wary, of medicating away their blue or anxious moods. For them, addressing depression and stress via “natural” interventions may well be worth the wait.

As Deanne Dolnick, vice president, Next Pharmaceuticals (Salinas, CA), says, “The trend to take supplements is getting a stronger foothold across all demographics, as well as in the medical community. The consumer is getting smarter when it comes to taking prescription medications, and they’re asking doctors the tough questions and getting frustrated with the side effects of drugs.”

Even setting side effects aside, it’s worth noting that not all patients improve with pharmaceutical therapy in the first place, prompting some to “go looking for a natural solution when they’re not getting the results for which they’d hoped via mainstream medicine,” says Cheryl Myers, head of education and scientific affairs, EuroPharma Inc. (Green Bay, WI). “This may be the impetus for many to explore natural or integrative options.”

Mood Food

Fundamental to integrative options—and to nutritional supplementation generally—is the notion that our bodies (minds included) are products of what we bring into and do with them. Or, as Dolnick says, “We feel better when we eat better and exercise. When we have control over our diets and activity, we’re controlling our lives, and that’s powerful in giving people a sense of satisfaction and calm.”

Unfortunately, today’s standard American diet—a.k.a. SAD—predisposes us to anxiety, stress, and depression, says Myers. By triggering systemic inflammation, SAD presents a real threat to mental wellbeing because inflammation doesn’t just cause muscle pain or hamper exercise recovery; it affects the brain. “When highly refined, over-sweetened foods and beverages are your only sources of ‘nourishment’—and Myers uses the term loosely—‘you’re going to see issues.’ And people with major depressive disorder often do exhibit higher states of inflammation than those without.

Add it all up and you have “a population crying out for the benefits of real nutrition,” Myers concludes. Mellentin would agree, and he predicts that “we’ll see people turn more to ‘regular food’ than to supplements...
to improve their mood and sense of well-being.” As they do, they’ll likely bolster the current “free-from” movement that’s made everything from gluten to high-fructose corn syrup ingredients that today’s consumers avoid. “The idea that certain carbs are bad for your brain has taken hold among a small but growing percentage of consumers,” Mellentin notes, citing the traction that books like neurologist David Perlmutter’s Grain Brain enjoy.

**Rooting Out Inflammation**

But free-from diets are only one tool among many for improving mood and affect—and one for which supporting evidence is far from conclusive. More encouraging are findings about how nutritional ingredients act within the brain and body to make us, literally, feel better. “Natural supplements can help mitigate the effects of stressors or triggers for depressive states of mind to help restore healthy brain function,” Myers says. “And many botanicals, including rhodiola, ashwagandha, lemon balm, holy basil, and—my favorite—curcumin, support overall health in many other ways.” She calls these “side benefits in stead of side effects.”

Curcumin, for example, is attracting attention for its anti-inflammatory properties. Its parent plant turmeric (Curcuma longa) has a long track record in ayurvedic medicine, and researchers are now sketching a clearer picture of how it’s earned its keep. Namely, the compound lowers levels of inflammatory biomarkers that travel to the brain where they do their damage. Myers adds that curcumin also “prevents the low levels of serotonin, noradrenaline, and dopamine” associated with depression and stress, and that recent research suggests that it participates in neurogenesis—the formation of brain cells—which she says is inversely related to depression.

A randomized, double-blind, placebo-controlled trial published last year in European Neuropsychopharmacology investigated curcumin’s potential mechanisms. For eight weeks, 50 subjects with major depressive disorder (MDD) received either supplemen-

**“Free-from” diets are only one tool among many for improving mood and affect.**

C3 Complex plus BioPerine delivered in two daily doses of 500 mg for six weeks, concluded that the supplement was effective in reducing scores on the Hospital Anxiety and Depression Scale (HADS) and thus had potential to alleviate symptoms of depression. “The authors suggested that the mechanism of action involved multiple pathways,” says Anurag Pande, PhD, vice president, scientific affairs, Sabinsa, “including the anti-inflammatory activity of curcuminoids, inhibition of monoamine oxidase, restoration of depleted levels of the neurotransmitters serotonin and dopamine, and reduction of corticosterone-induced neurotoxicity.”

Studies like these demonstrate that curcumin “can be an effective and safe treatment for patients with major depressive disorder without serious adverse effects,” Myers says. Even so, she’d like to see a greater emphasis on the fact that brain and mood health concerns are largely due to inflammation and aren’t just chemical imbalances. That’s one of the main reasons that curcumin performs so well in the realm of cognitive health.”

**Keep Calm**

While inflammation is a culprit in affective changes related to depression, researchers have implicated a related affective state—stress—in generating inflammation. Some evidence shows that chronic stress in particular can trigger the immune system to flood the body with inflammatory cytokines, which themselves may go on to promote heart disease, asthma, and other disorders. Indeed, a report by the Congressional Prevention Coalition on stress prevention claims that 90% of disease has roots in complications associated with stress. (The coalition was founded by a bipartisan group of U.S. lawmakers to examine America’s critical social and economic problems.)

Alas, stress is as much a fixture of modern life as the SAD, and supplement marketers and users alike are eager to find ingredients to help mitigate it. “Support for stress and mood in today’s complex world is an important cognitive health trend,” says Barbara Davis, PhD, vice president, medical and scientific affairs, PLT Health Solutions (Morristown, NJ). “In the United States today, more than 75 million people experience stress, with negative consequences for their physical and mental health, quality of life, and economic activity.”

But as with mood-boosting supplements, a stress-relieving product must deliver experien
tial results to gain consumer buy-in. So when PLT collaborated with HG&H Pharmaceuticals (Bryanston, South Africa) to develop what would ultimately become Zembrin, their entrant into the anxiety-reduction market, they focused on a botanical with an anecdotal history of working.

That botanical is Sceletium tortuosum, which, to the San people of South Africa, is “kanna”—their traditional remedy for lowering stress. PLT and HG&H added value to the San’s remedy by standardizing their own Sceletium extract for total alkaloid content and to meet a specific profile for the main active alkaloids mesembrenone, mesembrene, mesembranone, and mesembrine. Davis attributes the product’s safety and effectiveness to this “unique fingerprint,” which she
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Another question to ask is what kind of stress relief are we providing? T. P. Rao, PhD, an assistant general manager at Taiyo Kagaku Company, Ltd., (Mie, Japan) notes that while supplements like melatonin, valerian root extract, and others are popular within the stress-reduction sector, “their side effects—including dependency, sedation, and more—limit their use at any time of the day.” This has prompted marketers to seek ingredients that suppress stress without sedation.

L-theanine, an amino acid common in tea, is one. In studies, Taiyo’s purified form of the ingredient, which it markets as Suntheanine, “has been shown to offer a safe, non-sedative, and proven relaxation effect within 30 to 40 minutes after consumption,” Rao says. It crosses the blood-brain barrier “to excite the neurotransmitters and promote dopamine release, which are expressed in terms of increasing alpha brain waves that indicate an alert and relaxed state of mind in subjects.” What’s more, it appears to improve cognition, mood, focus, and quality of sleep, he adds, and its “synergistic effects with caffeine promote ‘energized’ relaxation by suppressing caffeine’s nerve-jangling tendency.

And it’s that desire to promote relaxation and alertness without causing overstimulation that’s driven ingredient suppliers to explore adaptogenic herbs, says Bruce Abedon, PhD, director of scientific affairs, NutraGenesis (Brattleboro, VT). “Unlike stimulants such as caffeine, which can exacerbate stress-related symptoms because they can cause rapid heartbeat, increased blood pressure, jitters, and make it harder to sleep, adaptogenic botanicals do the opposite, helping to bring about a balance in hormone levels and restore homeostasis disrupted by stress,” he says.

Ashwagandha (Withania somnifera) is one example, and Abedon’s company markets a standardized and patented extract of its root and leaf as Sensoril. The product contains the highest levels of ashwagandha glycowithanolide bioactives available, he says, and it’s been the subject of nine randomized, double-blind, placebo-controlled human clinical trials, as well as in vivo preclinical research. Clinical studies indicate that doses of 125 mg taken once or twice daily yield improvements in as little as 30 days, as the ingredient reduces levels of the stress hormone cortisol while increasing those of the energizing hormone DHEA (dehydroepiandrosterone). The fact that the extract is “all natural”—“an important selling point for consumers,” Abedon adds—doesn’t hurt, either.

A Brighter Future

Such supplements represent the mood and cognitive-health sector’s promise. All the same, headwinds remain. Regulations, Myers says, “make it a challenge to go head-to-head with pharmaceuticals.” And skepticism that the products are “too good to be true,” she adds, “hovers like a ghost in any conversation you have with the public at large.” To contend with that skepticism, she suggests “building trust and talking about research to keep the message strong and reach people who need high-quality natural products that work.”

Supplement users themselves should keep their expectations in check—and be patient. “Consumers need to understand that supplements don’t always work as quickly as prescription medications,” Dolnick points out. “And I think that’s the biggest issue for the consumer.”

And that reluctance to admit the need for help, “I think there is still a lot of stigma about depression and anxiety out there, and it can prevent people from seeking the professional help they need,” Myers says. “I urge anyone to talk to a professional about the concerns they are facing. If you’re dealing with depression or anxiety, it doesn’t just affect you—it affects everyone you love, work with, or meet during the day.”

One thing is clear: there is a need for help. As Sabinsa’s Pande points out, “Major depressive disorder is one of the most common mental disorders in the United States, with 6.7% of people suffering from it every year due to different reasons, according to NIH data. Stress takes its toll, too—on the body, cognitive health, and EQ, or emotional quotient.” That means we’ll need all the arrows in the mental-health quiver—counseling and pharmaceuticals, yes, but mood-boosting nutritional supplements and the occasional weekend getaway, as well—to help people cope.

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From Lightbulb to Launch

Tips for building a brand in today’s supplement marketplace

BY KIMBERLY J. DECKER

When Jeff Hilton says “fascinating things” are happening in the supplement space, grab a chair and take notes. An old hand at health-and-wellness branding, the chief marketing officer and cofounder of BrandHive (Salt Lake City) has had both a front-row seat and a back-stage pass to the industry’s evolution since Ronald Reagan was in the White House.

So when he predicts that we’re “in the early stages” of a major shift in how consumers approach health, he does so with some authority. And what his privileged perspective tells him is that an “entrepreneurial surge” is bringing about a bumper crop of brands backed by compelling stories, creativity, and resourcefulness to spare.

But those budding brands—and the industry as a whole—face a very different playing field than the one that existed back when nutritional supplementation meant taking the multivitamin you picked up at the grocery store. “We’re going through a thought revolution and a new-product revolution,” Hilton says, and the theme he sees underlying both is convergence: of channels, media, dayparts—even of foods and beverages with supplements themselves. It’s uncharted territory, for sure, but brands that follow these five key strategies will find “huge opportunity,” Hilton promises, as they navigate it.

**Budding brands and the industry as a whole face a very different playing field today.**

**Tip 1** Eat, Drink, and Be Healthy

“If you look at the landscape for supplements, foods, and beverages over the next 10 years,” Hilton says, “where the excitement and opportunity are is in the food and beverage sector.” That should come as no surprise to anyone who’s scanned a functional snack or smoothie label and realized there’s not much separating them nutritionally from the multivitamins of yore.

To nascent brands that already embrace edible and potable platforms for functionality, that’s encouragement to keep up the good work. But for old-school supplement marketers, “I think it’s a bit of a wake-up call,” Hilton says. “If I were a supplement manufacturer—and I tell my clients this—I’d be watching my back because I think the big-picture trend is away from popping pills and more toward adding functionality to what we’re already consuming.”

Need proof? Just ask a Millennial, who isn’t “going to pop 30 pills a day,” he says. Even Boomers, he adds, are “increasingly pill averse.” And while capsules and tablets aren’t going the way of the dodo just yet, consumers’ desire to make nutrition not just quick and convenient but an experience that’s “natural” and hedonically appealing explains why demand for functional bars, shots, gels, drinks, and snacks “is going through the roof,” Hilton says.

And remember: “The whole three-meal-a-day paradigm is dead or dying,” Hilton declares. Any brand that grasps how consumers are redefining traditional dayparts—turning breakfast, lunch, and dinner into the mid-morning nosh, post-lunch perk, pre-workout refueling, trans-commute nibble, and so on—will meet those consumers where it matters.

**Tip 2** Tell ‘Em a Story

And speaking of what matters, consumers don’t just insist on functional options that fit their lifestyles; they want products that fit their psychological and emotional constructs of what health and wellness really mean. That’s a cue to write a backstory for your brand that engages consumers. As Hilton says, “The brands that are succeeding are the ones that are trying to educate.”
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COGNITIVE HEALTH
Brand Building

It’s a lesson that Janie Hoffman, CEO and founder, Mamma Chia (Carlsbad, CA), knows by heart. “The greatest brands in the health-and-wellness space often come from an authentic place—a desire to better the world or enable people to live healthier lives. It’s this authenticity that can resonate with consumers and create a loyal following. For her, authenticity involved sharing the benefits of chia with a wider audience. "Those tiny little seeds had a dramatic effect on my health and vitality," she says, "and it was my passion for them that drove me to create Mamma Chia."

In a happy coincidence, putting her brand narrative on the table made it easier to stand out on a crowded shelf. "We think less about our competition and focus our efforts more on making delicious, healthy, chia-based products and creating a sustainable and conscious company," she says. "When your values align with your customers' and your products fulfill their needs, sales will follow."

That said, it still doesn’t hurt to stand out, and Hoffman wasn’t shy about giving consumers a product they’d notice. Her flagship chia drink “was unlike anything that existed at the time,” she says. Appearances helped, too, and she chose "a beautiful bottle with bright, eye-catching packaging that drew in consumers." She’s taken a similar approach with her new Chia Granola Clusters and Vitality Bars, enveloping them in “bright packaging with strong, clear statements about the products’ attributes.”

Tip 3
Make Functionality Worth It
Strong, clear statements about a product’s attributes are as much a part of the “education” mission that Hilton associates with success as are those feel-good product backstories. And given the proliferation of products bidding for consumers’ trust with good-for-you claims, you can understand why.

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“Right now,” Hilton says, “I think one of the challenges for the consumer is that they’re trying to figure out the value of functionality.” While they’ll buy the idea of enhanced protein, fiber, probiotics, and omega-3s, do they have the tools to calculate its actual monetary value? As Hilton asks, “Am I willing to pay an extra fifty cents for a yogurt because it’s got nutrients in it versus a salty snack that’s not going to do me any good?”

While that’s the consumer’s decision to make, “we as brands have to put out that knowledge and help create that value by telling them that they’re getting something special,” Hilton says. “We have to do our part in promoting value.”

And to the extent that value comes from delivering the nutrition your product promises, Hilton warns against providing what he calls “storefront functionality: a little hint of this or that, but nothing that’ll make a substantive difference to wellness. Not only is the practice sneaky: consumers are growing increasingly savvy at asking the tough questions to suss it out, too.

**Tip 4: Blind Them (Figuratively) with Science**

The best shield against that kind of consumer skepticism is evidence-based formulation. “The separation of the wheat from the chaff,” Hilton says, “is going to come from products that are offering true functionality that’s valid and related to science.” That means telling consumers how much of an ingredient your product truly delivers and educating them about the studies demonstrating its efficacy. As Hilton says, “Science is key. It helps differentiate the real products from the imposters.”

It also attracts the attention of capital, while warding off that of regulators. As Grant Ferrier, founder and CEO, Nutrition Capital Network (NCN; San Diego), says, “Investors are skeptical of claims that may not hold up or that may cause FDA or FTC woes. And they certainly view a significant part of the value of a company as being locked up in its intellectual property, not just top-line sales or bottom-line EBITDA—finance-speak for earnings before interest, taxes, depreciation, and amortization.

“There are still examples of marketing-based companies that show some success with relatively little scientific backing, or with borrowed science based on one ingredient or formula,” Ferrier concedes. “But the true pioneers—and those companies with the highest potential for profit—have either a proprietary application of a naturally occurring compound, or a formula that’s been properly tested in the lab, in animals, and, ultimately, in humans in a clinical-trial environment.”

So you want to break into the health-and-wellness market? Well, no matter what, make sure you secure a blockbuster functional ingredient first, and then develop a string of products that direct it at a handful of wellness need states…Or, wait. Maybe you should do the market analysis first, find out which health concerns are top of mind, and then build a stable of ingredients that address them…

…Or does it even matter?

To find the straightest route to success, we asked a few industry insiders what they thought. Not surprisingly, their answers depended on where within the industry they stand.

“Most developers are successful because they’ve devoted scientific research and product-development time to an ingredient or family of ingredients and have honed a formula or process to isolate or stabilize a blend of bioactive compounds. ‘Ingredient-driven’ is the answer. By all means, a developer also has to have an endpoint in mind for a need state with significant market-share potential to validate the business prospects of all their technical work. But starting from market demand and fishing about for a technical solution rarely works for an entrepreneur, although it’s often precisely what the big companies and well-funded investors look to do—i.e., identify five or six major need states and search a portfolio of potential technical solutions to evaluate and possibly invest in, buy, or license.”

—Grant Ferrier, founder and CEO, Nutrition Capital Network (NCN; San Diego)

“Building our brand around an ingredient has been the key to our success. Chia seeds are one of the world’s healthiest foods, with attributes that apply to a variety of different audiences. With chia, we could appeal to athletes, fitness and outdoor enthusiasts, and wellness seekers, as well as to those concerned with energy, weight loss, and heart health. This gave us a broad platform from which to build our brand.”

—Janie Hoffman, CEO and founder, Mamma Chia (Carlsbad, CA)

“I definitely have a bias for outside-in development. Looking to the market is what I do; others may not feel that way. But I think success can come both ways. [Ideally, both approaches] kind of meet in the middle. But my personal bias is always that the marketplace should speak to the opportunity. It doesn’t matter what widget you have if there’s no demand for it.”

—Jeff Hilton, chief marketing officer and cofounder, BrandHive (Salt Lake City)

**Tip 5: Know Your Channel, Know Your Consumer**

That’s a tall order, the precise height of which will vary with the claims a marketer wants to make and the benefits a product proposes to deliver. But the growing role that researchers, investors, and other “outsiders” now play underscores just how many forces are converging on the health-and-wellness sector.
DRcaps® capsules from Capsugel are innovative acid-resistant capsules that protect acid-sensitive probiotics, enzymes and sports nutrition ingredients like ATP and Betaine HCL. They provide vegetarian consumers with a plant-based capsule designed to release the majority of its content at an intestinal pH of 6.8 without the use of coatings. Not only do they eliminate the cost and complexity of adding acid-resistant properties during manufacturing, DRcaps capsules also mask taste and minimize the risk of bad aftertaste. As the vegetarian supplement market continues to grow, DRcaps capsules allow supplement manufacturers to grow with it. See the DRcaps capsule difference at capsugel.com.
As further proof that "convergence" is a sign of the times, Hilton refers to what he calls "channel convergence": that blurring of the lines between retail, online, multi-level marketing—all the venues available for making health-and-wellness purchases. Hilton notes that medical practitioners are even getting into the channel game, dispensing supplements in their practices.

So, he continues, "the fact that consumers have control over where and how they buy supplements has turned the paradigm upside down by allowing them to circumvent the retailers entirely." While this could stymie brands unfamiliar with outlets beyond retail, those with new-channel and new-media chops should find channel convergence an opportunity to get ahead.

That’s how Hoffman sees it. "Social media has been an important marketing strategy for us from the very beginning," she says. "Engaging your core customers personally and directly engenders brand loyalty and creates a coalition of ‘ambassadors’ who willingly share their love for your brand with the world. And by truly listening to those audiences, you can gain valuable insights that can help drive product development and line extensions."

And Millennials, for now at least, dominate those online audiences. That being the case, Hilton can’t emphasize enough: "They’re not looking for the same experience or engagement as Boomers." The ways in which the two groups apprehend health and wellness "are more different than they are alike," he notes, with the upshot being that "you’ve really got to look at these markets individually."

Take Millennials’ general opinion that bigger isn’t always better, especially when it comes to the companies that make and market their favorite products. "We know that Millennials love niche brands," he points out. "Many are actually big-brand averse and would just as soon buy from a small brand because they feel like they can own it and have a part in it."

And for brands that aren’t trying to conquer the world, that sounds fine. "We don’t believe in being all things to all people," Hoffman says. "The key to success lies in having a product whose attributes are desirable to a sizeable audience but that aren’t so generic that you’re unable to generate demand."

And she should know. The changing marketplace converged with her willingness to take a risk at just the right time. "The health-and-wellness industry changes almost daily," she says. "Smaller, entrepreneurial organizations tend to be more nimble, allowing companies to introduce products faster and self-correct as needed. And don’t underestimate the power of passion! It often requires tenacious perseverance to succeed in a crowded marketplace.”

Kimberly J. Decker writes for the food and nutrition industries from her base in the San Francisco area, where she enjoys eating food as much as she does writing about it. Contact her at kim@decker.net.
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Two-Way Street
Navigating the branded-ingredient partnership

BY KIMBERLY J. DECKER

What’s in a name? To hear suppliers of branded ingredients tell it, you might think it’s the key to a supplement’s very success. And while that may overstate the case by half, there’s no denying that nutritional ingredients with a recognizable brand name bring a lot to the table—not the least being their enthusiastic suppliers, who offer everything from premarket concept development to postmarket support.

But the benefits of branding don’t come without conditions. Hitching your own brand to that of your supplier means entering into a professional and legal relationship that requires extraordinary give and take. “The strength of a successful formulation comes down to the partnership between the branded-ingredient supplier and the supplement marketer,” says Shaheen Majeed, marketing director, Sabinsa (East Windsor, NJ). “A clear understanding of the marketer’s expectations and the deliverables for the ingredient supplier is necessary to walk this tightrope.”

What’s in It for Suppliers
It’s a balancing act more manufacturers are attempting as they turn to the branding advantage in a crowded marketplace. And at the topline level, their expectations run from “finding the best in quality to easing movement in the market and being well noticed among other brands,” Majeed says.

The branded-ingredient supplier, on the other hand, wants “a reasonable margin on the profits from the formulator,” he continues, as well as the visibility that comes from being the marquee player in a commercial supplement. “Ingredients get noticed more widely with more formulations on the market using them,” Majeed says. “An ingredient supplier knows that his brand gains recognition only when he finds the right supplement marketer to carry it forward.”

It’s in narrowing down those candidates that the supplier/manufacturer relationship dynamics really come into play. David Hart, vice president of marketing, Qualitas Health (Jerusalem, Israel), whose algal-source EPA-rich omega-3 oil branded as Almega PL debuted in its first commercial launches late last year, looks for “strong cooperation and collaboration” with formulator and retail partners. Coordinating R&D, marketing, and supply-chain efforts while leveraging distribution channels and marketers’ retail audiences will all help expand the company’s market reach and provides stability for both parties, he says.

Laying the Groundwork
But stability is only the start of what supplement makers get from the deal. As the number of moving parts needed to put a product on the shelf multiplies apace, a branded-ingredient supplier can act as a sort of Virgil to its marketer-partner Dantes, guiding the marketer through the various circles of development as they travel toward the daylight of a full-scale launch.

In the absence of such a guide, contempoary supplement makers face a more complex commercialization task than they might be prepared to assume. As Majeed notes, just bringing an ingredient—let alone a finished product—to market is a Herculean feat. “It involves the selection of raw materials, innovation in process development, scientific validation, regulatory guidelines, formulation compatibility, and the creation of an image as an effective nutraceutical.” Determining safety and efficacy while making sure proper doses are practical in finished formulations is another “intellectual challenge” the supplier takes on, he says.

By dispatching all this groundwork before the marketer even enters the scene, a brand-focused supplier makes it easier for a marketer to “establish scientific parameters for a final product,” Majeed says. Simply defining nuts-and-bolts parameters like solubility profiles and optimal storage conditions “saves a huge amount of time for the marketer.”

Trusted Partners
Mike Bush, senior vice president, Ganeden Biotech Inc. (Mayfield Heights, OH), has probably saved his customer-partners years’ worth of toil. “We’ve literally worked with in excess of 1,000 companies worldwide,” he says. And in doing so, he and his company—known for its spore-forming probiotic Ganeden BC30 (Bacillus coagulans GBI-30, 6086)—have demonstrated that having a supplier with skin in the game subtracts significant guesswork from the development process.

For example, Bush says, marketers’ R&D staffs aren’t always as familiar with specialized functional ingredients as their suppliers are—and that’s particularly the case when the supplier is dedicated to promoting that specialized ingredient. As Bush puts it,
“We’re a probiotic company and a biotechnology company, and that’s all we do.” So when his partners inquire about processing, temperature tolerance, cell viability, and the like, he’s ready with answers that “really cut lots of time off their cycles.”

Such was the case with The Cookie Department (Berkeley, CA), which uses Ganeden’s probiotics in its products. According to CEO Pam Marcus, “Any functional ingredient we use has to be able to take high heat and be baked without breaking down.” After collaborating on several test batches, lab tests, and formulation tweaks, they got the cookies’ probiotic dose just right and “were able to claim that by adding the probiotic, it could support digestive and immune health,” she says.

Giving suppliers this kind of inside peek at formulation details can be off-putting for marketers used to keeping such information under wraps. But when a supplier’s own reputation is inextricable from its brand’s, the marketer can rest assured that the supplier is looking out for the best interests of both parties and will share advice that’s candid, thorough, and honest. Carina Ayden, founder and executive director of EFFi Foods (Los Angeles)—another Ganeden partner—says “there is definitely an adjustment period as you become more trusting and dependent on your supplier, but there’s no mistaking the true value they can be as an asset to your company.” For example, when EFFi needed to find an organic carrier for its probiotic, Ganeden was able to “make that happen for us,” she says, leading her to conclude: “A supplier can make all the difference in the world.”

Instant Messaging
Even beyond the bench, branded-ingredient suppliers prove their value with marketing support and consumer outreach. Bush says that with some customers, his team is effectively “an extension of their marketing departments, so we’ll make media calls to help promote the products that they’re trying to promote themselves.”

He notes that a fringe benefit he’s seen accrue to his company’s marketer-partners is that working with a well-known branded ingredient like Ganeden’s has “made it much

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**Having a supplier with skin in the game subtracts significant guesswork from the development process.**

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easier for them to get their products on shelves at retail”—where, not coincidentally, he says they sell.

Hart adds that his company’s “focused consumer marketing and outreach” aim to educate and “activate” consumers with programs that communicate the benefits of omega-3 supplements—and of Qualitas’s ingredient. “All of this creates value for the Almega PL brand and builds a win-win relationship with our partners,” he says. “At the end of the day, healthier and happier consumers are important for the retail brands, and we strive to provide them with support in all the areas they require.”

**Rules of the Road**

One more area to think about is that of safety and regulatory authorization. While never straightforward, it’s growing more convoluted as marketers set their sights on overseas markets. As Majeed points out, “Different parts of the globe follow different regulatory guidelines, and it would be a time-consuming task for a supplement marketer to get clearances from the various governing bodies. However, with a standardized ingredient supplier having received all the clearances themselves, the marketer is spared this process.”

Todd Johnson, director of marketing, Albion Minerals (Clearfield, UT), is keen to reassure his marketer-partners that Albion’s chelated minerals are made in the USA in cGMP, ISO 9001:2008, kosher, halal, and EFSA-compliant facilities. “Working with branded ingredients can help ensure quality, traceability, and regulatory compliance,” he says. “Formulating with proven branded ingredients helps manufacturers validate their high standards for sourcing and helps reinforce their commitment to quality.”

**Test Prep**

And how do you validate those high standards and commitment to quality—not to mention the actual functional benefits that a branded ingredient claims to deliver? By testing them. As Johnson says, “While branded ingredients are valuable, it’s essential to ensure that they’re backed by scientific evidence and research.” That’s why his company has collected more than 125 published research papers “pertaining to our properly chelated minerals, their absorption, and their effects on different body functions,” he says.

As Bush points out, “There’s a significant investment to bring these ingredients to market, and as part of that we want to make sure that the consumer understands that not only does this ingredient do what it’s supposed to do; it’s been well researched and studied and sets itself apart from others in the space, as well.”

He notes that it’s important to test the finished products that contain those ingredients. His company ran over 10,000 tests in its labs last year investigating everything from the effects of reformulation to quality of supplements already on shelves. And they’re sticklers about encouraging their partners to use qualified independent labs for their own release testing. “We’ve literally trained outside food labs on how to enumerate Ganeden BC30,” he says, adding that theirs was the first probiotic to get a United States Pharmacopeia monograph: “We actually published our enumeration and identification protocols” so that others could put them to the test.

Ganeden spot tests customers’ products, too, picking up items at stores and bringing them back to the lab to check that the numbers on the labels match the results of analysis. And he insists his customers appreciate it. If Ganeden uncovers a product below spec, it helps the marketer bring it back into line; alternatively, by alerting partners when it finds products above spec, it helps cut both inclusion rates and formulation costs. Spot testing can also unmask “bad actors,” as Deanne Dolnick, vice president, Next Pharmaceuticals (Salinas, CA), explains. The company supplies a stress-reducing botanical ingredient branded as Relora, and when it found six years ago that a marketer was printing the Relora patent number on the label while including no apparent ingredient in the product itself, “we took this very seriously,” she says, “demanding that the product be taken off the shelves and restitution made.”

The response, she said, was in the interest of protecting consumers, which is a big part of what the brand advantage is about. As Bush says, “Launch one bad product,” and the blowback can be catastrophic. “We certainly don’t want one rogue company to go ruining that for everybody.”

**Your End of the Bargain**

Which, of course, brings us to the marketer’s end of the branded-ingredient bargain. Dolnick says that Next Pharmaceuticals requires its partners to sign a customer agreement establishing dosage requirements that “they must adhere to,” she emphasizes. Insisting on this provision “means that the manufacturer or marketer is going to be putting out an efficacious product” to the benefit of all. “We also require that our customers use our logos, trademarks, patent numbers, and so on,” she says, “to ensure that others don’t violate our trademarks and patents.”

Hart believes “we make it easy for customers to co-brand their products.” Qualitas uses a royalty-free trademark licensing agreement that spells out quality standards for any product that bears the Almega PL trademark. “This guarantees that the products including our branding are of the highest quality and enables our retail partners to be on a level playing field,” he says.

And who would argue with that? Apparently, not many supplement marketers. “We rarely get pushback,” Bush says. And if that pushback ever came to shove, he’d rather terminate the engagement than jeopardize the ingredient’s reputation or consumers’ trust.

Perhaps that’s because “the brand image that the ingredient carries speaks for itself,” Majeed points out, “particularly today when consumers have access to so much information right there in the store or on their smartphones.”

As occasional controversies roil the industry, that image assumes even greater gravity. “With the New York state attorney’s unprecedented actions and the resulting deluge of negative media coverage,” Majeed adds, alluding to the investigation of dietary supplements launched by New York Attorney General Eric Schneiderman this year, “now more than ever an emphasis on products with a track record of safety and efficacy is essential.”

**Kimberly J. Decker** writes for the food and nutrition industries from her base in the San Francisco area, where she enjoys eating food as much as she does writing about it. Contact her at kim@decker.net.
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It's in the details.
Flexible pouches are disrupting the reign of conventional rigid packaging in foods. Will the same soon be said for dietary supplements?

BY MAUREEN KINGSLEY

A ny observant consumer can attest to the fact that flexible pouch packaging, especially stand-up-pouch packaging, continues to grow in popularity. For foods sold in grocery stores and other retail outlets, and, just recently, for some nutritional supplements and nutraceuticals, brand companies are turning to this type of packaging for reasons including its protective properties, its novel and contemporary appearance, portability, custom-printability, shipping and warehousing cost savings, seemingly endless closure/fitment/spout choices, and its contribution to a reduced carbon footprint.

“Pouch packaging, especially stand-up pouches in the food market sector, has been trending in a positive direction for more than 10 years,” says Craig Livings-ton, senior marketing manager, healthcare, at packaging company Ampac (Hanover Park, IL). “The dietary and nutritional market segments have seen considerable growth over the past three to five years in their transition from rigid and blister packs to stand-up pouches and film over-wraps,” he adds. Livingston expects both of these trends to continue for the foreseeable future.

David Marinac, founder and CEO, ABC Packaging Direct (Cleveland), points out that as new styles of flexible pouch packaging are introduced, such as flat-bottom stand-up bags, interest will only intensify. (See sidebar on page 52, “The Latest and Greatest in Pouch Innovation.”)

Flexible Pouch Packaging’s Many Advantages

Those who design and manufacture flexible pouches, and those who package their products in them, have no trouble generating a list of this packaging format’s numerous benefits. For starters, Marinac points to pouches’ excellent barrier properties, which result from their multiple layers of engineered barrier film (including foil, metalized film, clear structures, and combinations of the three). These layers are laminated together to keep the pouch contents fresh for longer periods of time. This method protects what’s inside the pouch from moisture, vapor, odor, and UV rays.

The pouch format also benefits manufacturers and retailers alike, Ampac’s Livingston says, through its “unlimited range of packaging design options,” particularly in stand-up pouches. “The depth of packaging material options, along with the ability to provide 360° high-definition graphics on the package and the nearly limitless pouch sizes that can be manufactured,” he explains, make flexible-pouch packaging flexible in more ways than one. Livingston says that the large selection of pouch-reclose features, such as zippers, sliders, and spouts, “truly sets pouches apart from their rigid-packaging counterparts.”

Advances in resins, films, adhesives, and ink, along with “rapid and exciting developments in pouch-converting equipment technology,” according to Livingston, are producing new applications for stand-up pouches that would have been “unthinkable” just a couple of years ago. For instance, Ampac is now able to produce stand-up pouches robust and roomy enough to hold up to five liters of liquid product across food, healthcare, and other markets. “And on the other end of the spectrum,” Livingston says, “is the much smaller stand-up pouch that contains just 50 milliliters of personal-care product,
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Likewise, nutraceutical brand Nippi Collagen cites specific dosing as one of the variety of reasons why it chose pouch packaging (from Innovative Flex Pak; Springville, UT) for its TruMarine Collagen Jel ingestible personal-care product. Brand spokesperson Lauren Clardy says the pouch format suited the “recommended 5 g/day dose load” the brand was after. “Any formula with a higher dose load lends itself to flexible packaging nicely,” she adds. And her company appreciates that pouches can deliver liquids, thick jams, thin gelées, or powders.

Today’s advances can also open up pouch packaging to new categories. This February, Luminate Nutrition LLC launched its new Zig-brand Whey Protein Portable Shake, a just-add-to-water protein drink in a pouch. Protein powders can, in general, be subject to clumping and thus be challenging for the pouch format.

Zig chose the BlenderPak pouch by Perimeter Packaging (Northborough, MA), an innovative new design introduced last year. What makes this pouch unique is its trademarked MixingMesh structure housed within the pouch. The MixingMesh is a rigid fitment that not only makes the pouch easier for consumers to grip but also helps break up clumps of powder once a consumer adds water directly to the pre-measured powder dose within the pouch and shakes it up.

The BlenderPak provides a portable protein drink solution for consumers on the go and may outperform other options. “If you look at what’s out there, blending bottles are clunky and can smell bad if not washed right away. Scooping protein powder into a baggie and mixing it at the gym is messy, and ready-to-drink shakes are heavier to carry and not always cold when my clients want them,” said Kathy Glabicky, a personal trainer and Zig advisory board member, in a company press release.

Beyond the durability, flexibility, and versatility offered by pouch packaging is the environmental benefit. Molly Brown, director of sales for Zig, says that the BlenderPak pouch weighs 80% less than packaging of other ready-to-drink single-serving shakes. “Our lightweight packaging allows our company to ship Zig more efficiently and cost-effectively,” she contends, “which leads to fewer shipping trucks on the road and reduced gasoline consumption, pollution, and carbon-dioxide emissions.” She adds, too, that the company plans to offer Zig’s BlenderPak as a “100% recyclable solution,” which is in progress.

ABC Packaging Direct’s Marinac points to both the recyclability and landfill-friendliness of pouches. “If you can take a glass jar or a plastic jug and replace it with a flexible stand-up pouch,” he says, “you’ve reduced how much packaging and plastic is used that ultimately goes to a landfill.”

Because flexible plastic weighs less than rigid plastic, folds flat before it is filled, and consumes less energy for its production and less space for storage and transportation than its more-conventional rigid counterparts, as Clardy summarizes, it makes sense from both economical and environmental perspectives.

Building a Brand One Pouch at a Time

Packaging plays a huge role in building and distinguishing a brand, particularly in the food, supplement, and nutraceutical markets. Ampac’s Livingston believes this is an area where flexible-pouch packaging really shines. “One of the most critical and highly sought-after benefits of flexible packaging in general and stand-up pouches in particular is how they differentiate and draw attention to products on store shelves,” he states. “Stand-up pouches have bold, 360° reverse-print high-definition flexo or rotogravure graphics for increased billboard space,” he explains, “and they can be manufactured in countless shapes and sizes with unique openings and reclosable features. All of these elements in the stand-up-pouch format help provide a more contemporary delivery system, realiz-
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ing strong product and brand differentiation and recognition” among all the conventional cans, glass bottles, plastic bottles, and cartons occupying space on the shelf.

Marinac places great importance on the custom-printing options afforded to brands by flexible pouches. “All areas of a stand-up pouch—the front, back, sides, bottom—are available real estate for printing,” he says. “Brands have room to print ingredients, tell their company story, explain their product’s benefits, and more.” On a dietary supplement’s tablet bottle, by contrast, there is much less opportunity for branding, he contends. “You have room for one label,” Marinac points out. “Good luck with that.”

Nippi Collagen’s Clardy asserts that pouch packaging has become “front and center” in grocery aisles and a leading delivery technology for baby foods, fruit purées, and more. “But,” she says, “we have yet to see a brand built on this delivery technology on the dietary supplement side. The market, however, is predicted to continue with dietary supplement consumers requiring a higher dose load. We have seen brands such as 5 Hour Energy built on shots, and other brands built on gummies, so there certainly is a white-space opportunity for some unique branding, messaging, and differentiation within the dietary supplement space,” she says.

Zig’s Brown agrees with Clardy and believes the adult consumer is “now ready” for direct-to-mouth consumption from pouches. Brown says it is Zig’s single-serve design that sets Zig apart and is a “key element” in the brand’s plans to grow and drive consumer adoption of this format. “Zig is pioneering a new category: bringing healthier on-the-go alternatives to the active consumer” via pouches, she says.

Still, Can Pouches Penetrate the Supplement Market?

Pouches are still relatively uncharted territory for nutritional/dietary supplements, as Clardy and Brown have observed. ABC Packaging Direct’s Marinac believes this is largely a result of a fear of change on the part of supplement brands. “There is no reason to use pill bottles and containers” for supplements other than “because everyone else does,” he maintains. “In fact,” he continues, “if a brand were trying to distinguish itself in that market as being environmentally friendly while saving money, introducing a stand-up pouch to replace pill bottles would be a great place to start.”

And don’t forget the resealability of stand-up pouches with a ziplock,” Marinac adds. “No cap required.”

Ampac’s Livingston thinks along lines similar to Marinac’s. The company is working with nutraceutical companies in the development of flexible packaging options, “including the stand-up-pouch format to successfully replace current rigid bottles or blister-card packs,” he shares. “Our goal,” he explains, “is to provide companies a creative and more-effective option for packaging their supplements, maintaining the efficacy of their product while creating the customer-enhanced benefits that flexible packaging can provide over rigid or blister-pack formats.”

Of course, every dietary supplement manufacturer knows what its needs are and whether pouch packaging really meets those needs, including protection of fragile tablets, for instance. But for marketers for whom the pouch makes sense, know that the opportunities are great, interest is high, and innovation is happening.

THE LATEST AND GREATEST IN POUCH INNOVATION

Pouches, particularly stand-up pouches, are gaining steadily in popularity and do seem to offer a wealth of advantages to food/supplement brands and consumers alike. And because innovation in this packaging format is ongoing, it is likely that, within a couple of years, any food, supplement, or nutraceutical manufacturer will be able to find a flexible pouch that fully meets its products’ needs.

Ampac’s Craig Livingston and ABC Packaging Direct’s David Marinac (whose company owns StandUpPouches.net) list the following innovations that are keeping flexible pouches a dynamic format:

- Flat-bottom stand-up pouches
- Spouted stand-up pouches for liquids and granular products
- Various ziplocks, including slide ziplocks for ease of use and Velcro (hook and loop) ziplocks
- Improved barrier properties for containing five liters and more of liquid within a single pouch
- Safe containment of chemically challenging, hard-to-hold products
- Improved recloseable zippers
- Liquid-tight zipper closures
- Advancements in fitment/spout/cap technology
- Precise-dosage pumps
- Flip-top caps attached to pouch spouts

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Maureen Kingsley is a freelance writer, editor, and proofreader based in Los Angeles. She covers a variety of industries, including medical technology, food-ingredient manufacturing, and cinematography.
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Lutein and Zeaxanthin for Young and Old

AREDS2 highlighted the importance of lutein and zeaxanthin for AMD, but recent studies also show benefits for younger populations.

BY IRFAN QURESHI, ND

Xanthophylls are yellow pigments and one of the two major subgroups in the carotenoid family. Lutein and zeaxanthin are two carotenoids within the xanthophyll family. From a nutritional standpoint, lutein and zeaxanthin are most well-renowned for their eye health benefits because they are the only two carotenoids accumulating in the macula of the retina in humans. These carotenoids form what is referred to as the macular pigment, which serves to filter harmful blue light and provides antioxidant benefits to protect retinal tissue. Research studies suggest beneficial effects related to nutritional supplementation with lutein and zeaxanthin, including prevention of macular degeneration, a leading cause of vision loss expected to impact nearly 200 million people globally by the year 2020. In fact, this research was the basis for conducting the well-known AREDS2 (Age-Related Eye Disease Study 2) trial.

The original AREDS (Age-Related Eye Disease Study) found that daily supplementation with a combination of antioxidant vitamins and minerals reduced the risk of developing advanced age-related macular degeneration (AMD) by 25%. AREDS2 was conducted as a follow-up study between 2006 and 2012 and included 4,203 individuals aged 50 to 85 at risk for development of advanced AMD. The purpose of AREDS2 was to determine if supplementation with the nutrients lutein/zeaxanthin and omega-3 fatty acids yielded additional benefits for AMD prevention beyond the original AREDS formulation. Overall, the results of the study failed to show increased protection from AMD with the added lutein and zeaxanthin as well as omega-3 fatty acids beyond what was found in the original AREDS study. However, the researchers then looked at the data by dividing it into groups based on dietary intake of lutein and zeaxanthin. The groups with the lowest dietary intake of these nutrients showed significant increased protection against progression to advanced AMD from consuming the supplemental lutein and zeaxanthin. Thus it’s possible that those with the lowest dietary intakes of these carotenoids would benefit substantially by supplementing with these nutrients.

A further, and potentially significant, confounding factor pointed out by researchers includes the issue of competitive absorption of carotenoids. As the AREDS formula contains beta-carotene, the authors suggest that administering lutein and zeaxanthin concurrently with the original AREDS supplement (as was the case in AREDS2) could have diluted the protective effect of the latter carotenoids on the basis that significant quantities remained unabsorbed due to competitive absorption with beta-carotene.

Given this confounder, it’s not possible to conclusively say whether the addition of lutein and zeaxanthin to an AREDS-type multinutrient would yield significant additional protection against the progression of macular degeneration. For this, additional long-term studies excluding beta-carotene need to be conducted. However, more recent studies beyond AREDS2 continue to point to...
the substantial eye health benefits of supplementation with both lutein and zeaxanthin in individuals with macular degeneration as well as in those who are healthy.

**Lutein and Zeaxanthin in AMD**

Yang-Mu Huang and colleagues from Beijing conducted a randomized, double-blind, placebo-controlled study in 112 individuals aged 50 and older with early AMD to assess changes in retinal function with lutein and zeaxanthin supplementation. The researchers divided study subjects into four groups, including placebo, 10 mg lutein, 20 mg lutein, and 10 mg of lutein plus 10 mg of zeaxanthin daily. Supplementation commenced for a two-year period, and the researchers assessed measures of retinal sensitivity at baseline, at 48 weeks, and at two years.

Results of the study showed that all groups besides placebo achieved higher macular pigment optical density scores (MPOD). A higher density of macular pigment, composed primarily of lutein and zeaxanthin, is thought to confer better eye protection. Furthermore, retinal sensitivity was significantly enhanced in the groups receiving 10 and 20 mg of lutein daily versus placebo. While the authors clarified that the duration of the current study was too short to determine whether lutein supplementation reduces the progression of AMD, lutein supplementation was clearly shown to enhance parameters of retinal function.

Researchers in the field of carotenoid and eye disease research recently published a study in which they took a different approach to looking at the relationship of lutein and zeaxanthin with the main outcome measures involving the substantial eye health benefits of supplementation with both lutein and zeaxanthin in individuals with macular degeneration as well as in those who are healthy.

**Lutein supplier OmniActive Health Technologies (Morristown, NJ) is one supplier committed to spreading the word that lutein benefits all.** The company rang in the second anniversary of its award-winning Lutein for Every Age campaign at the 2015 Natural Products Expo West trade show in Anaheim.

The goal, says Lynda Doyle, OmniActive’s vice president, global marketing, is to raise awareness not only among industry folk but also among consumers and healthcare providers. “We’re trying to educate about the importance of early and consistent lutein intake over a lifetime—so starting young and continuing on—because if you think about macular degeneration, that doesn’t happen overnight,” she told *Nutritional Outlook*. Instead, AMD is the result of “a constant bombardment of the different stressors of your eye over a lifetime,” including heavy use of computers, tablets, and other electronic devices.

The company is now boosting the social media arm of its campaign, ironically and sensibly, to reach those very consumers staring at tablets and smartphone screens daily.

—Jennifer Grebow, Editor-in-Chief

**LUTEIN FOR EVERY AGE**

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—Jennifer Grebow, Editor-in-Chief

**Lutein and Zeaxanthin for Healthy Eyes**

While macular degeneration is a disease often associated with aging eyes, research is also pointing to the ability of lutein and zeaxanthin to enhance visual function in young, healthy individuals. Emily Bovier from the State University of New York, Oswego, (Oswego, NY), and Billy Hammond from the University of Georgia (Athens, GA) recently conducted a randomized placebo-controlled trial to assess the effects of lutein and zeaxanthin on visual processing speed in young healthy adults.

The study assessed measures of retinal sensitivity at baseline, at 48 weeks, and at two years.

Of the eight studies selected, six were conducted in Europe, one in China, and one in the United States. The duration of the studies was between 6 and 36 months, while the dosage of lutein ranged between 6 and 20 mg per day and zeaxanthin between 0 and 10 mg per day. The final analysis found that supplementation with lutein and zeaxanthin resulted in significant improvements in visual acuity and contrast sensitivity in individuals with AMD. The results also showed that the magnitude of benefits increased in a dose-dependent fashion. In addition, the authors noted that the improvement of MPOD levels in study subjects significantly correlated to the improvement of visual acuity and contrast sensitivity, indicating a significant benefit of lutein and zeaxanthin supplementation in those with AMD.
trial and randomized into three groups: the first group consumed a zeaxanthin supplement (20 mg daily); the second consumed a combination supplement containing 26 mg zeaxanthin, 8 mg lutein, and 190 mg of fatty acids from fish oil; while the third group consumed a placebo. The researchers assessed the subjects for changes in MPOD and a measure of temporal vision known as temporal contrast sensitivity function (tCSF). Increases in MPOD and tCSF were noted in both supplemental groups, while no change was seen in the placebo group. The magnitude of effect was similar in both groups receiving the zeaxanthin and lutein supplements, translating to a nearly 20% increase in MPOD and a corresponding 20% increase in temporal processing speed from baseline levels. These results are significant in that the study highlights the benefits of zeaxanthin and lutein supplementation in a young population that is already at peak function, indicating that the use of xanthophyll carotenoids can further optimize visual function beyond normal levels.

In a second double-blind placebo-controlled study, Billy Hammond and colleagues from the University of Georgia investigated the impact of lutein and zeaxanthin supplementation on recovery from photostress, glare, and chromatic contrast.8 Photostress occurs with intense, short-term exposure to bright light, while chromatic contrast refers to the ability to distinguish colors. Similarly, glare can cause discomfort and disability, leading to a reduction in visual performance. In this year-long study, 150 young, healthy participants were randomized to a supplement consisting of 10 mg lutein and 2 mg zeaxanthin daily, or a placebo. The results of the study showed that the lutein and zeaxanthin supplementation increased MPOD and significantly improved chromatic contrast as well as recovery time from photostress. Glare recovery trended towards improvement, but the changes were not statistically significant. This study provides further evidence for the ability of lutein and zeaxanthin to enhance visual performance in young, healthy subjects.

In an interesting study on Chinese drivers, Yuan Yao and colleagues from Shanghai Jiao-tong University in China conducted a one-year trial to assess the effects of lutein supplementation on visual performance.9 In the study, the researchers recruited 120 healthy participants between the ages of 25 and 47 who were employed as drivers with a daily average working time of 10 hours over the previous two years. The randomized, double-blind, placebo-controlled study consisted of drivers supplementing with lutein (20 mg/day) or a placebo and included assessments for visual acuity, MPOD, and visual performance. At the end of the one-year study period, participants in the lutein group had significant increases in MPOD, while no changes in MPOD, were noted with placebo. Additionally, lutein supplementation significantly improved contrast and glare sensitivity, which are particularly important attributes for driving during the day and at night. Furthermore, drivers were asked to complete the National Eye Institute 25-Item Visual Functioning Questionnaire, a validated measure of visual function. Those in the lutein group showed significant improvements in the driving subscale of the standardized questionnaire. The investigators also noted a trend towards enhanced visual acuity in the lutein group; however, the improvements in visual acuity did not reach levels of statistical significance. These results pointed to substantial benefits of lutein for drivers, especially while driving at night or under low-light conditions.

**Benefits for All**

The central role of lutein and zeaxanthin for eye health is abundantly clear from the research. The importance of these xanthophyll carotenoids from a functional and structural point of view in the retina and macula of the eye make them indispensable nutrients for healthy vision. Additional research will ultimately reveal the extent of their ability to prevent the progression of eye diseases like AMD; however, supplementing with these nutrients is a sensible strategy in the elderly at risk for advanced eye diseases as well as in young, healthy individuals looking for an edge to optimize their already healthy vision.10

**References**


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**Irfan Qureshi, ND**, is chief regulatory officer for Vitamin Research Products LLC. His current focus includes oversight of product development, regulatory affairs, quality control, and quality assurance.
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The latest from the world of oral health

BY MICHAEL CRANE, ASSOCIATE EDITOR

Gargle some mouthwash, brush and floss your teeth, and drop into the dentist’s chair a couple times each year. Sound familiar? Even if many people fall short of following it, the conventional wisdom for maintaining good oral health has become fairly ubiquitous. However, there may be more to the story.

The supplement world has produced a deluge of research, applications, and products relating to oral health in the last few years. From probiotic strains working to cultivate the proper bacterial climate, to omega-3 ingredients fighting periodontitis, there’s a mouthful of options for a market that may be gradually moving “beyond dental.” A mix of cost-efficiency, natural appeal, and promising research are all driving the hype.

A Bacteria Balancing Act

One crucial element of oral health that conventional measures often fail to address is maintaining a healthy microbial balance. Most mouthwashes strive to rid the mouth of harmful bacteria that contribute to tooth decay and gingivitis, but do they go too far?

The problem with antimicrobial rinses and mouthwashes is that they “inhibit the growth and functioning of beneficial strains of bacteria that help protect the oral cavity from colonization by the pathogenic strains,” says Nena Dockery, technical support manager, Stratum Nutrition (St. Charles, MO). Beyond contributing to tooth decay and bad breath, these harmful strains may also infect the throat and upper respiratory tract.

To that end, the BLIS M18 and K12 probiotic strains from Stratum Nutrition are designed to restore protective bacteria in the oral cavity. Derived from Streptococcus salivarius, a naturally occurring oral bacteria, both strains are meant to “protect the oral cavity from occupancy by deleterious strains of bacteria through competitive inhibition,” says Dockery. But each strain takes a slightly different approach.

BLIS M18 for Periodontal Health

With three bacteriocins targeting harmful Streptococcus mutans, BLIS M18 is intended to improve gum and tooth condition, especially among patients with poor periodontal health. Study results announced in January suggest Stratum may well be on the right track with this strain.

Researchers at the A.J. Institute of Dental Sciences (Mangalore, India) conducted a study of BLIS M18 probiotic lozenges on 28 participants aged 20-60 years who suffered from “varying degrees of poor periodontal health,” according to a press release. An experimental group took the lozenges every day for 30 days and was then examined at 15-day intervals for 60 days in comparison with a control group. All the participants underwent professional scaling and root planing at the outset of the study.

By the end of the 30-day probiotic administration period, “the M18 supplement group showed a significant reduction in all clinical parameters, including plaque index, gingival index, modified sulcular bleeding index, and probing pocket depth when compared to that of the control group,” says Dockery. At 60 days, the experimental group still scored higher on these parameters, but the periodontal health benefits did gradually decline after the probiotic administration stopped, reported the researchers. Dockery points out that “regular supplementation” would be necessary to sustain the possible benefits.
BLIS M18 also produces enzymes that are meant to neutralize acidic conditions that can wear down tooth enamel and degrade dextran, a component of dental plaque, says Dockery.

**BLIS K12 for Children**

Although it acts by a similar mechanism, Stratum's BLIS K12 targets a different harmful strain, *Streptococcus pyogenes*, which can cause pharyngeal infections. K12 produces two bacteriocins that are meant to inhibit *S. pyogenes*, among other harmful strains, says Dockery.

A clinical study 2 published in *Drug, Healthcare and Patient Safety* in February 2014 explored possible benefits of K12 supplementation among children who suffer from recurrent oral streptococcal disorders. Thirty children aged 3-13 were treated for 90 days with a daily, slow-release oral tablet containing at least 1 billion colony-forming units/tablet of *S. salivarius* K12. The experimental group was compared with a control group of 30 untreated children. It was a multicenter, open, nonrandomized, controlled clinical trial.

By the end of the 90-day period, the treated group experienced a 96.79% reduction of pharynogtisillitis episodes caused by *S. pyogenes*, and near-perfect patient tolerability and compliance. While the control group spent a combined 900 days taking antibiotics and missed 228 days of school or preschool, the BLIS K12 group spent only 30 combined days under antibiotics and missed just 16 days of school.

Beyond showing “excellent tolerability and ease of compliance of K12 supplementation,” this research “built upon prior studies showing that the K12 strain can be a valid therapeutic solution in the prevention of infections of the oral cavity, whether of streptococcal or viral etiology, and in particular those of a recurrent nature,” says Dockery.

**A Market for Oral Probiotics?**

Even if oral probiotics have shown promise in recent research, is the market there? One advantage may be the acceptance that probiotics have already found in other applications.

“Most consumers now recognize the benefits of probiotics in the GI tract, so they are more receptive to understanding the role that probiotics can have in supporting oral health as well,” says Dockery. “The market is definitely growing.”

Entering the probiotic market also poses the challenge of finding ways to market specific strains and make finished products stand out, according to Heather Thompson, global marketing manager, Stratum Nutrition. Rather than a weakness, the novelty of oral probiotics may actually be a strength for suppliers looking to differentiate new products.

“We are now trying to educate on another angle with a different kind of probiotic. The mouth is a primary entry point for all bacteria—good and bad,” says Thompson. “Why not be proactive in building the positive balance within this gateway to our overall health?”

Stratum’s probiotics are not intended as replacements for daily brushing and flossing, but Thompson hopes consumers will turn to oral probiotics more and more as part of a well-rounded oral health regimen.

**Fighting Plaque? There’s a PAC for That**

Another relative newcomer to the oral health world is the cranberry, which has recently begun making appearances in...
Research is gradually building behind the benefits of omega-3s for periodontitis, but it’s still not a “slam dunk.”

powders, toothpastes, and chewing gums as an ingredient aimed at reducing harmful biofilm in the mouth. Could it be that the same proanthocyanidins (PACs) often claimed to provide relief from urinary tract infections (UTIs) may also reduce dental plaque?

Cranberry Toothpaste and Chewing Gum

On the basis of two promising preliminary trials, Nexira (Rouen, France) is promoting its Exocyan cranberry extract as a “natural oral care solution for decreasing dental plaque.” Just last year, Nexira launched Exocyan Cran 70S, named for the up to 70% possible standardized PAC levels in the extract.

Dental plaque arises out of the formation of a white viscous layer of harmful biofilm, but Nexira says the PACs in Exocyan disrupt the formation of this biofilm due to their anti-adhesive properties. If the PACs are able to prevent bacteria from attaching and growing in the mouth, inhibiting biofilm formation, then it may be possible to decrease the “main risk factor of gingivitis and periodontitis,” according to Nexira.

Researchers at the University of Bordeaux (Talence, France) conducted two small preliminary human studies on Exocyan’s effect on oral health in chewing gum and toothpaste. In the chewing gum study, conducted in 2008, nine participants chewed four pieces of gum every day for four weeks, with each piece of gum containing 36 mg of Exocyan PACs. According to Nexira, researchers saw an average 28% decrease in dental plaque over the course of the study, as measured by the Turesky plaque index score.

The 2011 study on PAC toothpaste involved 18 participants who brushed their teeth three times daily with toothpaste containing Exocyan. After six weeks, researchers noted a 15% decrease in plaque, also measured by the Turesky plaque index score. In both studies, the participants were healthy volunteers without cavities who were approximately 21 years old. Both study results are unpublished but currently featured in Nexira’s marketing materials.

“The natural action in oral health of Exocyan, as well as its natural origin, makes it perfectly suitable for the formulation of healthy and clean-label products,” says Vanessa Agnolutto, marketing and communication manager, Nexira. She adds that Exocyan is available in organic grade and suitable for soluble and insoluble applications.

Cranberry PACs may reduce dental plaque by preventing harmful bacteria from growing and attaching in the mouth, Nexira says.

Cranberry Powder

Cranberry ingredient supplier Fruit d’Or Nutraceuticals (Notre-Dame-de-Lourdes, Quebec) has been marketing its ExoCran cranberry PACs for oral health applications. Last year, the company launched a cranberry extract that is 70% standardized PACs. This extract was used in an ExoCran chewable tablet for dental plaque reduction.”

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QC, Canada) recently launched its own cranberry powder for oral health, called Oral Cran. Acting on the same biofilm-disrupting mechanism as Exocyan, Oral Cran is currently available in a powder that Fruit d’Or claims may help fight plaque buildup, cavities, gum bleeding, and bad breath.

A recent pilot study of 33 patients aged 33-80 showed promising potential for Oral Cran, according to Fruit d’Or. The participants all suffered from halitosis, gum bleeding, or generally poor gum condition prior to treatment. After two months of tooth brushing with Oral Cran powder, study organizer Hilary Rodrigues, PhD, reported overwhelmingly positive findings.

“The periodontal condition has improved, and in all cases bleeding from the gums has ended,” Rodrigues said in a press release. “Swelling of gums was reduced, bad breath was eliminated, and blue-tinged gums turned back to a normal pink color.”

The preliminary study consisted entirely of patients from Dr. Rodrigues’s private practice, and the results are unpublished, but Fruit d’Or has plans to launch a larger-scale study of Oral Cran, according to Stephen Lukawski, director, sales and business development. Lukawski also posits Oral Cran as a less expensive complement to professional teeth cleaning, especially for patients undergoing chemotherapy who are advised not to get their teeth cleaned for fear of infection.

Omega-3s: A Friend for Gums in Need?

Omega-3 fatty acids have racked up an expansive lineup of possible health benefits over the years, but we may soon be adding one more to the list. Recent research has shown omega-3s may ease several symptoms of periodontitis, possibly due to the anti-inflammatory action of the famous fatty acids.

Omega-3s and Aspirin

A randomized, double-blind, placebo-controlled trial published last year in the Journal of Dental Research explored the effect of omega-3 docosahexaenoic acid (DHA) on adults with moderate periodontitis. Over the course of three months, 46 participants took either 2000 mg per day of DHA or identical placebo capsules. All study participants also received 81 mg of aspirin per day, which was intended to reduce enzymatic inactivation of DHA and enhance possible “protection against inflammation-induced tissue and bone loss from periodontitis,” according to the researchers.

Although bleeding on probing and plaque index were not affected in either group, researchers at Beth Israel Deaconess Medical Center (Boston) observed a significant decrease of mean pocket depth and gingival index in the experimental group.
group, two indicators of problematic inflammation and separation of the gum from the tooth. The proportion of DHA in red blood cell plasma membranes also increased from 3.6% to 6.2% in the omega-3 group, compared with no change among the control group.

The researchers concluded that "aspirin-triggered DHA supplementation significantly improved periodontal outcomes in people with periodontitis, indicating its potential therapeutic efficacy.”

Omega-3s Alone
Researchers at India’s Dental College and Research Centre (Kolhapur, India) also released the results of a similar study last year, except in this case aspirin was not included in the study design. For 12 weeks, 58 participants with moderate and severe chronic periodontitis were given either a 300-mg tablet of omega-3s daily or a placebo. Each omega-3 capsule contained 180 mg of eicosapentaenoic acid (EPA) and 120 mg of DHA. The trial was randomized, double-blind, and placebo-controlled.

Four parameters of gum health—gingival index, sulcus bleeding index, pocket depth, and clinical attachment levels—all saw significant reductions in the omega-3 group compared with the control group, researchers reported. They concluded that omega-3 supplementation may have "potential benefits as a host modulatory agent in the prevention and/or adjunctive management of chronic periodontitis.”

New Products?
Clearly, the research for omega-3 applications in oral health is growing, but it’s still not a “slam dunk,” says Harry Rice, PhD, vice president of regulatory and scientific affairs, Global Organization for EPA and DHA Omega-3s (Salt Lake City). Rice is also a member of Nutritional Outlook’s editorial advisory board.

In the last five years, omega-3 research has taken enormous strides in moving from animal models to human trials, says Rice, but there is still a scarcity of companies marketing omega-3 products specifically for oral health. As always, a big question is: would there be a demand among consumers?

"Perhaps the appeal would be that omega-3s have additional benefits above and beyond cardiovascular health,” says Rice, adding that periodontists would likely need to begin endorsing omega-3 products to jump-start the market. "Provided the research builds in support of a solid benefit, there could be a demand, but I think it would be a niche market."

With so many new and promising options, dietary supplements are poised to play an evermore important role in consumers’ oral healthcare routines.

References
The role of probiotics has expanded from gut health maintenance, to use in applications that target diverse preventive health maintenance needs. Clinically validated probiotics now find innovative applications in dietary supplements, functional foods, and mainstream food products.
Turkey, the Middle East, and Africa (MENA) is one of the fastest-growing food and beverage regions in the world. The food industry in this region is set to grow to US $1 trillion by 2030 as the population shifts from raw and bulk foods to packaged and processed foods. The population of the MENA region is almost 500 million, and with a lack of market maturity as well as a favorable long-term economic structure, it has become the latest hot spot in the food industry.

The 2014 Fi Istanbul & Ni 2014 events were a great success. More than 200 food industry exhibitors met with more than 4,700 key international contacts and decision makers over the course of three days. This year, Fi Istanbul offers a three-day Seminar Theater, giving visitors the opportunity to discover the latest trends, innovations, and market insights from key opinion leaders and industry professionals. Keynote topics include:

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**Exhibitor Highlights**

**Aromsa**
Aromsa A.S. is a Turkish manufacturer of flavors, natural extracts, caramelized sugars, caramel colorants, and sauces and fruits. Its products range from carob extract to E150b Caustic Sulphite Caramel.

**Chr Hansen**
Chr Hansen is a global supplier of bioscience-based ingredients to the food, health, and animal feed industries, with leading positions in the markets in which it operates. Its product range includes cultures and dairy enzymes, probiotics, and natural colors.

**Halavet**
Halavet is a Turkish gelatine and collagen protein manufacturer.

**Omya**
Omya is a global producer of industrial minerals—mainly fillers and pigments derived from calcium carbonate—and is a worldwide distributor of chemical products.

**Prinova**
Prinova is a single-source solution for high-quality ingredients. The company offers vitamins and derivatives, proteins, amino acids, aroma chemicals, essential oils, sweeteners, food additives, hydrocolloids, natural extracts, flavor enhancers, and more.

**Synthite**
Synthite is the largest oleoresin extraction firm in the world, supplying ingredients to the food, fragrance, and flavor industries.
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Exhibitor Highlights

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Gloval transition over the last 50 years to a modern, sedentary lifestyle, combined with a shift toward processed-food diets higher in calories, carbohydrates, and saturated fat, are contributing to a concerning worldwide epidemic of impaired glucose tolerance. An estimated 387 million people worldwide are living with diabetes. According to statistics from the International Federation of Diabetes (IFD), the number will increase 53% and reach 592 million by 2035.1 In North America alone, 37 million people were diagnosed with diabetes in 2013, with many more judged to be at risk for the disease. The costs associated with managing blood glucose levels and controlling diabetes are daunting. The American Diabetes Association estimated the cost of treatment in the United States during 2012 as $245 billion.2

A number of factors contribute to the development of impaired blood glucose function, ranging from family history, weight, and high blood pressure to poor diet and lifestyle. But diabetes in particular is a deceptive disease, with symptoms that are not easy to identify. If not treated, these issues can cause debilitating conditions affecting many systems and tissues in the body, including the heart, eyes, nerves, kidneys, and blood vessels.

While no one is certain how diabetes has reached epidemic proportions worldwide, understanding of how diabetes develops has come a long way. We now know that it is perfectly normal for most people to experience an increase in blood glucose after consuming a meal; thereafter, insulin and its receptors work to transfer the blood glucose to storage cells in the body, which brings blood sugar levels back to a normal range within a couple of hours. But when insulin production becomes inefficient and the body cannot produce enough to maintain normal blood glucose levels, the patient develops insulin resistance, or type 2 diabetes. Clinicians now understand that impaired glucose tolerance (IGT) is a predictor of diabetes in people with above-normal blood glucose and that addressing IGT can prevent or reverse the onset of the disease.

As these unfortunate health conditions proliferate, both governments and scientists are seeking cost-effective solutions. While diet and exercise are important tools, researchers are also exploring additional alternatives for effectively controlling blood glucose levels, with a goal of helping to manage the disease and prevent its associated metabolic complications.

Many people find it necessary to use glucose-lowering prescription medications such as acarbose and miglitol. These drugs inhibit absorption of intestinal enzymes such as maltase, isomaltase, and sucrase, which leads to reduced carbohydrate absorption and postprandial glycemia. Unfortunately, these drugs do have unpleasant side effects, such as bloating and gastrointestinal discomfort, which can hinder patient compliance.

Safe Solutions

An emerging body of science now shows promise of natural and traditional methods to support healthy blood sugar and insulin levels. For example, there are several botanicals with a long history of use and effectiveness in blood sugar management. With hundreds of years of use and observation behind them, they can offer safe, efficacious, and cost-effective solutions for many patients seeking healthy blood sugar levels. Health professionals also are seeing that, when combined with lifestyle modifications, these herbal preparations can play a vital role in addressing blood sugar management and the onset of diabetes.

A good example is the Salacia plant, a perennial woody climbing vine that is native to India and Sri Lanka and that has been used in traditional Indian medicine to treat diabetes and obesity for centuries. Plants in the Salacia genus contain various beneficial nutraceuticals, including anthocyanidins, catechins, phenolic acids, quinones, and triterpenoids. The major bioactive compounds in Salacia oblonga are xanthonoid, glucoside, and mangiferin, as well as two unique compounds, salacinol and kotalanol. The S. oblonga species has been the subject of several clinical studies since 2005 demonstrating strong efficacy in reducing and controlling blood glucose levels in both healthy subjects and patients with type 2 diabetes.

In one study3 conducted at Ohio State University and published in 2005 in the Journal of the American Dietetic Association, 39 healthy subjects participated in four separate high-starch–meal tolerance tests, with each participant fasting for at least 10 hours prior to the test. Subjects then drank a chilled beverage that contained 0, 500, 700, or 1000 mg of S. oblonga extract. Researchers...
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drew blood samples from participants at quarterly and half-hour intervals for three hours. They found that the presence of *S. oblonga* extract tended to lower postprandial glycemia and significantly reduced postprandial insulin response. The beverage containing the highest concentration of the extract produced the most significant reduction in both blood glucose and blood insulin levels (23% and 29%, respectively), compared to the control group.

Because *Salacia oblonga* is known to produce some intestinal gas, every eight hours after consuming the herbal extract the researchers also collected breath hydrogen samples to determine participants’ levels of hydrogen and methane, which correspond to bacterial gas production levels in the colon. Subjects who received the beverages containing *S. oblonga* showed increased hydrogen excretion but reported minimal gastrointestinal discomfort.

In another randomized, double-blind crossover study published in *The American Journal of Clinical Nutrition* in 2007, researchers looked at the effects of *Salacia oblonga* extract in 66 patients with diabetes after a high-carbohydrate meal. Subjects, in a fasted state, consumed one of three meals: a standard control meal, a control meal plus 240 mg of *S. oblonga* extract, and a control meal plus 480 mg of *S. oblonga* extract. Researchers then measured serum glucose and insulin levels at baseline and at postprandial intervals of 30 minutes for up to three hours.

They found that subjects who received either dose of the extract had postprandial glucose levels below the curve—by 14% for the 240-mg dose and 22% for the 480-mg dose—as well as an adjusted peak glucose response of 19% and 27%, respectively. Both doses of the herbal extract also produced lowered postprandial insulin response and an adjusted peak insulin response of 14% and 9%, respectively, for the lower dose, and 19% and 12%, respectively, for the higher dose, as compared to control. The researchers concluded that *Salacia oblonga* has the potential to lower acute glycemia and insulinemia in patients with type 2 diabetes following a high-carbohydrate meal.

**Inhibition of Carbohydrate Absorption**

To help prevent the development of diabetes and/or complications arising from high blood glucose levels, doctors often prescribe alpha-glucosidase inhibitors to lower postprandial blood glucose levels. Recent in-house research by Bioactives American Corp. confirmed that multiple bioactive compounds in *Salacia oblonga*—salacinol and mangiferin—work in much the same way as anti-diabetic drugs *in vitro*. They bind to intestinal enzymes and block the breakdown of complex carbohydrates in the intestine. Studies have also shown that *S. oblonga* extract and isolated mangiferin work as an anti-diabetic by increasing Glut4 expression and translocation in muscle cells. These effects are mediated through two independent pathways related to 5’-AMP-activated protein kinase and PPAR-gamma.

Overall, the hypoglycemic effect of *Salacia oblonga* extract is likely the result of a combined effort of these components. Coupled with present-day research data, ancient wisdom, and the documentation of ayurvedic medicine, *S. oblonga* extract is emerging as a strong nutritional solution to address postprandial glucose...
and insulin response, especially in combination with diet and lifestyle changes.

The extract’s unique, multipronged approach to lowering postprandial glycemia and insulinemia offers greater flexibility in diet for the patient and a gentle, cost-effective solution without the side effects associated with pharmaceutical preparations, thereby fostering comparatively superior patient compliance. *S. oblonga* extract has a proven history of use in India and Japan where it is taken as a tea or a supplement with meals. The ingredient also has potential for use in medical foods; blood sugar-management products in gummies, chews, and lozenges; meal-replacement programs; and healthy beverage applications. Finally, *Salacia oblonga* has growing potential, with new research suggesting its benefits for heart health and renal support.

References

Mohamed M. Rafi, PhD, is founder and CEO of Bioactives American Corp. (Highland Park, NJ). He has worked for many years as an investigator in clinical trials for the Cancer Institute of New Jersey and as a professor of nutrigenomics at Rutgers University. The company represents the culmination of Dr. Rafi’s research on inflammation, diabetes, cancer, and obesity. Bioactives American is the only marketer of a self-affirmed GRAS *Salacia oblonga* water extract, which is sold under the trade name Salsulin.

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Few herbals can rival turmeric’s astronomical rise in popularity over the last few years. Named 2013’s top-selling herbal supplement in the U.S. natural health channel by the American Botanical Council, the famous orange rhizome has continued to gain momentum for its possible effects on everything from arthritis to depression.

Several turmeric manufacturers are looking to build off the craze by infusing beverages with curcumin, the active compound in turmeric (Curcuma longa). But formulating the ingredient into an attractive and palatable drink can prove more challenging than you might think.

Appearances Are Everything
Curcumin’s orange or vivid yellow coloring may be its signature characteristic, but it also presents certain obstacles. For one, the ingredient’s staining properties can be troubling for both manufacturers and consumers.

“Formulators find it hard to contain the yellow staining nature of curcumin in equipment and any facility handling curcumin products,” says Anurag Pande, PhD, vice president, scientific affairs, Sabinsa Corp. (East Windsor, NJ). Curcumin may also stain teeth, says Pande, which is why chews or mouthwashes containing curcumin are basically “nonexistent.”

One of the ways Sabinsa addressed this problem was by launching C3 Reduct, “an off-white-to-white color [curcumin] extract which does not have staining properties,” says Pande. He expects the extract to open even more doors for the celebrated ingredient, especially in the oral health world.

Aside from staining concerns, curcumin’s hydrophobic nature often causes particles of the ingredient to settle at the bottom of beverage containers, forming an orange sediment that consumers may not find attractive. Exposure to light can also cause curcumin to degrade, further limiting the ways a curcumin beverage can be attractively presented. Opaque packaging is one option to address both of these dilemmas, but it can also be more expensive.

At Natural Products Expo West 2015, Sabinsa announced it may have a better solution to these challenges. The company is currently debuting uC3 Clear, a new curcumin ingredient that “brings complete solubility to curcumin for the beverage market,” according to marketing materials.

uC3 Clear dissolves completely in water, avoiding the unsightly settling issue entirely, says Shaheem Majeed, marketing director, Sabinsa. He adds that uC3 Clear held up well in a photo-sensitive study and is therefore appropriate for beverages with clear packaging.

“The idea of launching uC3 Clear is to enhance the consumer experience of curcumin with a more convenient and improved delivery system,” says Majeed. The new ingredient contains 10%-15% curcuminoids, and Majeed recommends dosages of up to 200 mg/day.

A Flavorful Challenge
Curcumin’s bitter taste is also a factor to work around. Juice company Urban Remedy (San Rafael, CA) has found a simple way to mask the ingredient’s taste in its turmeric-containing Boost beverage.

“Turmeric has a very earthy flavor many don’t find appetizing,” says Urban Remedy Founder Neka Pasquale. “By freshening it up with some organic lemon juice and a little bit of stevia, we were able to offset the earthy flavor, making it more refreshing.” Another Urban Remedy beverage, Cold Crusher, launched in Fall 2014, combines turmeric, carrot, orange, and lemon.

Cashew milk, pineapple, carrot, ginger, beet, mango, apple, and maple syrup are a few of the other ingredients beverage companies have combined with turmeric.

Although it may not be a simple task to formulate turmeric beverages, these companies have clearly found innovative ways to do just that.
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