THE AGE of ADAPTOGENS

The stage for adaptogens is set thanks to today’s stress-ridden world.
Backed By 15 Human Clinical Studies, LJ100® (Eurycoma longifolia extract) Helps Improve Sexual Performance & Increase Libido

- Inhibits sex hormone binding globulin (SHBG), thereby increasing free testosterone levels*
- Reduces ROCK protein & inhibits Rho-kinase (ROCK-II) activities to improve sexual response*
- Inhibits PDE5, arginase and angiotensin-1-converting enzyme (ACE) for improved vasodilation*
- Reduces reactive oxygen species (ROS), thereby increasing nitric oxide-cGMP signaling pathway for harder erections*
- Increases aromatase for improving libido, sexual communication, and sexual behavior*
- Increases dopamine for heightened sexual fulfillment*
- Increases cGMP and cAMP for harder erections*

We provide unique ingredients that address common health and aging concerns such as support for...

- Metabolic Syndrome • Cholesterol, Blood Glucose Balance • Weight Management • Skin Care
- Men’s Testosterone Health • Enhanced Physical Performance • Sports Nutrition • Neuronal Health
- Bone, Joint and Muscle Health • Cognitive Function, Mood, IQ Performance • Antioxidant Support

* The products and the information provided have not been evaluated by the Food and Drug Administration. The product is not intended to diagnose, treat, cure, or prevent any disease.
MEDIUM CHAIN TRIGLYCERIDES

▶ Ketogenic support
▶ Sustainable energy & improved performance
▶ Increased thermogenesis & prolonged satiety
▶ Cognitive enhancement

CAPTEX® liquids & NUTRI SPERSE® powders
1,500,000 Sq.ft. of Manufacturing Facilities

16 Extraction Lines
30 Tons of Raw Materials Produced Daily
100 Tons Milled, Granulated or Blended Daily
40,000 Sq.ft. of Laboratory and R&D Facilities
1,200 Employees Worldwide
2,500,000 Kgs of Raw Materials Warehoused in NJ and CA

Strength In Numbers

Botanical Extracts & Powders
Fruit & Vegetable Powders
Spices & Natural Sweeteners
Premix Blends & Organics
Plant Proteins

Visit Us at SupplySide East Booth 501

Premier Manufacturer of Natural Ingredients
SKIN-CERA® is a ceramide extract from Japanese konjac potato—a patented, novel, clean-label solution for supporting skin health* simply by adding an oral dose of 100 mg/day to the user’s conventional skincare routine.

- Backed by a published, single-blind, randomized, placebo-controlled clinical trial—Overall skin health improvements include a reduction in:
  - Dryness*  |  Redness*  |  Roughness*
  - Hyperpigmentation*  |  Itching*  |  Oiliness*

- Carrier-free konjac potato (*Amorphophallus konjac*) extract standardized to ≥ 5% konjac ceramides (glycosylceramides)

- Prepared from konjac potatoes cultivated in the Gunma Prefecture of Japan

- Patented for use in skin care (U.S. Patent 10,004,679)

- Free of the 8 major food allergens
  - Milk  |  Eggs  |  Fish  |  Crustacean Shellfish
  - Tree Nuts  |  Peanuts  |  Wheat  |  Soybeans

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease. Claims should be reviewed under the guidance of regulatory and/or legal counsel for compliance.
FEATURES

14 Active Nutrition

24 Gut Health
Category diversification drives growth.

30 Joint Health
Next-generation joint-health ingredients take center stage.

38 Sex Health
What’s exciting in sex health and fertility supplements?

46 Minerals
Minerals ride the wellness wave.

51 Botanicals Special Focus
COVID-19’s impact on botanicals, including adulteration. Also: A look at trends in adaptogens, elderberry, and turmeric.
WE ARE THE MINERAL PEOPLE

SAFE • PROVEN • EFFECTIVE

Our 60 years of mineral knowledge and a patented chelation process have made Albion the most trusted brand of pure chelated minerals available.

• Superior Absorption
• Gentle on the GI Track
• Complete Mineral Nutrition

• GRAS/Kosher/Halal/Non-GMO Certified
• Hypoallergenic/ Vegan and Vegetarian Friendly

ALBION MINERALS

LEARN MORE
CALL 1-800-453-2406
ALBIONMINERALS.COM

Disclaimer: These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
More U.S. states are permitting the use of cannabidiol (CBD) in foods and beverages. This contradicts FDA’s current position that CBD is illegal in foods, beverages, and dietary supplements. Attorney Ashish Talati, partner at Amin Talati Wasserman LLP (Chicago), provided an updated look at CBD’s legal status in foods and beverages during an August 13 *Nutritional Outlook* webcast titled “CBD in Food: A Challenging Road Ahead.”

“My recommendation to companies looking to get into this area, especially for food use, is to monitor the states,” Talati said during the webcast. “At our last count, there are about 21 states where CBD is allowed legally as a food or a dietary supplement—and that list is growing.”

Nearly half of U.S. states currently allow the sale of hemp and CBD food products, including large states such as Florida, Ohio, Texas, and West Virginia. Other states, such as California, Hawaii, and Massachusetts, have introduced legislation to allow hemp and CBD in food. And still other states, such as Maryland, continue to align with FDA’s position that CBD isn’t legal in food.

Companies selling CBD foods should be wary, Talati cautioned. The patchwork of state laws governing CBD foods has resulted in a wide disparity of individual state regulations, some contradicting each other. These can include registration requirements for retailers, manufacturers, distributors, and/or products (such as in Alaska, Texas, Utah, and West Virginia). States may also have unique testing and labeling requirements, including QR codes. One state, Utah, even regulates the shape of an edible: “They allow it as a gummy, but it has to be in a rectangular or a cube shape, so that tells you how companies have to monitor individual state requirements because any other shape may not pass and may not be allowed,” Talati said.

To ensure compliance, companies must familiarize themselves with state regulations. “One of the questions we usually get is, ‘Can I have one label that complies with all the states’ and FDA regulations?’” Talati said. “It’s very difficult to have one label that can comply with every single state. We’re hoping that down the road, it will get better.”

That said, Talati noted, in most states enforcement of CBD foods “has been inconsistent.” One exception, he said, is Florida, which has issued stop-sale orders in the past. “So it’s important that if you’re in Florida, you fully comply.”

Will increased tolerance of CBD foods in the states push FDA to change its position? That remains to be seen, said Talati. “What we see is that there is some tension between state and federal positions. Federally, FDA says you cannot add it to foods, and now we’re seeing more and more states allowing it.”

He continued: “What we really see in terms of where things go from here is that more and more states will allow CBD in foods. We don’t see that stopping...We do foresee that down the road, FDA will allow it in dietary supplements. And whether FDA allows it in foods, that’s a question mark right now. But if more and more states are allowing it, then down the road I think FDA may not have a choice at that point, when most of the country has a legal basis to sell it in states.”

On another note, I am excited to announce the addition of 10 editorial advisory board members to *Nutritional Outlook’s* esteemed panel of industry experts. In tandem with the nine current members of the editorial advisory board, the new members will help our editors identify key industry trends, developments, and insights within the field of dietary supplements and nutrition. For the full roster of our current editorial advisory board, please turn to page 4. We are honored to collaborate with these renowned industry experts. Working with this esteemed board is a testament to the level of excellence that our editors aim to deliver to our readers.

Jennifer Grebow
Editor-in-Chief
DO YOU NEED THE BEST GINKGO BILOBA EXTRACT?

- Conforms to the current USP 43 standards
- Free of over 300 pesticides
- Full ID traceability for every lot via HerbaLink®
- Purity and other quality standards verified in our ISO 17025 certified lab

Premier Manufacturer of Natural Ingredients

JIAHERB
essentials of nature
1.888.JIAHERB
www.jiaherbinc.com
CBD-Edibles Sales Grow Even During COVID-19, Says IRI

Cannabidiol (CBD) edibles such as food, drinks, gummies, and candy are set to be a huge driver of CBD market growth moving forward. CBD-edibles sales are already trending upward even as the COVID-19 pandemic persists. Market researcher IRI (Chicago) shared this and other CBD market insights during an August 13 Nutritional Outlook webcast titled “CBD in Food: A Challenging Road Ahead.”

Although the CBD-edibles category is still in its infancy in the mainstream market today (meaning outside of dispensaries), the potential for growth is promising, noted webcast speaker Larry Levin, executive vice president, Market and Shopper Intelligence, IRI. Although “the bases are small” today, Levin said, sales growth of CBD edibles and beverages is already outpacing the sales growth of the general CBD product market, at 130% vs. 89%, respectively, based on data from the 52 weeks ending June 14, 2020. (The data IRI shared stems from its partnership with BDS Analytics (BDSA; Boulder, CO), a market intelligence provider specializing in the global cannabinoid retail market.)

Looking forward, edibles such as food, candy, and beverages will be essential to CBD’s mainstream market growth, Levin said. The mainstream CBD products market is expected to reach $18 billion by 2024, growing from just $3 billion in 2019. CBD edibles will grow the most during that time, gaining approximately $5.7 billion. Compare this to the mainstream growth predicted for other CBD categories during that time period: topicals ($4.2 billion), pharmaceuticals ($2.1 billion), sublingual ($1.8 billion), inhalables ($1.0 billion), and pet care ($0.6 billion).

“There’s definitely a preference for edibles,” Levin noted.

Drilling down further into BDSA retail sales tracked in January 2020-April 2020, Levin reported that CBD candy (including gummies) accounted for the largest share of edible products sold in dispensaries. “More than half of the edibles market is being driven by candy,” Levin said. The next biggest CBD-edibles categories in dispensaries—from highest to lowest sales—were chocolate, infused food, pills, and beverages. Altogether, sales of all of these edible products, including candy, amounted to $420 million during that time period.

Beverages are still a small part of the CBD-edibles market, accounting for just 6% of the edibles sold in dispensaries, for instance. However, rapid growth is happening. In the 52 weeks ending December 29, 2019, for instance, hemp and CBD beverage sales grew 168% in the general market.

Opportunities

For companies hoping to participate in the CBD market, “having an edibles strategy is certainly a critical component,” Levin advised. Keys to success include taste/flavor, price, and brand familiarity/trust.

For growth to happen, consumers need to be educated about these products. Brands looking for pockets of opportunity should also understand that CBD users span a wide range, crossing generational and socioeconomic lines. Many also use both THC and CBD products, meaning many brands will find opportunities by “playing in both channels.” Some have already found good results extending their reach beyond dispensaries and into the mainstream market.

Levin also shed light on why consumers seek CBD products. The number-one sought-after benefits include relieving pain, sleeping better, and relaxing. Moreover, nearly 50% of consumers who prefer CBD-edible products report consuming these products daily, with nearly half taking them later in the evening.

Finally, as CBD products become more mainstream, companies will find retail channels shifting. While dispensary sales accounted for 51% of the market in 2019 (followed by e-commerce at 14%, pharma at 14%, grocery at 4%, mass-market at 1%, natural/vitamin stores at 5%, other channels at 3%, convenience stores at 4%, and drugstores at 3%), that pie will change. By 2024, dispensaries’ share will shrink to 26% and pharma will decline to 11% as other retail channels grow (e-commerce to 18%, grocery to 9%, mass-market to 9%, natural/vitamin stores to 8%, other channels to 7%, convenience stores to 5%, and drugstores to 5%).

“This truly is becoming a mainstream market, and we’ve got to be ready for that,” Levin said.

COVID-19 Sales

Levin also reported that CBD sales have not suffered during the COVID-19 pandemic. For instance, from April 14, 2020, to June 14, 2020, sales of all CBD products were 37% higher compared to the same period a year ago. Drilling down, CBD health and beauty product sales were 37% higher compared to a year ago while CBD-infused food and beverages were 39% higher.

Correction

In May 2020, Nutritional Outlook published an advertising-supported e-learning book on its website titled “Omega-3s: New Research and Market Trends.” This e-book referenced certain results from Amarin’s REDUCE-IT® study, which examined the impact of Vascepa®, Amarin’s FDA-approved pharmaceutical drug, on treating cardiovascular disease. Nutritional Outlook wished to clarify that its e-book was not an endorsement of any particular product, and Amarin states that the REDUCE-IT® study was not designed to test the efficacy of an omega-3 dietary supplement.
The Non-GMO Project Verified is North America’s leading independent third-party verification for products that are produced according to best practices in avoiding Genetically Modified Organisms (GMO). Products bearing the Non-GMO Project Verified seal have gone through a comprehensive evaluation process according to a consensus-based rigorous standard, which includes traceability, segregation, and meaningful, ongoing testing of high GMO risk ingredients.

“Providing health conscious consumers with herbal, probiotic, and digestive enzymes products that support their preference for Non-GMO ingredients can be challenging, so going this extra step in transparency is one way we can support our manufacturing and brand owner partners, retailers, and their customers.”

sabinsa.com/nongmo
In the early weeks of 2020, one could have done worse than to be in the sports nutrition sector. According to data provided by Euromonitor, the category’s domestic value had grown 63% from 2014 to 2019—10% compounded annually—topping out at U.S. sales of roughly $13.1 billion. And to all appearances, says Maggie McNamara, marketing director, Gencor Pacific (Irvine, CA), prospects for growth looked good.

“Increased demand for protein bars, supplements, and energy drinks among athletes, bodybuilders, and even weekend warriors was one of the major factors in that growth,” she adds, pointing to findings from Grand View Research1 that rising disposable incomes, urbanization, and the sheer building boom in gyms and fitness centers gave further cause to be bullish on the category.

“So needless to say,” McNamara concludes, “we expected sales to surge over the next few years.”

Then COVID-19 hit, and those expectations went out the window.

But new expectations are taking their place, and the pandemic may even lift some corners of the category, both now and in the long term. So industry insiders are keeping their eyes on the sector, and their fingers crossed.

Before…and After

Brian Appell, director, global communications, OmniActive Health Technologies (Morristown, NJ), also saw a bright future for sports nutrition as the year began.

“When you account for all the categories that have been subsumed into sports nutrition,” he says, “it’s a huge market. Diversification into weight management, athletic performance, energy, and even cognitive performance has transformed it from a niche category targeting gym goers to a broader consumer base looking to fuel their active lifestyles. And that’s a good thing; it’s built a strong category.”

But despite all that strength, sports nutrition couldn’t escape the disruptions that COVID-19 wrought in how consumers find, buy, and use the category’s products.

“Behavior has been so broadly affected by COVID-19 that the long-term effects aren’t yet known,” McNamara notes, “but there have been several immediate impacts.”

First, she says, fitness-center closures dampened demand both by cutting off a key purchase venue and “because people aren’t doing the same intense workouts at home that they were doing when working out at their local gyms or with trainers and coaches.”

Appell also noticed shifts in post-lockdown behavior that affected the market. “People simply weren’t exercising as much,” he says, “or they reprioritized spending toward keeping their pantries stocked.” And with more people at home than on the go, he adds, demand for

---

1: Grand View Research
We are a domestic source of high-purity fully-reacted zinc salts with exceptionally low levels of lead.

With 35 years of experience, Jost Chemical manufactures high-purity USP/EP/FCC mineral salts in cGMP-compliant, FDA-registered facilities. Our products are fully reacted, consistent from lot-to-lot and meet all customer requirements. Jost’s team of scientists provide particle size options, custom product development and technical support.

Visit jostchemical.com
US +1 314 428 4300  EU +48 65 322 69 60
convenience SKUs like bars and RTD beverages also fell.

The Bright Sides

"It's not all bad news, though," Appell continues. For one, while the pandemic depressed sales of pre- and post-workout formulas targeting gym goers, upticks in sales of weight-management and protein formulations have helped stabilize the category, he says.

For another, Appell and other sector watchers can't emphasize enough the support that online sales have lent sports nutrition, not to mention the industry overall. As he says, "It's a sure bet that e-commerce will be a main focus for sports nutrition marketers going forward."

McNamara agrees. "Consumers have had much more time to research products and shop online for everything from groceries to supplements amidst COVID-19," she says. Citing a data from Nutrition Business Journal's "2020 Supplement Business Report," she notes that online supplement sales are set to grow a stunning 61.4% in 2020. "Even more notable," she says, "online sales are projected to grow from $5 billion in 2019 to more than $10 billion in 2022, potentially representing 19.6% of all supplement sales by 2023."

And as for a third upside, COVID-19 appears to have renewed—or even awakened for the first time—a sense of urgency in consumers of all stripes to shore up their health however they can, including via diet, exercise, and supplementation.

"As a result of the coronavirus outbreak," notes Floris Daamen, marketing manager, performance nutrition, FrieslandCampina Ingredients (Amersfoort, The Netherlands), "people are increasingly interested in looking after their health. In fact, according to our research, six in 10 consumers across the globe say they’re more conscious about their overall health and wellbeing because of the outbreak."

Nutrition, activity, and quality of life are part and parcel of that new approach, Daamen adds. "That's why their fitness habits are changing as they discover new ways to enjoy exercise, such as going for long runs," he notes. "So I believe that one of the key lasting effects of this virus will be people’s acknowledgment that all aspects of health, both mental and physical, are interlinked."

Upping Their Game

Sports nutrition brands hoping to thrive post-pandemic will have to both acknowledge that new reality and formulate to address it. Fortunately, Appell says, the category "has been evolving and moving in this direction anyway; the pandemic simply accelerated that change significantly."

One way that McNamara thinks brands can adapt is by "exploring options with additional supplement blends to extend positioning away from being solely about performance to including adjacent needs."

"We've already seen that manifest in formulations that nod toward consumers' increased interest in immunity. "Even though it hasn't been a cornerstone of sports nutrition," Appell says, "companies are starting to pivot to including it as a benefit in their offerings."

That's in addition to other benefits that consumers seek, like weight and blood-sugar maintenance, adequate protein intake, and reduced inflammation, he says. "These all play well in this space, and formulators are starting to accent those benefits as part of their offerings, as well."

Daamen thinks gut health might be "an exciting avenue" for sports nutrition formulators in the future. "Considering the research into the gut-muscle axis," he says, "this will be an interesting development for sports nutrition, as current science suggests that as many as 30%-50% of athletes suffer from gastrointestinal problems that may impair their performance and/or recovery."

In addition to the Biotis Gut Health ingredient that FrieslandCampina launched earlier this year, the company aims to offer Biotis brand ingredients that target sleep, stress and immunity, Daamen says, "to deliver further on interconnected health concerns linked to the health of our gut and microbiome."

Back to the Lab

McNamara sees R&D as key to ensuring that sports nutrition brands hit the ground running when "normal" demand returns. "During the crisis, many manufacturers have emphasized developing novel products based on customer personalization and customization, which are generating substantial growth prospects in the global market."

For example, while CBD has attracted attention in the sports space—despite the potential for regulatory complications and what McNamara describes as a thin scientific record supporting its benefits—she offers palmitoylethanolamide (PEA) as a more comprehensively studied, and potentially more effective, alternative. She claims that PEA has the same effect as CBD on the endocannabinoid system, "which plays a role in fundamental physiological processes such as mood, pain, and recovery."

Add Daamen. "Brand owners can differentiate not only by adding health benefits to their products, but by clearly communicating them. In the end, "Proactive education about different ingredients' functional benefits is necessary to grab consumers' attention and help sports nutrition brands extend into broader consumer bases," he says. And just like an end of this pandemic, that's something we can all look forward to."

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.

Reference

HARD WORK PAYS OFF

CLINICALLY VALIDATED HEALTH BENEFITS

GRAS STATUS: FDA NO-OBJECTION LETTER

NON-GMO PROJECT VERIFIED

HEALTH CANADA APPROVED
With natural products number

QUALITY CERTIFICATIONS AND SCIENTIFIC SUBSTANTIATION YOUR CONSUMERS EXPECT

It takes a significant investment of time and resources into a product to meet the standards of today’s savvy, health-conscious consumer. The probiotic DE111® is a clinically validated strain of *Bacillus subtilis* with an impressive portfolio of scientific support and certification. We put in the work, because we know for our customers and their consumers, it pays off.

Call us at 800.697.8179 or visit DE111probiotic.com to see how DE111 can deliver digestive and immune health benefits in supplements, foods, beverages and companion animal products.

DIGESTIVE HEALTH • REGULARITY • IMMUNE HEALTH
Sports nutrition products are becoming more diverse, both in format and in flavor. As the market matures, offering consumers novel and interesting flavors is essential.

Sian Cunningham, marketing insights specialist for North America for Kerry (Beloit, WI), says that consumers are looking for new and exciting flavors that also bear a degree of authenticity. "The thirst for unexpected and provenance-inspired taste experiences continues to drive consumer interest in food and beverages," Cunningham said in a company press release.

As consumer tastes become more sophisticated, keeping up with flavor trends and creating innovative new flavors will be important tasks for sports nutrition brands looking to grow. Here are some of the dominant and growing flavor trends in sports products on which brands can capitalize.

**Mediterranean Flavors Lead in BCAA Drinks**
Flavor experts predicted that 2020 would see the rise of Mediterranean-inspired flavors in sports nutrition products. Alexandre Massumoto, marketing associate for Synergy Flavors (Wauconda, IL), says that the fresh fruits, cheeses, nuts, and sweet treats native to the Mediterranean region are inspiring a variety of new product flavors in sports products and ready-to-eat meals. While the Mediterranean will be a major influence on flavor trends, desire for more exotic flavors is also resulting in flavor launches inspired by other parts of the world.

"Regions such as Italy, Spain, and France have traditionally been viewed as culinary hotbeds, and flavors from these regions are now making their way into sports nutrition products," Massumoto says. "We're also seeing an increase in product launches of less-mainstream cuisines like Turkish, Lebanese, and Egyptian, creating a great opportunity for flavor innovation using ingredients and known desserts as reference."

Synergy Flavors expects these ingredients to be popular in a variety of workout applications. Some of the most common formats for these flavors will include whey protein and branched-chain amino acid (BCAA) beverages, as well as plant-based protein bars, Synergy Flavors said in a press release.1

**Baklava Hits the Power Bar Scene**
Massumoto says one Mediterranean flavor in particular is going to perform well in sports nutrition. Baklava is an iconic Mediterranean dessert thought to have originated before the rise of the Byzantine Empire. This sweet-tasting pastry is

---


---

**The Flavor of Fitness**
Emerging flavors in sports products

**BY MIKE STRAUS**
made with alternating layers of chopped nuts and thin, unleavened dough soaked in honey or rosewater. According to Synergy Flavors’ research, baklava will be a hit flavor in sports bars.

“Baklava is one of the most iconic desserts from the Mediterranean, but it has yet to reach its full potential elsewhere,” Massumoto says.

Synergy Flavors expects baklava to enter the mainstream quickly, citing social media and growing interest in the Mediterranean diet as factors that will spark the flavor’s growth. Data provided by Synergy Flavors indicate baklava as a dessert flavor is growing rapidly, with product launches incorporating baklava flavoring into plant-based power bars.

**Carob and Rum Raisin Poised to Enter Mainstream**

Massumoto says other niche flavors that have proven popular in small circles are now set to break through to mainstream sports product consumers.

While rum raisin has been a common dessert flavor in ice cream and gelato since at least the 1980s, Synergy Flavors is predicting that the flavor will soon enter mainstream sports nutrition products. Flavors like carob and forest honey are also expected to break through in the sports vertical in the form of food products, offering consumers a more unique or intense taste than chocolate and flower honey, respectively. Carob has a naturally sweet and mildly nutty taste, and is slightly sweeter than unsweetened cocoa. While it doesn’t taste exactly like chocolate, carob’s unique taste profile may offer consumers a novelty experience. Both carob and rum raisin will start showing up in protein powders, while carob will also likely emerge in bar form.

**Dessert Flavors Move Beyond the Cinnamon Bun**

When the first cinnamon bun–flavored sports product hit the market, it represented a taste revolution. After years of sports products leveraging chocolate as the dominant flavor, cinnamon bun flavoring was innovative and new. Megan Byrnes, marketing manager for Gold Coast Ingredients (Commerce, CA), says that now, sports product companies are adding layers of complexity to cinnamon that leverage a tried-and-true taste while also bringing a novelty element to entice consumers.

“Years ago, cinnamon bun flavor was the hot new thing,” Byrnes says. “While it has since become a classic flavor in the nutraceutical industry, emerging dessert flavors like snickerdoodle, churro, and horchata maintain a cinnamon-like profile while also helping companies differentiate their products.”

Byrnes predicts that future dessert flavors will continue to see cinnamon evolve and even merge with other flavors. She expects brands to experiment with flavors like chocolate-churro and cinnamon latte. Some brands, like RSP Nutrition (Miami Gardens, FL), are already using churro flavoring in sports protein powders. Dessert flavors vary from fresh and fruity to sweet and indulgent, Byrnes says, giving brands more opportunities to innovate.

“One flavor that we foresee emerging is ruby chocolate,” Byrnes notes. “It’s chocolate that is pink in color and is made from ruby cocoa beans. Ruby chocolate has emerged in the confectionery industry, so we might be seeing more pink-colored sports products that are ruby chocolate flavor rather than the expected strawberry or raspberry flavor.”

**Functionality Inspires New Flavors**

As sports products continue to improve their formulations and gain more functionality, flavors are evolving to match the core ingredients found in these functional products. Philip Caputo, marketing and consumer insights manager for Virginia Dare (Brooklyn, NY), says sports nutrition’s expansion into the holistic health space is creating an intersection between flavor and function as wellness-oriented products gain popularity.

“As consumers seek out ingredients that promote cellular repair, naturally ease symptoms, or support various body functions, a linking with the inherent flavors of those ingredients typically follows,” Caputo explains. “[That’s why] the popularity of turmeric, matcha, açai, and ginger [flavors]...
Nutritional Outlook®’s website delivers comprehensive and insightful industry coverage of the ingredient research, business developments, regulations, and manufacturing techniques that are shaping the industry. Stay up-to-date with the latest news, trends, elearning tools, and more!

Start discovering today!

NutritionalOutlook.com
Sports Flavors

will continue. Florals, spices, and many botanicals also fall into this category.

Moreover, flavor trends appear to be specific to product kinds. Caputo says that Virginia Dare has identified specific flavor groups that are popular with pre-workout, intra-workout, and recovery products, with functionality determining the ideal flavor for a given product.

“For pre-workout products, consumers gravitate to refreshing and energizing flavors with citrus and fruity notes,” he says. “Top generic profiles are fruit punch, watermelon, and lemonade. But the candy profiles, while relatively new, are quickly becoming a dominant category.”

Candy has a positive association with childhood and can evoke a positive mood state. Caputo says, which is just the motivation that people want before a workout. Intra-workout products, meanwhile, tend to have refreshing flavors like coconut or sea salt. For post-workout recovery products, though, the emphasis shifts to dessert-oriented tastes.

“Emerging flavor categories are sophisticated indulgences, elevated classics, and childhood-inspired desserts,” he says. “Cereal milk flavors are quickly emerging as the childhood-inspired favorites. Cinnamon toast cereal, apple cinnamon cereal, and marshmallow cereal are just a few that are growing.”

Caputo also notes that fermented and sour flavors will have a bright future in products associated with gut health. He says that as brands begin to experiment with flavors, consumers will base their purchases on certain functional aspects. Matching flavor to function, then, will be an important practice for sports brands.

Winning with Flavor

A rapidly growing interest in foreign flavors is creating new opportunities for sports brands. Consumers are looking for novelty and will eagerly try emerging new flavors from regions like Europe and the Mediterranean, as well as unique new takes on established dessert flavors. While flavors like fig and carob are on the cusp of entering the mainstream, there is a growing opportunity to engage early-adopter consumers with niche flavors like baklava and gianduja. Brands can capitalize on these emerging trends by appealing to influencers and promoting new flavors as an opportunity for a novelty experience.

Reference

1. Synergy Flavors website. “Synergy Flavors looks to the Mediterranean for sports nutrition’s flavors of the future.” Published online November 21, 2019.
The global market for branched-chain amino acids (BCAAs) is growing, with a wider subsection of consumers looking for products that support physical activity. BCAA products are no longer just for bodybuilders; now, the healthy active-lifestyle market is becoming aware of amino acid products.

BCAAs are also showing up in more diverse product formats with multiple functional claims. While the wider mainstream market pays relatively little attention to BCAAs, changes in marketing methods suggest they could move beyond the bodybuilding market, opening up opportunities for early-mover brands. Here are some of the trends driving growth in BCAAs.

**BCAA Sports Drinks Hit the Market**

Major brands are now introducing BCAA sports drinks with amino acids like leucine and valine as primary ingredients. In February 2020, Powerade introduced its Powerade Ultra Citrus Blast Zero Sugar drink, a naturally flavored sports drink with B vitamins, creatine, and BCAAs, including L-leucine, L-isoleucine, and L-valine. Meanwhile, October 2019 saw the release of Danone’s MyPro+ protein milk with BCAA, a high-protein, milk-based RTD beverage containing 25 g of protein and 5.1 g of BCAAs. This fat-free drink is made with no added sugar and no colorings or preservatives.

RTD sports drinks with BCAAs have seen impressive growth since 2015. Innova Market Insights data show that in 2019, RTD sports drinks accounted for nearly 6% of all BCAA food and beverage launches worldwide. This category accounted for only 0.8% of launches in 2015, making it the fastest-growing BCAA product format that Innova has tracked.

**Post-Workout Power Bars Grow**

Post-workout BCAA products are also growing in popularity, particularly in the global market outside of North America. These products are capitalizing on favorable clinical trials demonstrating the efficacy of BCAAs as post-workout ingredients. While athletes have several different options for post-workout products, bars are rapidly gaining ground due to their convenience. BCAA product launches in the sports bar category grew by a factor of 10 between

---

**MAKING GAINS**

Trends shaping the BCAA market

BY MIKE STRAUS

---

RBar Energy’s new almond protein bars provide leucine, isoleucine, and valine in a 2:1:1 ratio.
2015 and 2019, according to Innova data, increasing from just 0.3% of all BCAA product launches five years ago to 3.1% last year.

In January 2020, for instance, Brazil-based company Nutry launched its vanilla-flavored post-workout protein bar, a 30-g power bar with BCAAs, 10 g of whey protein, and 26 vitamins and minerals. Meanwhile, in May 2020, RBar Energy launched a new line of almond protein bars. Almond protein powder contains leucine, isoleucine, and valine in the 2:1:1 ratio necessary to increase lean muscle mass, RBar said in a press release.2

Are Brands Building Mainstream Awareness?

Innova data indicate that awareness of BCAAs among a general consumer audience remains low; however, BCAAs are beginning to show up in more retail settings as ingredients in sports nutrition product lines. BCAAs are also being incorporated in multi-ingredient formulations.

In February 2020, for instance, Canadian company BodyLogix released its new native whey isolate protein powder with 2.9 g of leucine and 5.7 g of other BCAAs per 31-g serving. BodyLogix explicitly markets this product to three different audiences: professional athletes, aspiring athletes, and active individuals. In addressing the functional benefits of BCAAs specifically, BodyLogix positions BCAAs as useful “for the maintenance of good health.” Perhaps most notably, there is no direct mention of bodybuilding in the product’s official description.

These shifts indicate that an opportunity is emerging for BCAAs in the healthy active-lifestyle market. As more brands start positioning BCAAs as sports products and active-lifestyle supplements, expect such consumers to start seeking out more information about BCAA formulations.

BCAAs Bring Opportunity

While powders continue to be the primary driver in the BCAA market, making up more than 80% of all BCAA product launches in 2019, other formats are quickly growing in response to new interest in the benefits of BCAAs. BCAAs are proving to be particularly popular in bars and sports drinks. These products aren’t yet mainstream, but they’re also not just for gym rats anymore. Health-conscious “weekend warrior” consumers are starting to take notice of BCAA products, priming the active-living vertical for future growth. As BCAAs expand beyond bodybuilders and into the healthy active-lifestyle market, expect opportunities for more brands and more diverse products to arise.2

Mike Straus is a freelance writer living in Kelowna, Canada. He has written for publications including Canadian Chiropractor, Grow Opportunity, and Massage Therapy Canada.

References

Gut Health

Digestive Health, Diversified

The digestive health space has come a long way, presenting ingredient suppliers and product manufacturers new opportunities for growth.

BY SEBASTIAN KRAWIEC, ASSOCIATE EDITOR

The digestive health market has experienced an impressive evolution, growing in diversity of the products it offers, as well as scientifically and conceptually, to influence the lifestyles of its users.

“In recent years, the digestive segment has shown growth not only in terms of market size but also in the range of delivery systems and, more importantly, in science,” explains Anurag Pande, PhD, vice president, scientific and regulatory affairs, at Sabinsa Corp. (East Windsor, NJ). “The emerging research on, for example, probiotics has explored the area of gut-brain axis or gut-brain-muscle axis and looked at the influence of digestive health on mood or immunity. New research on turmeric has shown its prebiotic effect and its protective effect against inflammatory conditions associated with the digestive tract, especially the distal part (colon health), as well as benefits related to a healthy microbiome.”

Shoppers are listening. Says Sam Michini, vice president of marketing and strategy, Deerland Probiotics & Enzymes (Kennesaw, GA): “Consumers now know to link their gut status with immune function. This was practically a foreign concept only a few years ago. Simply, when you understand what digestion is—the processing of food to sustain life—then you realize how critical it is. This knowledge is driving consumers to change their diets and take supplements that enhance the entirety of digestion, starting with releasing the proper enzymes in the proper amounts, breaking down foods for assimilation, and supporting that assimilation.”

While herbs have long been used to support acute symptoms of gastrointestinal distress, probiotics, for instance, exposed people to the idea of supporting one’s overall digestive health with bacterial strains. This concept itself emerged from the benefits of fermented foods such as sauerkraut, yogurt, and kombucha, and made its way into a supplement format. Thus, the digestive health space has evolved, embracing everything from enzymes to fiber and prebiotics.

Delivery Systems Expand Appeal

The industry has also come full circle to functional foods and beverages. “We see a lot of innovation in new delivery systems, which have become standard platforms, such as gummies. At one point in time, gummies were limited to multivitamins but now are used for delivering probiotics and fibers,” says Pande. “Kombucha beverages, both in refrigerated or in canned form, are growing in popularity. Functional foods are now focusing on increasing probiotics via prebiotic fibers in products like bread, cookies, cereals, and beverages like tea or herbal teas. Together, innovation in delivery systems and new science have become the driving force for this segment.”

Much like in other supplement categories, consumers buying digestive products are experiencing pill fatigue, especially if they are already taking medications or other dietary supplements. “Some days, consumers just prefer a ‘treat’ instead of another capsule or tablet,” says Michini.

For probiotics, driving innovation in new delivery formats and functional foods means finding probiotic strains that survive not only the manufacturing process but also the digestive system to enable the ingredients to
It takes 30 days* for the properties of its bark to take effect in the body.

It takes 30 years for a French maritime pine tree to reach full maturity.

We let nature take its time, we don’t waste yours.

It is our responsibility to provide the best conditions for planting, growing and harvesting pine trees. DRT Purextract® is involved in a constant reforestation action, even if no trees are felled for the manufacture of our extracts, because pine bark itself is a by-product of the silvicultural industry. We take care of Nature, it takes care of you.

For more information: www.theoriginalpinebarkextract.com

THE ORIGINAL PINE BARK EXTRACT

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
make their way into the large intestine. “Today, probiotics like LactoSpore have made it possible for consumers to have daily probiotic supplementation at low cost, with minimum loss of potency in the manufacturing process, providing more choices to consumers of all ages,” explains Pande. “LactoSpore can be formulated at a dosage of 2 billion spores and up, with structure-function claims and approved health claims in Canada made possible by clinical studies, with the proper endpoint, on LactoSpore at a dosage of 2 billion.”

For example, LactoSpore was found to remain stable for three years after commercial production, without any genetic or phenotypic alterations, as well as remain stable for 36 months at an ambient temperature of 23 +/- 2 °C. This makes it suitable for applications such as yogurt and baked goods, with the added benefit of having GRAS status. In terms of efficacy, a recent study demonstrated the gut-brain axis at work. In the study, 40 patients diagnosed with major depressive disorder and irritable bowel syndrome were randomized to receive either placebo or LactoSpore for 90 days. Results showed that those in the LactoSpore group had significant changes in primary outcome measures according to the Hamilton Depression Rating Scale (HAM-D), Montgomery-Asberg Depression Rating Scale (MADRS), Center for Epidemiologic Studies Depression Scale (CES-D), and Irritable Bowel Syndrome Quality of Life questionnaire (IBS-QOL). Secondary outcome measures of the following also showed significant changes in the probiotic group: Clinical Global Impression-Improvement Scale (CGI-I), Clinical Global Impression Severity Scale (CGI-S), Gastrointestinal Discomfort Questionnaire (GI-DQ), and Modified Epworth Sleepiness Scale (mESS).

Deerland, for its part, recently studied the efficacy of its spore-forming probiotic on children, an important segment to capture. Immune health is already cited as a category of major opportunity for brands that want to target families with small children. According to a report from Kerry International (Beloit, WI), only 2% of children's food and drink products launched globally between 2012 and 2017 carried immune health claims. As more research emerges linking digestive health with immune health, children's health products offer a great deal of potential. In the randomized, parallel, double-blind, placebo-controlled study that is pending publication, children ages 2-6 were given Deerland's *B. subtilis* DE111 strain, or placebo, for eight weeks to observe the changes to the children’s microbiome profile and subsequent digestive health.

“After eight weeks of daily probiotic consumption, the researchers observed an increase in alpha-diversity at the phylum level, suggesting an expanded functional diversity of the microbiome compared to that of the children in the placebo group,” explains Michini. “Specifically, there were nine differentially abundant taxa at the genus level found in the probiotic group. Six (of the phylum *Bacteroidetes*) grew in abundance, while three (of the phylum *Firmicutes*) were reduced. The six taxa of *Bacteroidetes* that flourished are involved in immune regulation and the reduction of inflammation.”

The modulation of the *Firmicutes/Bacteroidetes* ratio in the microbiome of children taking the probiotic is a positive indication of improved gut function. The study also found that supplementation supported resilience to gastrointestinal infection, reducing incidence and duration in subjects who were supplementing with the probiotic. Specifically, children taking DE111 had 18 days of gastrointestinal discomfort while the placebo group had 48 days. DE111 is viable for use in gummies and stick packs and, with this research demonstrating efficacy in children, is ideal for products designed for kids.

**Prebiotic Spotlight**

While probiotics are important to digestive health, they are not necessarily the best solution for everyone, nor do they offer the best results in isolation. Prebiotics are therefore becoming more recognized for their digestive health benefits, both as a complement to probiotics, given the nature of prebiotic fiber to feed gut bacteria, and as an alternative to probiotics.

“Though probiotics have gained a bulk of the attention in the digestive category for individuals seeking gastrointestinal relief, consumers are becoming increasingly aware of the importance of prebiotics as part of their diet and lifestyle regimen,” explains Samantha Ford, MS, director of business development for AIDP (City of Industry, CA). “There is compelling evidence for the use of prebiotics to selectively target the growth of specific probiotics in the gut. Similarly, symbiotic formulas are on the rise, as prebiotics can act as a fertilizer to support the proliferation of probiotics within a supplement. As prebiotics have been on a hockey stick trajectory in terms of growth, we are already seeing these concepts disrupt the market.”

“‘Probiotic-free’ digestive health formulas are becoming more and more popular. Also, the concept of food-derived ingredients that can selectively alter the microbiome, as would happen with the consumption of more whole, plant-based foods, is appealing to the consumer in the era of clean-label, functional ingredients,” adds Ford.

AIDP supplies a variety of ingredients that offer unique benefits, with or without probiotics. Livaux, made from the Zespri SunGold brand of kiwifruit, is associated with an increase of *Faecalibacterium prausnitzii* bacteria. This is important because *F. prausnitzii* is the most abundant anaerobic bacteria in the colon, and it has been observed that individuals with irritable bowel disorder have significantly less of the bacteria than healthy individuals. Unfortunately, because *F. prausnitzii* is anaerobic, it cannot survive in oxygen and therefore cannot be replenished as a probiotic supplement.

Another prebiotic ingredient called PretticX, which is a non-digestible xylooligoscacharide, can support the levels of beneficial *Bifidobacteria*, reconditioning the gut by only feeding
IT ALL COMES DOWN TO FLAVOR.
From the foundational flavors that define memorable
taste to the delightfully offbeat flavors that satiate
our sense of adventure, Virginia Dare’s dedication
to delivering preferred taste spans generations
and continents. Through reliable sourcing,
expert flavorists, taste-savvy scientists, and
authentically sourced ingredients, we enliven
eating experiences with innovation and
inspiration. Through five generations and 100 years
of dedication to flavor, we’ve been relentless in our
pursuit of making the most of every bite and bringing
satisfaction to every sip.

Hear more of our story at virginiadare.com
beneficial bacteria. A common complaint users have of prebiotics is that they cause gastrointestinal side effects such as bloating. This happens because some types of prebiotics do not selectively feed beneficial bacteria but rather feed both good and bad bacterial strains present in the gut. This is where PreditX offers an advantage. "Due to the small dosage required, PreditX may have reduced gastrointestinal side effects, as compared to other prebiotics," says Ford.

**Herbal Gut Support**
And don’t count out the popularity of herbal ingredients in the digestive health space. "While prebiotics have experienced significant growth, we also see a strong uptick in herbal sales for digestive health," explains Ford. "Herbals have seen strong growth for immunity and cold/flu symptoms. As this has grown, consumer acceptance and knowledge of herbals has increased. Ayurvedic practices focusing on bringing the body in balance have also contributed to herbals being used for digestive health."

As Pande explained earlier, emerging research shows that turmeric may have prebiotic benefits in addition to its well-known ability to support inflammation. A recent pilot study found that the combination of curcumin with piperine—Sabinsa’s flagship Curcumin C3 Complex ingredient coupled with its BioPerine ingredient—increased bacterial species in subjects by 69%, on average, compared to placebo (whose subjects saw a 7% increase in bacterial species).4

Another ingredient, derived from *Glycyrrhiza glabra* (licorice), that supports digestive health is GutGard. "It is entirely different from standard deglycyrrhized licorice (DGL) with respect to chemistry and composition, manufacturing process, mechanisms of action, and physiochemical properties," explains Ford. "GutGard itself has been clinically tested and is effective for addressing digestive complaints related to the upper GI tract. Because of the concentrated nature of the flavonoids, GutGard is effective at a much lower dose than that needed for standard DGL, at 150 mg/day versus 1500 mg/day."

The ingredient has been studied for functional dyspepsia, heartburn, and *H. pylori* infection, and can support occasional indigestion and heartburn.

**Looking Ahead**
What is clear is that the digestive health space is becoming more diverse, and with this growth will come more knowledgeable consumers who will look for digestive support that fits their needs. This presents an opportunity for ingredient suppliers and product manufacturers alike.

"What’s interesting is that today, when a consumer hears his/her gut ‘growl,’ more than ever the thought that arises is ‘Is my digestive function okay?’ Thanks to the consumer media and ads, people generally are ‘listening to their gut’ a lot more, which is good," says Michini. "Industry is now accelerating brand—and consumer—education about the link between optimal digestive function and immune health status. In tandem is the increased knowledge and dispensing of that knowledge about the microbiome and how it impacts health. Consumers are coming to understand the connection between digestion and the microbiome and how they also influence immune function and other areas of health such as cardiovascular, sleep, mood, and more."

The link between digestive health and our overall health will be an important factor as the ongoing COVID-19 pandemic makes consumers more aware of their health, particularly immune health. Offering a product with multiple benefits is a welcome convenience, and providing multiple delivery formats to choose from is even more ideal. So, while ingredient suppliers are developing innovative products that offer higher stability, solubility, and/or bioavailability, product manufacturers will be finding ways to incorporate these digestive health ingredients into added-value propositions. Some ingredient suppliers are already thinking ahead.

"Beyond digestion, probiotics are increasingly found to pair up synergistically with other functional ingredients to support other health areas. As such, we recently created a turnkey supplement portfolio of several condition-specific product concepts," says Michini. "For example, Beauty from Within combines probiotics with antioxidant vitamins D3, E, and B3 as well as Solarplast, a spinach extract that provides superlative amounts of antioxidants. There’s also Mood Support, Immune Support, Cardio Support, Sleep Support, and Women’s Health Probiotic, as well as SBO Probiotic and Multi-Strain Probiotic, both for digestive health."  

**References**
ONLINE LEARNING

Visit our website for the latest e-Learning tools in the nutraceuticals industry.

- Webcasts
- eBooks
- Videos
- Breaking news
- And more!

Visit us at NutritionalOutlook.com
Joint Health

MODERN MECHANICS

Consumers look to emerging ingredients like collagen, turmeric, eggshell membrane, and MSM for support.

According to SPINS data on this category (U.S. Natural and Multi-Outlet (MULO) channel, 52 weeks ending July 12, 2020), collagen products have earned $198 million in consumer sales in 2020; turmeric $5 million; and MSM $2.6 million. Compare this to glucosamine-and-chondroitin combination products’ $215 million, glucosamine products’ $45 million, and chondroitin supplements’ $57.185. Meanwhile, a report by MarketInforming Healthcare estimates the North American eggshell membrane market was worth $11.8 million in 2019.1

As the joint health product space evolves, innovation among nutritional ingredients—in the form of science, new dosage and delivery methods, and unique branded formulas—is driving market growth.

Collagen
Collagen has seen significant gains in recent years, with its benefits for joint health (as well as applications for “beauty from within” and bone health) spurring consumer interest.

Discussing the rise of collagen, Suhail Ishaq, president of BioCell Technology (Irvine, CA), says the company’s clinically studied BioCell Collagen offers a unique composition that mirrors human articular cartilage.

“Dietary supplement manufacturers and formulators are seeking clinically studied, branded ingredients to include in their products that enable them to make reliable and more specific claims,” he notes. “At a 2-g dosage, the BioCell Collagen ingredient is clinically proven to promote joint comfort and mobility, and cartilage and synovial fluid health, and boost hyaluronic acid. These are marketable claims that consumers can understand.”

BioCell Collagen is composed of hydrolyzed collagen type II peptides, chondroitin sulfate, and hyaluronic acid. The ingredient’s matrix is not a formula or blend of individual ingredients but rather a naturally occurring composition.

In a 2014 pilot randomized, double-blind, placebo-controlled study of recreationally active people, participants took 3 g of BioCell Collagen over six weeks before an upper-body bench press challenge.2 The study found that participants experienced favorable improvements in stress resilience and recovery after...
Introducing the first Botanical Pharmaceutical Food Grade Persimonal™ — Persimmon Leaf Extract Powder

Persimmon Leaf Extract Powder — Exclusively features the next generation of polyphenolic active compounds which act as the guardians of cardiovascular and cerebrovascular health. For centuries, China, Japan, and Korea have enjoyed the medicinal benefits of Persimmon leaves and over the years have documented the well-known positive effects on hypertension, lowering blood pressure, lowering cholesterol, eczema and overall healthy skin.

Total health benefits:

- Protecting heart & cerebral vessel
- Lowering cholesterol
- Anti-hypertension
- Anti-hyperlipidemia
- Anti-inflammatory
- Proprietary technology extraction & purification
- Clinically proven
- Amazing taste with beverages

Nutraceuticals & Agriceuticals Technology Company, Inc. (NATCO) is proud to introduce Persimonal™ — a novel dietary supplement ingredient rich in 8% - 10% Flavonoids utilizing our proprietary extraction & purification processes.

For information & availability please contact:

T: (949) 554-8853
F: (951) 600-8676

info@natcohealthyliving.com
www.natcohealthyliving.com

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
bouts of intense resistance exercise, without any reported side effects.

Nitta Gelatin (Morrisville, NC) offers multiple clinically tested collagen ingredients specifically designed for joint support in both the sports nutrition and healthy-aging segments.

“Our global technical teams have been at the forefront of research illuminating collagen’s mechanisms of action within the body, and we use that insight to concentrate the ‘active’ portions of the ingredient, specifically the dipeptides proline-hydroxyproline (PO) and hydroxyproline-glycine (OG), in our products,” says Liz Clarke, CFS, technical marketing manager, Nitta Gelatin North America Inc.


Clarke adds that Wellnex collagen peptides for joint health serve a dual function because they offer both a specific health benefit and also act as a dietary protein. “Adding collagen peptides to everyday foods is a quick and easy way to support joint function without contributing to the pill fatigue that consumers may experience with other joint supplements,” she states. “The versatile nature of Wellnex collagen peptides allows for unique applications in the functional food space, including bars, shots, gels, gummies, and more.”

A recent study conducted at Josai University (Sakado, Japan) investigated the effect of 5 g daily of Wellnex collagen peptide supplementation on sports-related joint and muscle pain in healthy long-distance runners. Results of the double-blind, placebo-controlled, randomized study demonstrated a significant reduction in knee pain, and a reduction in muscle breakdown markers, in as little as four weeks. “We already had a substantial body of evidence supporting Wellnex collagen peptides’ benefits on those suffering from osteoarthritis,” notes Clarke. “The results of this most recent study open the doors to more opportunities in the sports nutrition world, which is an exciting place to be right now.”

Meanwhile, IDF (Springfield, MO), part of Diana in the Symrise Nutrition Segment, offers chicken bone broth ingredients that are high in collagen protein to support joint health. “Our ingredients are available in multiple formats (concentrated, liquid, and dry) and flavor profiles for use in savory beverages, functional foods, supplements, and more,” explains Becky Rademacher, IDF product manager.

The company believes the versatility of its ingredients is providing new and convenient ways for consumers to get their daily collagen. “Bone broth has long been touted by athletes and nutrition experts, and collagen has come to be recognized as the missing protein for joint benefits and more,” says Rademacher. The company’s CHiKPRO Collagen is soy-, dairy-, and gluten-free; Certified Paleo by the Paleo Foundation; keto-friendly; and rich in type II collagen.

Turmeric

Demand for turmeric (Curcuma longa)—and its primary bioactive chemical compound curcumin—has skyrocketed in recent years. Between 2017 and 2018, sales of turmeric overall grew by 30.5% in the mainstream MULO channel data alone, earning $93 million in that channel in 2018, according to SPINS data featured in the American Botanical Council journal HerbalGram. Perhaps turmeric’s prominence in the joint health space stems from its natural, plant-based roots. In the Council for Responsible Nutrition’s (CRN) 2019 Consumer Survey on Dietary Supplements, 72% of dietary supplement users expressed confidence in the quality and safety of herbal and botanical formulas, while 50% of total supplement users reported taking such products—increasing their usage by 19% since 2015. CRN attributed this growth to breakout botanical ingredients like turmeric, as well as green tea and CBD. The same survey also found that 20% of supplement users take a nutritional formula for joint support.

To meet this increasing consumer demand, suppliers are developing scientifically supported, high-quality turmeric and curcumin ingredients. Once such formula—Meriva curcumin phytosome from Indena (Milan, Italy)—has demonstrated support for healthy joints and bones in five human clinical studies.

Francesca de Rensis, marketing director of Indena S.p.A., highlights the bioavailability of the company’s formula as a unique benefit, calling the ingredient “the first bioavailable form of curcumin designed from nature.” Indena utilizes a lecithin system inspired by the traditional use of turmeric in milk (often called “golden milk”).

A recent in vitro study examined the effect of microbiota on the biotransformation of curcumin. The Meriva formulation with lecithin had an impact on the biotransformation of curcuminoids by providing a more efficient production of active curcuminoid metabolites in comparison to the unformulated ones. This, says de Rensis, “is opening new perspectives in the investigation of curcuminoids’ bioavailability and effectiveness.”

A more bioavailable formula leads to more tangible results from the formula, notes de Rensis. “Due to an aging population and increased stress with busy lifestyles, the maintenance of our long-term health plays an ever-increasing role. As the health benefits of curcumin—and specifically Meriva—in joint health have been demonstrated, Indena has focused on how Meriva offers lifelong support for the body’s natural defenses against low-level chronic inflammation.”

Sabinsa Corp’s (East Windsor, NJ) Curcumin C3 Complex is yet another clinically studied curcumin brand, with over 150 published papers supporting safety and efficacy. More recently, the company has made strides in developing a wide range of curcumin delivery systems to address various applications and to meet market demands.

Shaheen Majeed, president worldwide, Sabinsa, believes new delivery systems like beverages and gummies are fueling growth in the joint health space. “We predict that curcumin’s market share will keep growing in a variety of categories, including joint health, because it works,” states Majeed. “We’re focused on more science on reductive metabolites as we continue to drive the understanding of curcumin’s many uses and benefits. We’re just scratching the surface.”

One addition to the company’s curcumin portfolio was Curcumin C3 Reduct, a standardized extract obtained by hydrogenating the curcuminoids from the rhizomes of the turmeric plant. Curcumin C3 Reduct is a colorless formula crafted to eradicate the
Phase 2™ is a proprietary, natural ingredient derived from the white kidney bean that may reduce the enzymatic digestion of dietary starches and may assist in weight control when used with a sensible diet and exercise program.† Studied extensively, it has been the subject of more than 14 clinical trials and has two structure function claims. Unlike other products on the market, Phase 2™ is not a stimulant.

To get the skinny on carb control, contact us at ashland.com/9phase2
EGGSHELL MEMBRANE PLUS FISH OIL SUPPLEMENT REDUCES JOINT PAIN, STIFFNESS AFTER EXERCISE, SAYS RECENT STUDY

BY ALISSA MARRAPODI, CUSTOM CONTENT EDITOR

Stratum Nutrition (CARTHAGE, MO) and KD Pharma (Bexbach, Saarland, Germany) recently created a partnership to develop a joint health formula, MOVE3, combining Stratum’s NEM brand eggshell membrane and KD Pharma’s marine omega oil KD-Pür. Moreover, a recent study evaluated the ingredient’s effect on joint pain and stiffness after exercise.

The randomized, double-blind, placebo-controlled study, published in the International Journal of Physical Medicine and Rehabilitation, evaluated whether MOVE3 versus a placebo would reduce cartilage turnover and alleviate joint pain and/or stiffness immediately following exercise and 12 hours post exercise. A total of 85 healthy men and women (40-70 years) were randomly assigned to receive either 500 mg/day of eggshell membrane with 1,500 mg fish oil concentrate (n=43) or 2,000 mg/day of a placebo (n=42).

MOVE3 produced statistically significant reductions in levels of urinary excretion of C-terminal cross-linked telopeptide of type-II collagen (uCTX-II), a marker of cartilage degradation, versus the placebo after one and two weeks of exercise. Compared with the placebo, MOVE3 also significantly relieved joint pain immediately after exercise at one week, pain 12 hours after exercise at one week, and stiffness 12 hours after exercise at one week.

“The body of science supporting exercise and recovery benefits for both omega-3 and NEM continues to grow, but this study is unique because it demonstrates benefits in healthy people consuming the MOVE3 formulation after they have exercised,” said Adam Ismail, chief strategy officer of KD Pharma Group, in a press release. “For sports nutrition products, it is important that consumers be able to feel the benefit, and the fact that we saw a significant improvement compared to placebo means the subjects not only felt the impact of MOVE3 but observed the effects in a rapid time frame."

Kevin Ruff, PhD, MBA, senior director of scientific and regulatory affairs for Stratum Nutrition, added: “Conducting this clinical trial in exercising healthy adults will allow brands to make label claims relating to joint pain and stiffness and even cartilage protection. This is an additional benefit that MOVE3 provides beyond any other combination product on the market.”

Eggshell Membrane

Nutritional support from the membrane of eggshells has also been shown to bolster connective tissue and joints.

Stratum Nutrition manufactures and supplies NEM-brand eggshell membrane, a partially hydrolyzed eggshell membrane that’s developed through a patented enzymatic process. “The natural eggshell membrane is predigested just enough to begin digesting its fibrous membrane and release its nutritional content,” explains Dockery.

This select partial digestion enables the valuable components within NEM to benefit the joints in two different ways. First, the combination of partial digestion and the body’s own digestive processes ensures that the bioactive components within NEM are optimally bioaccessible for absorption through the intestinal wall and utilization in joint tissue,” she explains. “And, secondly, the predigestion releases peptides, specifically collagen peptides, that interact with the gut immune system to indirectly modulate the immune response to joint inflammation via oral tolerance. This two-prong functioning would not be possible if NEM were either fully hydrolyzed or unhydrolyzed.”

A recently published clinical trial evaluated the efficacy of NEM in the reduction of joint pain, stiffness, and functional disability in 70 patients with mild to moderate knee osteoarthritis. After just 10 days, researchers reported statistically significant improvements in Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain, Visual Analog Scale (VAS) pain, and Lequesne Algofunctional Index pain. At the conclusion of the two-month study, WOMAC pain was reduced by 52%, VAS pain by 49%, and Lequesne Algofunctional Index pain by 39%.

Another ingredient, also derived from eggshell membrane, is manufactured by Biova (Johnston, IA) under the trade name BiovaFlex. This water-soluble eggshell membrane is produced by a patented process that separates the membrane from the shell of the egg, leaving a high-protein ingredient.

Yellow staining property associated with curcumin, while retaining the product’s benefits. This format also supports better stability, the company claims.

Curcumin C3 Dispersible is another new offering from Sabinsa, delivering a minimum curcuminoid content of 60%. It can be used in ready-to-drink beverages, powdered formulations, and chewable and dispersible tablets.

Additionally, Sabinsa developed uC3 Clear, a water-soluble curcumin formula designed to overcome the challenges some consumers experience with solid dosage delivery systems such as poor disintegration, slow dissolution, or difficulty swallowing.
Fortifying products with water soluble vitamins and minerals to exacting specifications.

✅ Vitamins
   • Completely soluble in water formulations
   • New! Vegan Vitamin D₃

✅ Bioflavonoids

✅ Pectins
   Pear, Apple, Citrus

✅ Fruits and Vegetable Fibers

✅ Prebiotic Inulin

✅ Organic Gums

✅ Minerals
   Magnesium Chloride, Potassium Chloride, Tricalcium Phosphate

Our Union, New Jersey facility provides substantial contract manufacturing capabilities:

• Blending
• Micronizing
• Repacking

Contact us today for samples and information
sales@morretec.com  www.morretec.com  908.688.9009
with elevated collagen, elastin, and glycosaminoglycans (GAGs) content.

A clinical study with a robust 88-person subject size found positive results for supplementation with BiovaFlex in those with osteoarthritis, leading to reduced stiffness and improved performance in the six-minute walk test within five days. The double-blind, placebo-controlled trial examined the subjects with osteoarthritis over 12 weeks and found that daily consumption of BiovaFlex water-soluble chicken eggshell membrane hydrolysate “significantly enhanced average individual physical capacity (walking distance and ability), reduced stiffness by the fifth day of supplementation (with the greatest benefit seen by the most compromised individuals), and was maintained over 12 weeks,” the researchers reported.

**MSM**

Methylsulfonylmethane (MSM) is an organic sulfur-containing compound with extensive research supporting its use in the area of joint health, mobility, and active aging. Science suggests the ingredient’s sulfur content and donation help the body maintain healthy connective tissues.

OptiMSM from Bergstrom Nutrition (Vancouver, WA) is backed by numerous preclinical and clinical studies for safety and efficacy.

“Extensive research has shown MSM decreases joint pain, improves stiffness and swelling, and increases the range of motion and physical function of individuals with osteoarthritis,” explains Tim Hammond, vice president of sales and marketing for Bergstrom Nutrition. “The reduction of joint pain has also been noted in healthy athletes.”

The ingredient’s mechanism of action likely includes its ability to decrease proinflammatory cytokines, reduce oxidative damage, and supply a rich source of sulfur, he adds.

Looking ahead, Hammond says he was excited to see new products featuring OptiMSM with other popular joint health ingredients like collagen, hyaluronic acid, curcumin, and *Boswellia serrata*. “The broad utility of MSM, along with its relatively low cost and safety, provides formulators with options in creating new products for a new generation of consumers looking for alternatives to glucosamine and chondroitin.”

### References

Sign up for our eNewsletters

Get the latest news, research, and trends in the nutraceuticals industry delivered straight to your inbox by signing up on

NutritionalOutlook.com
The sex health market has been heating up, with new ingredients and deeper research into the mechanisms behind established ingredients making this space an attractive one for brands. Sex health ingredients are also getting smarter, with cognition-enhancing adaptogens suddenly stepping into the sex health space and proving that smart is the new sexy. Stressed out and aging consumers are turning to sex health supplements in greater numbers, with changing societal norms and more evocative packaging driving a 9% yearly increase in global sales, according to Technavio (London, UK).1

As sex health supplements gain popularity, advanced clinical studies and new product developments could generate further interest among consumers. Here are some of the hottest new developments in sex health supplements.

New Fenugreek Patents

Gencor Pacific (Irvine, CA) recently received a new patent for its branded fenugreek (Trigonella foenum-graecum) extract for men, Testofen. This new patent was issued in May 2020 and was granted for enhancing sex hormones in aging men via administration of fenugreek seeds or extract.

Venkatesh says Gencor has also received a new patent for its branded Libifem ingredient, a fenugreek extract for female sexual health. “We’ve done extensive work in this area,” he says. “We were the first to have a peer-reviewed and published randomized, double-blind, placebo-controlled human clinical study showing that our Libifem-brand fenugreek extract powder enhances female sexual function. This study was done on young adult women with low libido. At the time we had completed our study, to the best of our knowledge there had been no other successful clinical studies done on this segment.”

Tongkat Ali Backed by Science

Tongkat ali (Eurycoma longifolia) has a long history as a folk remedy for male sexual dysfunction. Now, modern clinical studies are demonstrating its efficacy and revealing the mechanisms of action behind its effects. Annie Eng, CEO of HP Ingredients (Bradenton, FL), says recent studies are showing positive effects on sex health for men. Eng cites the results of a study on HP Ingredients’ branded tongkat ali supplement, LJ100.

“A new, not-yet-published study has shown that both 100-mg and 200-mg doses of LJ100 daily had a significant improvement in total and free testosterone, a significant reduction in fatigue from two weeks onward at 100 mg, and a significant reduction in Aging Male Syndrome from two weeks onward at 100 mg,” Eng says. “Recent clinical evidence continues to show health benefits, including testosterone production, libido, desire, and satisfaction.”

Eng says tongkat ali’s fraught history makes consumer education and transparency essential. She notes that industry groups like the Council for Responsible Nutrition and the American Botanical Council can help marketers teach consumers how to understand the importance of testing protocols, certifications, and other important information when making the purchasing decision.

Education can also help consumers differentiate between the pharmaceuticals and the natural products in this space—and to

IS CBD THE NEXT BIG THING IN SEX HEALTH?

Consumers certainly think so. Despite a lack of clinical trials examining whether CBD plays a role in sex health, consumers are reporting that CBD makes for better bedroom encounters. According to one consumer self-report survey of over 1,000 people by Remedy Review (Raleigh, NC), 67% of respondents who have used CBD for sexual purposes say CBD is “very” or “extremely” effective at increasing their level of sexual satisfaction.
INGREDIENTS FOR INNOVATION

**Aquamin**
A natural source of Calcium from red algae, plus 73 other minerals

- Plant based source of Calcium
- Harvested from the pristine waters off Iceland
- Certified organic version now available
- Clean label friendly
- Sustainable
- Supports bone, joint & digestive health by over 45 peer reviewed studies
- Available in granule, powder or soluble grades

**Aquamin Plus**
A new proprietary blend specially developed for Joint health

- Contains both Aquamin, Aquamin Mg and Enzogenol
- Sustainable
- Clean Label
- Supported by a recent clinical study showing that it out performed glucosamine head-to-head
- Available in a ready to tablet granule or a powder

**Aquamin Mg**
A magnesium from seawater plus 73 other minerals

- Produced using clean Irish seawater
- Sustainable
- Highly bioavailable
- Available in a granular and soluble powder forms

Visit us online at www.stauberusa.com or email us at innovations@stauberusa.com
be vigilant if what they are searching for is a natural product. “Many companies knowingly sell adulterated coffee laced with compounds similar to tadalafil,” Eng notes. “It’s cheaper [to use pharmaceuticals] than it is to educate consumers on the long-term benefits of tongkat ali. We vehemently condemn this immoral practice.”

**Adaptogens Trend in Sex Health**

One class of natural products rapidly gaining popularity as sexual experience enhancers is adaptogens. Chris Kilham, founder of Medicine Hunter Inc. (Boston, MA) and a brand ambassador for Ixoreal Biomed (Hyderabad, India), says adaptogenic herbs like rhodiola (Rhodiola rosea), ashwagandha (Withania somnifera), and ginseng (Panax ginseng) all play diverse and multifaceted roles in sexual health.

“I don’t think we’ve seen the apex of interest in adaptogens for sex health,” Kilham says. “Over the last 20 years or so, the media has been anywhere from somewhat to lavishly favorable toward this category. Much of that is due to the avalanche of science that has come out about herbs.”

Kilham says Ixoreal has published clinical trials examining the effects of ashwagandha on both male and female sexual function. For women in particular, he says, KSM-66 appears to be highly effective.

“For the past 15 years, I’ve watched pharmaceutical companies go on a vain quest to find the female Viagra, which is kind of a ludicrous proposition. But what they wanted to find is essentially what you find in ashwagandha. The KSM-66 study rang every bell for women: greater number of successful sexual encounters, higher sexual satisfaction, better orgasm. Anything you could admire, like influencers. Consumers can research from the comfort of their own homes and find a multitude of alternative methods they might not get in a physician’s office,” she notes.

**Market Allure**

The early successes of more prominent sex health brands are prompting new players to enter the sex health market. More ingredients are adding sex health functional claims, and more consumers are seeking out supplements to improve their sex lives.

As the sex health market grows, expect the best-performing ingredients to be those that are clinically validated and have a transparent supply chain.

**KAVA COULD SOON SEE A RESURGENCE**

Chris Kilham, founder of Medicine Hunter Inc. (Boston, MA) and a brand ambassador for Ixoreal Biomed (Hyderabad, India), says he expects interest in sex health botanicals to increase. One botanical ingredient he’s keeping an eye on is kava (Piper methysticum).

“About four days before COVID-19 hit, I was in Vanuatu, and I was pleased to see the kava market there is in good shape,” he says. “The native people were making money, the industry was more sophisticated, and the quality controls were much better. There’s some percolating that has to happen if kava is going to become vastly popular again, but if there ever was a time for it to come back in a big way, that time is now.”

**References**

For 30 years, OptiMSM® has set the quality standard for MSM in Dietary Supplements. Research on OptiMSM indicates multiple benefits for supporting healthy and active lifestyles.

**HAIR, SKIN & NAILS:**
- Reduces fine lines and wrinkles*
- Enhances nail growth, look and condition*
- Improves hair shine, volume and appearance*

**JOINT:**
- Improves function and mobility*
- Reduces pain and stiffness*
- Increases range of motion*

**MUSCLE:**
- Reduces DOMS and speeds recovery*
- Protects muscle from damage without blunting adaptation*
- Adaptively increases GSH and SOD*

**AGING:**
- Supports a healthy inflammation response after exercise*
- Provides metabolism-supporting sulfur*
- Anti-oxidant properties protect the skin and tissue*

**IMMUNITY:**
- Sustains glutathione levels*
- Modulates a healthy immune response*
- Blunts exercise-induced immunosuppression*

**AGING:**
- Supports a healthy inflammation response after exercise*
- Provides metabolism-supporting sulfur*
- Anti-oxidant properties protect the skin and tissue*

**FOR ADDITIONAL INFORMATION ON OPTIMSM®**
- info@optimsm.com
- www.optimsm.com
- 888-733-5676

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

©2020 Bergstrom Nutrition
Fertility

Fertility problems are quite common for couples of various ages. According to the United States Department of Health and Human Services (HHS), roughly 12%-13% of American couples have trouble getting pregnant. Moreover, infertility is both a female and a male problem. HHS data show that male and female fertility problems each account for one-third of infertility cases, with the remaining third the result of either a combination of male and female fertility problems or an undetermined cause.

Fertility problems can also be a source of significant stress, particularly if they are prolonged in nature. Those struggling to conceive are looking for an effective solution to an emotionally charged problem, and the stamp of approval offered by clinical trials can help build consumer confidence. Here are some of the most promising fertility health supplements on the market—and the studies demonstrating their efficacy.

Beta-Carotene Shortens Time-to-Pregnancy

One of the key factors influencing fertility is oxidative stress. Lisa Dispensa, RD, medical director at family-wellness brand UpSpring (Austin, TX), says oxidative stress contributes to difficulty conceiving for both women and men. In addition to affecting the rate at which ova age and the quantity and quality of sperm, oxidation, Dispensa says, has other far-reaching effects.

"Oxidation impacts cell survival and ovum maturation and is well known to play a key role in male and female infertility," Dispensa says. "That’s why the most-studied ingredients that show fertility benefits are antioxidants like beta-carotene."

One 2014 secondary data analysis of the Fast Track and Standard Treatment trial, a 2010 randomized clinical trial involving over 500 women between the ages of 21 and 39 with unexplained infertility, found that increased intake of antioxidants was associated with a shorter time to pregnancy in certain groups of women. More specifically, the analysis found that among women with a BMI over 25 and among women under 35 years of age, consumption of beta-carotene supplements was associated with a reduction in the amount of time it took to become pregnant. In women over 35, however, beta-carotene was associated with an increase in time-to-pregnancy.

In June 2020, UpSpring launched HeNatal, a preconception fertility health vitamin for men. HeNatal is a combination product that includes vitamin C, vitamin E, folic acid, selenium, antioxidants, and other ingredients designed to reduce oxidative stress and improve sperm health.

L-carnitine Boosts Fertility in Men

L-carnitine is another compound with fertility-increasing properties, Dispensa says. One 2016 literature review found that L-carnitine increased sperm motility and concentration in infertile men.
USE LESS GET MORE
FROM YOUR PROTEIN SOURCE

ONLY 39g VS. OTHER PROTEIN SOURCES TO MEET DAILY VALUE.

Grams of protein isolate powder needed to get all the essential amino acids of a 50-gram daily value of complete protein.*

*Using IOM Reference Standard. Data from one sample each = not an average

Fortify with CHiKPRO®
Chicken Protein Isolate Powder or Collagen Protein:

Compatible with FDA/USDA
Supplement Manufacturing Guidelines

- Zero Carb
- Zero Common Allergens
- High BCAA
- Low Sodium
- Antibiotic-Free
- Hormone-Free

# MUSCLE BUILDS MUSCLE.

Learn more at idf.com or chikpro.com | +1 800 641 6509
©2020 International Dehydrated Foods, LLC. (IDF) All rights reserved.
One of the key factors influencing fertility is oxidative stress, says UpSpring’s Lisa Dispensa.

One of the studies included in this literature review was a randomized, double-blind clinical trial involving 325 men between the ages of 27 and 40 who were experiencing either varicocele-associated or idiopathic oligoasthenospermia. All participants were in committed relationships with healthy fertile partners, and all participants had been actively trying to get pregnant for at least 12 months.

All participants followed a standard control diet. Participants were randomized to receive either: 1) a placebo (n=118), 2) 2 g of L-carnitine and 1 g of acetyl L-carnitine per day (n=101), or 3) 2 g of L-carnitine and 1 g of acetyl L-carnitine per day plus 30 mg of cinnoxicam once every four days (n=106). Participants were assessed for sperm concentration, bilateral testicular volume, percentage of class-A motile sperm, and natural pregnancies achieved at baseline, after three and six months of supplementation.

After six months of supplementation, 38% of participants receiving L-carnitine, acetyl L-carnitine, and cinnoxicam reported they had successfully conceived. In contrast, roughly 22% of participants who received L-carnitine and acetyl L-carnitine without cinnoxicam reported having successfully conceived, while the placebo group saw a mere 1.7% conception rate.¹

**B Vitamins Promote Healthy DNA Replication**

Leah Hechtman, ND, founder of The Natural Health and Fertility Centre (Sydney, Australia), says B vitamins impact both male and female fertility health in various ways. She says the two most important B vitamins for promoting conception are the methylation co-factors folate (vitamin B9) and vitamin B12.

"Methylation regulates the healthy replication of DNA for all cells, especially eggs, and enables the embryo to grow and replicate," Hechtman says. "A deficiency of either vitamin B12 or folate affects development of the embryo and the health of the child.”

One 2015 analysis of a prospective cohort study involving 100 women of childbearing age found that women who had higher serum folate concentrations and higher serum vitamin B12 concentrations were more likely to conceive and give birth. Specifically, women with more than 701 pg/ml of serum vitamin B12 were 43% more likely to become pregnant and twice as likely to experience a live birth relative to women with less than 439 pg/ml of vitamin B12.²

Vitamin B12 and folate also impact male reproductive health. Hechtman explains that these compounds regulate DNA replication in sperm. B vitamins play an important role in both male and female fertility. Consumers are also already largely familiar with B vitamins as a result of their other functional applications and high profile in workout supplements, making B vitamins an appealing compound to include in fertility formulations.

**Fertility Supplements Set for Growth**

The fertility products market is expanding rapidly. Data from Zion Market Research indicates the segment will grow by 7.2% CAGR through to 2026, when the global fertility supplement market will be worth $2.49 billion USD.³ As more consumers seek out natural options to help them conceive, clinical validation will become more important. Fertility ingredients with several robust clinical trials behind them will be well positioned to capitalize on this opportunity.⁴

---

References


2. Ruder EH et al. ‘Female dietary antioxidant intake and time to pregnancy among couples treated for unexplained infertility.’ *Fertility and Sterility*, vol. 101, no. 3 (March 2014): 759-766

3. Mongioi L et al. ‘The role of carnitine in male infertility.’ *Andrology*, vol. 4, no. 5 (September/October 2016): 800-807


5. Gaskins AJ et al. ‘Association between serum folate and vitamin B-12 and outcomes of assisted reproductive technologies.’ *American Journal of Clinical Nutrition*, vol. 102, no. 4 (October 2015): 943-950

6. Zion Market Research. ‘Fertility Supplements Market: By Ingredient (Natural and Synthetic/Blend of Natural & Synthetic), By Ingredient (Capsules, Tablets, Soft Gels, Powders, and Liquids), By End-Use (Men and Women), and By Distribution Channel (OTC and Prescribed): Global Industry Perspective, Comprehensive Analysis, and Forecast, 2018 – 2026.’ Published November 25, 2019.
NOT ALL COLLAGENS ARE ALIKE

BioCell Collagen® Clinical Dosage: 1g daily
• Reduces facial lines and wrinkles*
• Reduces crow’s feet*
• Improves skin elasticity*
• Reduces skin dryness*
• Boosts skin collagen & hyaluronic acid*

BioCell Collagen® Clinical Dosage: 2g daily
• Promotes joint comfort and mobility*
• Promotes cartilage health and stimulation*
• Promotes synovial fluid health*
• Boosts hyaluronic acid
• Promotes post-workout recovery* (3 g)

Interested in learning more about new scientific studies behind this unique ingredient, please call 714.632.1231 or visit:
www.biocelltechnology.com

BioCell Collagen™ variously in name and/or design, are trademarks of BioCell Technology, LLC, and are registered in the United States and other jurisdictions.
(Pat: https://www.biocellcollagen.com/patents)
© 2020 BioCell Technology LLC. All rights reserved.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
When a small, 43-subject observational cohort study (preprint, not peer-reviewed) published in June of this year showed that a combination of vitamins D3 and B12—plus the mineral magnesium—suppressed COVID-19’s progression in hospitalized patients, it created a small stir. After all, current understanding holds that COVID-19’s pathogenesis lies less with the coronavirus itself than with the pro-inflammatory “cytokine storm” that the immune system unleashes upon infection—and that has scientists searching for compounds that exert some sort of immunomodulatory effect as a treatment. While no vitamin or mineral should be proposed as preventing, treating, or curing COVID-19, the aforementioned study had some reason to focus on this nutrient trio: vitamin B12 promotes a healthy gut microflora, vitamin D protects the respiratory epithelium, and magnesium pulls it all together by helping vitamin D function—serving not only as an enzymatic cofactor in the hormone’s metabolism but as a bronchodilator and vasodilator in its own right as well.

This is just an example of the high interest in how vitamins—and, in the case of this article, minerals especially—make a significant difference to human health and why researchers continue to study the potential benefits of supplementation as an adjunct for helping to fill any vitamin or mineral nutrient gaps in the daily diet. Thankfully, more consumers are seeking out mineral supplements as they take a deeper interest in supporting their overall health—and their immune health specifically. Just ask Ohad Cohen, CEO, Gadot Biochemicals Ltd. (Haifa Bay, Israel). “Let’s face it: People are living in stressful times, and health-conscious consumers are seeking wellness help wherever they can get it,” he says. That bodes well for minerals. “Due to the current worldwide health situation,” Cohen continues, “we’ve seen a major increase in food fortification as well as higher mineral use in supplements to help strengthen the immune system and assist with stress relief.”

Immunity’s Helper

Indeed, DIY immunity boosters are in particular demand. And, notes James DiNicolantonio, PharmD, director of scientific affairs, AIPD (City of Industry, CA), “The public is starting to realize that the health power to attain it through diet and supplementation. Just ask Ohad Cohen, CEO, Gadot Biochemicals Ltd. (Haifa Bay, Israel). “Let’s face it: People are living in stressful times, and health-conscious consumers are seeking wellness help wherever they can get it,” he says. That bodes well for minerals. “Due to the current worldwide health situation,” Cohen continues, “we’ve seen a major increase in food fortification as well as higher mineral use in supplements to help strengthen the immune system and assist with stress relief.”

More consumers are seeking out mineral supplements as they take a deeper interest in supporting their overall health—and their immune health specifically.

BY KIMBERLY J. DECKER
Your Source for Coleus Extracts
1% / 10% / 20% / 40% / 95%

Cepham Inc.
Tel: (201) 255-6011  |  Fax: (201) 255-6012  |  info@cepham.com  |  www.cepham.com

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
“Due to the current worldwide health situation, we’ve seen a major increase in food fortification as well as higher mineral use in supplements to help strengthen the immune system and assist with stress relief,” says Gadot Biochemicals’ Ohad Cohen.

of the immune system is directly determined by the body’s overall nutrient status, with minerals making up part of our overall nutrient status.

These essential elements are key components of endogenous antioxidants, acting as cofactors in their functioning and contributors to our antioxidant status, DiNicolantonio continues. “For example, copper and zinc make up superoxide dismutase, selenium is important for glutathione peroxidase, and magnesium is important for glutathione levels,” he says.

The upshot: “All the evidence indicates that poor mineral status leads to poor outcomes when it comes to viral infections,” he says.

The Zn and Mg Show

That’s more relevant now than ever, and sales of minerals with links to immune support have ranked among the fastest-growing in the supplement category over the past half year, notes DiNicolantonio. Copper and selenium have certainly benefitted, but the real winning minerals have been zinc and magnesium.

Patrick Stano, brand manager, Stauber Ingredients (Fullerton, CA), notes that demand for his company’s zinc products “has essentially doubled” lately, making them among the company’s top sellers. As for why, Stano says it’s no mystery: “It’s primarily due to their immune-health benefits during the COVID-19 pandemic.”

Cohen has also observed increased interest in his company’s zinc citrate—the form he says offers the highest bioavailability—and zinc gluconate, the high solubility of which is valuable in functional food and beverage formulations.

And while zinc’s immune effects are attractive to consumers and supplement brands, they’re not zinc’s only selling point. Cohen points out that research also associates zinc with better cell growth and wound healing, protein synthesis, improved use of vitamins like E and A, and the proper functioning of hormones—from sex hormones to insulin. And regular daily intake is essential, he adds, because “the body has no specialized zinc storage system.”

But zinc can’t do it all alone—which is where magnesium comes in. Magnesium helps the body regulate zinc levels, while zinc enables more efficient magnesium absorption, Cohen explains. “It only hinders absorption when taken in abnormally high doses of around 142 mg of zinc per day,” he says.

So zinc and magnesium—when taken jointly and in the right doses—“work together to each other’s advantage,” Cohen concludes. “They do this so well that a lot of oral supplements on the market—tablets, capsules, etc.—combine the two.” In fact, Gadot recently introduced a direct oral zinc formula with magnesium that he says requires no water, making it that much easier to take.

Letting It Sink In

The interplay between zinc and magnesium illustrates the extent to which “the correct mineral balance in our bodies is important,” Cohen says. “Lack—or too much—of any mineral can cause unwanted effects and lead to serious health outcomes.” And while the public could probably do a lot better at striking this balance, “the key is to take quality minerals that the body absorbs and doesn’t flush out,” he says.

DiNicolantonio agrees, adding that “more people are beginning to understand that mineral bioavailability isn’t enough. You have to get minerals into the cell once they’re absorbed into the body.”

And Tom Druke, marketing director, Balchem Human Nutrition and Pharma (New Hampton, NY), believes that “the most successful technologies are those that can improve the way the body absorbs or processes a nutrient—and a good example of this is chelated minerals.”

Chelates Demonstrate Results

For example, Druke says, the protection of an amino acid chelate “opens the possibility of more targeted delivery in the digestive tract.” What’s more, “By showing that a chelated mineral is more bioavailable and increases absorption, manufacturers have discovered that they can command a premium at a time when consumers are looking for health solutions that demonstrate results,” he adds.

Mark Mans, process chemistry group leader, Jost Chemical Co. (St. Louis, MO), also praises chelated minerals, pointing out that nutritionists often prefer them “because their complex structures better survive passage through the stomach and small intestine, where absorption into the bloodstream occurs.”

Jost’s newly developed zinc ascorbate glycinate chelate delivers three nutrients—zinc, vitamin C, and the amino acid glycine—in a water-soluble dose unit that eliminates the task of blending multiple components.

Adds Joe Hardimon, research and development manager at Jost, “This unique compound incorporates an equal molar ratio of ascorbic acid and glycine, completely neutralized with zinc in a metal ligand to a ratio of 1:1:1.”
IMMUNE SUPPORT FOR A CHANGING WORLD

PROBIOSEB CSC3™
The Daily Power of Three
Spore-Forming Probiotics
Bacillus subtilis
Bacillus coagulans
Bacillus clausii

IMMUNOSEB™
Daily Immune Support
Powerful Enzyme Blend
Shown in studies to support immunity markers, and demonstrate antifungal and antibacterial properties*

Specialty Enzymes & Probiotics
Your Global Resource for Quality Enzymes & Probiotics
Learn More Today!
909-613-1660 • SpecialtyEnzymes.com • adm@specialtyenzymes.com
Formulating Functionally

Chelated minerals aren't just good for us, though; they’re good for formulations, too. As Druke says, “In the case of chelated minerals, the benefits go beyond enhanced absorption because chelated forms also have improved taste profiles and prevent interactions in the digestive tract, leading to better tolerance.”

As for other mineral-delivery formats, Mark K. Williams, PhD, biochemist, Mineral Logic (Kalamazoo, MI), notes that nanotechnology, in the form of liposomal ingredients, also improves mineral stability in the product environment, and that microencapsulation and time-release technologies are useful in formulation, too. “With the availability of products in chews, bars, sachets, shots, shakes, and other foods, appearance, odor, taste, and stability are gaining importance for consumers,” he notes.

Stano points out that the encapsulated nature of Stauber’s ZincNova—made by Lipofoods, which Stauber represents—improves product taste profiles and prevents possible interactions between the zinc and other ingredients. And the company’s Lipofer, an encapsulated iron salt handy in beverages, powders, and functional foods, also improves finished-product taste and forestalls ingredient interactions, he adds.

Given the expanding range of mineral-fortified products that these technologies make possible, consumers have no excuse not to strike that all-important mineral balance. But Williams exhorts all of us not to disregard the role of a balanced diet, too.

“A diet of whole foods is more complete and provides the supportive nutrients that our bodies need beyond minerals alone,” he notes. “Fiber, pre- and probiotics, electrolytes, and all the trace minerals and elements found in foods allow our bodies to properly digest minerals, proteins, carbohydrates, and fats in the most efficient way.”

Wise words. But mineral supplements belong in the mix, now and in the future. “As people live longer,” Druke notes, “there will be constant pressure to maintain quality of life as long as possible. Minerals that are well-positioned to address specific health benefits will continue to grow.”

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.

Reference

Nature’s Own Thermonutrient®

Extract from black pepper fruit, significantly “improves the gastrointestinal absorption and systemic utilization of nutrients”* that are supplemented. In a series of clinical studies performed on various nutrients, BioPerine’s bioavailability benefits were evaluated and findings were published in peer-reviewed journals. BioPerine’s bioavailability enhancement effect has been well studied with several nutrients such as curcumin, resveratrol, coenzyme Q10, vitamins such as B6, vitamin C and beta carotenes. Optimizing nutrient delivery can go a long way in enhancing the dosage efficiency and health benefits obtained from your formulation.

GRAS Affirmed | Award Wining Product | FAQ Available
Black Pepper Extract
(piper nigrum)
On a matter of months have passed since COVID-19 effectively pressed “pause” on life as we’d known it. Yet the disease’s upending of institutions, economies, and industries—to say nothing of individuals’ health—has been so dramatic that it’s hard to remember what “normal” life as we’d known it was like.

Unless, that is, you’re in the botanicals business. As Shaheen Majeed, president worldwide, Sabinsa (East Windsor, NJ), puts it, “Conventional wisdom says that COVID-19 changed everything. Except the pandemic’s impact still hasn’t hit our sector badly.” Government decisions deeming the industry essential, added atop heightened demand for herbal-based supplements purported to boost immunity, have kept botanical companies busy.

And if these companies manage the pandemic’s continued upheavals successfully, they may stay busy long after normal life returns.

Stressful New World
It’s impossible not to appreciate the gravity of the coronavirus’s depredations, no matter the business you’re in. As Ramon Luna, marketing coordinator, Ecuadorian Rainforest LLC (Clifton, NJ), notes, “COVID-19 has been a tragic event for several industries. It’s upsetting to see how it’s ravaged our way of life and forced us to adapt to a new way of being.”

That said, he, too, has noticed a botanical boost amidst the gloom. “We’ve seen great growth specifically in immunity, energy, relaxation, and sleep support categories—which makes sense, given that consumers are adjusting to a new world fraught with fear and stress.”

Brian Appell, director, global communications, OmniActive Health Technologies (Morristown, NJ), agrees, ticking off some of the stressors that bedevil this new world: “self-isolation, working from home, managing an at-home family, less activity—coupled with more eating!”

All have turned frazzled consumers toward products that address immunity and sleep support, as well as others concerns like stress management, weight management, metabolic health, and active wellness, he says.

Skyrocketing demand for immune-health supplements has resulted in widespread shortages of echinacea.
Clinically shown to:

- Increase lean muscle and strength*
- Increase power output and training volume*
- Improve athletic performance*
- Increase ATP, the energy currency of the body*

Designed for your next natural energy, pre-workout, or performance product

Learn more at futureceuticals.com/elevATP or call 888-452-6853.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
“COVID’s implications on supply chains have become more apparent as the pandemic’s steadily taken hold in India and other countries where a majority of botanical raw materials are sourced,” says OmniActive’s Brian Appell.

**Defensive Response**

But immune health, industry insiders believe, has emerged as the real winner here. "Immunity is surging across products," Appell says, "from vitamin C to more specialized formulas. And while no one could have predicted COVID’s impact on the supply of immunity products specifically, the industry’s been quick to respond and meet the demand."

Majeed also notices the ‘emphasis on immune benefits,’ adding that Sabinsa had been underscoring botanicals’ role in promoting immunity well before the current crisis. But now the company’s turning up the volume on that message, he says, "providing studies that validate our products’ immune benefits, including clinical studies that show our Curcumin C3 Complex supports immune function and counteracts inflammation, a component of the COVID-19 disease.”

**Self-Care Revolution**

Consumers are seizing upon those benefits and others as a self-empowering hedge against the unpredictable nature of the COVID-19 threat, and they’re looking for any tools they can find—including diet and supplementation—to exert some control over their health.

As Appell says, "They’re reassessing their supplement regimens to align them more with long-term wellness goals. Even seasonal users are becoming more steadfast with their supplementation.” The reason: “I think it speaks to a larger truth that consumers are reexamining what health means to them and how they can live a healthier life,” he says.

Francesca de Rensis, marketing director, Indena S.p.A. (Milan, Italy), thinks COVID-19 has shaken consumers’ confidence in institutions—particularly, in the ability of both government authorities and healthcare systems to adequately provide healthcare services.

"Under these circumstances, individuals have become more proactive, passionate, and dedicated to self-care,” she says. "Personal health has become top of mind, and each of us is making new health choices—from socially distancing to wearing masks—every day.”

Whatever their choices, she says, "The shift toward greater self-care is positive for the industry’s long-term growth. Indeed, since the beginning of the self-care movement, the dietary supplement industry has benefited, and the pandemic has made taking charge of our own health even more important.”

**Logistical Gymnastics**

But the pandemic has also made the smooth flow of ingredients from source to supplement manufacturer equally important so that consumers can ultimately access the products they demand.

Unfortunately, a principal “side effect” of the illness has been the complication of the very supply-chain and sourcing dynamics that would otherwise ensure that smooth flow. This has been particularly worrisome with respect to botanicals, which can grow in some pretty remote regions around the globe. And like consumers themselves, those regions and sourcing dynamics haven’t been immune to the pandemic’s fallout.

“COVID’s implications on supply chains have become more apparent as the pandemic’s steadily taken hold in India and other countries where a majority of botanical raw materials are sourced,” Appell says.

Majeed adds that some crops—tulsi (Ocimum sanctum), bacopa (Bacopa monnieri), and gotu kola (Centella asiatica)—“are less abundant than usual due to a shortfall in labor for timely harvesting, processing, and transporting.”

Sabinsa’s pre-inventory planning allowed it to avert any acute botanical-ingredient shortfall, he continues, but if growth in botanical demand continues at the current rate, “We may see permit-based limits on procurement of some key raw materials, especially those collected from the wild.”

**Be Prepared**

Luna agrees that "logistics have been a challenge.” Port closures and short-staffed operations haven’t helped, either, as at-home consumers order more online and burden an already-strained system. But “while this can cause delays and be stressful,” he says, “it’s been manageable.”

That’s because supply-chain disruptions “shocked” manufacturers into finding suppliers with decades of experience in the industry, proven sourcing records, and strong relationships with botanical growers able to weather COVID-19’s disruptions, he says. “These qualities help supply meet market demand so that manufacturers don’t lose business, so for us, it’s been business as usual.”

De Rensis notes that because Indena’s headquarters are in Italy—an early hotspot hit hard by COVID-19—“we had to plan and adapt quickly to maintain supply chains. We communicated with our botanical growers and suppliers as soon as possible to limit any disruptions in supply.”

India took almost as big a blow, which, given its role as a major botanical origin, forced companies to mobilize quickly to safeguard supply continuity. Fortunately, Majeed says, “India’s government is aware of the importance of the herbal industry and has been very supportive.”

While securing the needed border-crossing passes, maintaining processing-plant operations, and resolving logistical problems related to labor and driver shortages "takes a lot of time and resources," Majeed continues, "we’ve been agile and inventive in those areas beset with lockdowns, social distancing, reduced airfreight capacity, and other unexpected challenges.”
REACH NEW PEAKS

LEPIDAMAX ENHANCES KEY FACTORS FOR VITALITY AND SEXUAL FUNCTION IN MEN.

Lepidamax® is a patented blend of Peruvian maca phenotypes discovered and developed by Nutrition21. This proprietary formulation provides superior efficacy in improving various areas of male performance.

In a double blind, placebo controlled study, Lepidamax improved reported sexual function in men by 20% — in just one month.

Clinical study results demonstrated that Lepidamax (vs placebo) significantly improved:

- **SEXUAL FUNCTION**†
- **STRENGTH**
- **ENERGY***

*Liberated energy measured by using the validated Profile of Mood States (POMS) questionnaire.

†Sexual function measured by using Derogates Interview for Sexual Functioning (DISF-SR).

Get in touch with us:
info@Nutrition21.com

THESE STATEMENTS HAVE NOT BEEN EVALUATED BY THE FOOD AND DRUG ADMINISTRATION. THIS PRODUCT IS NOT INTENDED TO DIAGNOSE, TREAT, CURE, OR PREVENT ANY DISEASE.
And that, he says, is why Sabinsa’s been able to stay operational worldwide. “Like everyone right now, we’re figuring out how to do everything differently,” he says. “We’re monitoring new information as situations evolve so we can adapt procedures to keep people safe and healthy.”

OmniActive also got ahead of the chaos early, Appell says, establishing an internal rapid-action taskforce across management, procurement, agriculture, legal, production, and R&D departments to support customers and provide an all-important first response during India’s shutdown.

Working directly with the Indian government, the company obtained classification as an “essential” business—which helped keep its supply chain flowing—and prioritized and expedited decision-making as well as customs clearance of essential products.

“Because our manufacturing units are in three locations,” Appell adds, “we were able to maintain operational capacity in compliance with safety protocols, despite restrictions on people’s and vehicle movement.” With inventory warehoused across the company’s global markets, OmniActive’s supply chain was also somewhat insulated from shipping restrictions.

Finally, as a vertically integrated company, he says, they’ve already started planting crops, like marigold, and continue to support their farmers.

And at Draco Natural Products (San Jose, CA), Brien Quirk, director of R&D, reports that supply disruptions on his end are nowhere to be found. “There’s been more scarcity of rhodiola, but that was related to geopolitical issues that were going on well before COVID,” he says. “And there have been widespread shortages of echinacea for consumer products—but we haven’t had supply issues obtaining the raw botanical in our extract manufacturing from China.”

Even the turmeric shortages stemming from India’s lockdown haven’t plagued the company, as its China-grown raw-material chains have been strong. Quirk says, “And in my personal consumption, I haven’t seen any reduction in product availability on the market.”

Identity Crisis
So botanical professionals can take a victory lap for so far averting the big supply-chain disasters that could have descended had they not been so well prepared.

But it had better be a quick turn around the track, because brands also have to consider the door that COVID-19 opens to increased botanical adulteration.

“Adulteration has been an industry issue for some time,” de Rensis says, “and greater demand due to COVID-19 made it attractive for some companies to sell adulterated ingredients.”

An understandably distracted FDA also increases the opportunity for shenanigans, Appell adds. “But many of the industry’s stalwarts, like the United Natural Products Alliance, the Council for Responsible Nutrition, and the American Botanical Council, have been proactively monitoring and creating awareness around adulteration,” he says. “This hypervigilance, coupled with increased product testing by responsible finished-foods manufacturers, is appropriate and will help ensure the safety and benefits that consumers expect.”

All of which has made COVID-19 something of a “stress test” for industry initiatives to stay on the up-and-up, Appell says. “And I believe we have performed fairly well as a company and an industry,” he declares. “You can be sure that any gaps in those initiatives have been addressed and will only make for a strong botanical supply chain going forward.”

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.
BiovaFlex water soluble egg membrane (WSEM) is a nutritional ingredient that supports joint health and offers proven elemental building blocks to support essential joint health needs.

Our patented process maintains the natural ratios of nutrients found in egg membrane, and creates a water-soluble, formulation-friendly ingredient.

BiovaFlex has been clinically proven to support joint health in these 4 key areas:

- **Comfort**: Reduction of lower back discomfort within 5 days*
- **Activity**: 4x increased activity levels and ease of performing daily tasks*
- **Mobility**: Over 15% improvement in range of motion*
- **Protection**: Reduces free radicals and oxidative damage*

*These statements have not been evaluated by the Food and Drug Administration. This product not intended to diagnose, treat, cure, or prevent any disease.

www.Biova.com
Info@Biova.com
We all like to know what we’re getting. That holds true whether we’re buying a healthcare plan, shares in a mutual fund, or a dietary supplement.

And to its credit, the dietary supplement industry has gone out of its way to ensure that consumers know exactly what they’re getting with each purchase.

But despite industry’s best efforts, shenanigans occur. So, the American Botanical Council (ABC; Austin, TX), in collaboration with the American Herbal Pharmacopoeia (AHP) and the University of Mississippi’s National Center for Natural Products Research (NCNPR), established a Botanical Adulterants Prevention Program (BAPP) to address the shenanigans that occur in the botanicals space.

As chief science officer for ABC and technical director of BAPP, Stefan Gafner, PhD, has a unique perspective on botanical adulteration. And with the COVID-19 pandemic threatening to make adulteration a more common occurrence in the supplements space, Gafner’s perspective, and the work of BAPP and its partners, becomes all the more valuable.

This Is What Adulteration Looks Like

“Botanical adulteration comes in many forms and shapes,” Gafner says.

At its most innocent, human error is to blame, as when a wildcrafter misidentifies a plant and collects the wrong species, or an employee at a processor unintentionally mislabels a drum in the warehouse with no ill intent.

“But more often,” says Gafner, “adulteration is economically motivated.” In these instances, an undisclosed, lower-cost material with a similar chemistry or appearance may substitute for the labeled ingredient or a portion thereof.

“For example, powdered turmeric (Curcuma longa) sold in the local herb shops in rural India or Bangladesh may be adulterated with yellow dyes—some of which are made with lead—or corn or tapioca starch,” Gafner explains. “In Europe or North America, substitution with other Curcuma spp., or the use of synthetic curcumin or curcuminoids, appears to be the main problem.”

Published data indicate that most adulteration occurs at the harvesting and ingredient-processing levels, Gafner adds. “But that doesn’t mean there aren’t finished-product manufacturers who intentionally adulterate botanical ingredients.”

Adulteration Temptation

Malefactors at any point in the supply chain have no want for motivation, whether from sudden increases in demand, supply shortages, sharp and unexpected price rises, or competitive pressure, Gafner says. Lax government oversight, as well as shipping delays requiring pricey air-freight costs, also increase the temptation to adulterate.
Adulteration

Even a lack of appropriate test methods or suitable analytical markers can increase adulteration’s economic appeal, as was the case with African mango (Irvingia gabonensis) and cordyceps (Ophiocordyceps sinensis), Gafner says.

Given the supply-chain upheaval brought about by COVID-19, there’s reason to believe that the strain it’s put on the botanical market could encourage some degree of exploitive adulteration in response.

That said, Gafner declares, “It’s too early to determine if there will be an increase in adulteration due to increased demand, supply shortages, and less oversight, as FDA temporarily suspended onsite inspections.” While history suggests that such crises open the doors to adulteration, “we haven’t received confirmation that this is actually happening,” he says.

Nevertheless, BAPP monitors the situation closely, especially in the case of ingredients seeing “extraordinary increases in sales” thanks to COVID-19. Those include elderberry (Sambucus nigra subsp. nigra and Sambucus nigra subsp. canadensis), echinacea (Echinacea spp.) roots or aerial parts, and ashwagandha (Withania somnifera).

Other ingredients worth watching at any time include mushrooms (lion’s mane, reishi, and cordyceps), astragalus (Astragalus membranaceus and A. mongholicus), ginkgo (Ginkgo biloba) extracts, and berry extracts such as bilberry (Vaccinium myrtillus) and cranberry (Vaccinium macrocarpon). And as Ayurveda’s popularity has grown, so, too, has adulteration of its top-selling botanicals, not least of which are turmeric, ashwagandha, and boswellia (Boswellia serrata), Gafner says.

Risky Business

What’s the risk to those on the receiving end of botanical adulteration?

Fortunately, consumer safety is at low risk, Gafner says, except in instances where, say, lead chromate replaces turmeric, or the hepatotoxic germander (Teucrium spp.) takes the place of skullcap (Scutellaria lateriflora).

More often, adulteration harms the botanical sector’s image.

“The negative headlines about botanical-ingredient adulteration damage the reputation of the whole industry and are used by some industry critics to ask for stricter regulations,” Gafner notes. “Importantly, the lower prices at which adulterated ingredients can sell also put high-quality suppliers at a competitive disadvantage. For many industry members, this is more of an economic issue than a safety one.”

Frontline Defense

That’s still an issue worth militating against, and the industry has mounted multiple initiatives to curb adulteration.

Gafner considers the mightiest so far the establishment of BAPP, which conducts research and educates botanical-sector members about herbal-ingredient and dietary-supplement adulteration. As of June 2020, BAPP had published 57 papers and newsletters documenting adulteration cases and highlighting detection methods for raw materials.

Gafner also credits the American Herbal Products Association’s (AHPA; Silver Spring, MD) Botanical Identity Reference Compendium, which, he says, provides access to images from analytical tests to identify botanical ingredients.

For its part, BAPP is completing its standard operating procedures on the disposal and destruction of irreparably defective articles, which Gafner describes as a self-regulatory effort to inform receivers of adulterated material on how properly to dispose of or destroy what they can’t lawfully recondition, rather than send the adulterated material back to the supplier, who might then sell it back to another buyer.

BAPP is also discussing establishing a “mailbox” for anonymous company reporting of adulteration incidences. “The goal is to alert industry members in a timely fashion about new, or old, ways of botanical-ingredient adulteration,” Gafner says.

“On a positive note, I’m thrilled about the positive impact that the ABC-AHP-NCNPR Botanical Adulterants Prevention Program has had on the supply chain,” he concludes. Companies that read and use the group’s documents generally have “very robust and solid quality-control protocols,” he believes.

But even the most well-intended manufacturer or supplier can be caught unawares, which is where the program has offered significant help improving test methods and detecting fraudulent ingredients before they reach consumers.

“Ultimately,” Gafner says, “this is what the program is all about.”

Here’s a look at how adulteration may be affecting the botanicals you work with today.

Ginkgo Leaf: A Case Study in Adulteration

Ginkgo biloba may be the poster botanical for “the many ramifications of adulteration,” Gafner says. Competitive pressure pushes some companies to ask for ever-lower prices, initiating what he calls a “race to the bottom” that encourages dilution of ginkgo extracts with foreign flavonoids, like those from Japanese sophora (Sophora japonica, syn. Styphnolobium japonicum) leaf extract.
“This has gone so far that it’s become quite difficult to obtain authentic ginkgo leaf extracts on the market,” Gafner notes, “and those companies that sell quality extracts find themselves at a big disadvantage because they can’t sell their products at the same low price as others.”

Adulteration of Saw Palmetto with Ingredients Derived from Animal Fat

In this case, Gafner says, bad actors adulterated the popular botanical in such a way that the tampered-with ingredient mimicked the fatty-acid composition of authentic saw palmetto (Serenoa repens) extracts.

“What I found surprising was the extent of sophistication that went into this to avoid getting detected by current analytical methods,” Gafner observes. “It makes me wonder just what types of adulteration we may not catch because the adulterators have found ways to cheat without getting caught.”

What to Do with Weak Chromatograms?

Recent studies on analyses of commercial herbal dietary supplements frequently report occurrences of “weak chromatograms”—from, say, HPTLC or HPLC-UV analysis—reflecting low concentrations of the labeled ingredient.

“Unfortunately,” Gafner says, “some manufacturers cut costs by selling excessively diluted ingredients,” considering the resultant mix of excipient and extract the actual botanical ingredient. But as far as he’s concerned, that’s textbook adulteration: “The products don’t provide what the consumer expects based on information on the label.”

Unfortunately, it isn’t always easy to detect, as some products simply contain a highly diluting ingredient, or, as Gafner puts it, “just a low-quality extract.”

Extract Doping

Gafner and colleagues are also noticing more cases in which suppliers appear to have doped herbal extracts with single molecules, either synthesized or naturally sourced, to increase the extracts’ strength.

Addition of ellagic acid to pomegranate extracts; curcumin to turmeric extracts; and vitamin C to acerola (Malpighia spp.), baobab (Adansonia digitata), and other vitamin C-rich extracts are all examples, he says, as is the addition of caffeine to cola (Cola nitida) and guarana (Paullinia cupana) extracts.

“Depending on the chemical marker in question and the dietary intake, there can be potential safety concerns with such ingredients,” Gafner cautions.
In recent months, Alkemist Labs (Garden Grove, CA), among others in the dietary supplement industry, has brought attention to the increased threat of botanical ingredient adulteration in the supply chain, largely resulting from the ongoing COVID-19 pandemic, which has made the industry more vulnerable than usual to bad actors. As a respected industry testing lab, Alkemist Labs offers insightful perspective on the pandemic and the ensuing adulteration taking place.

Adulteration is nothing new to the industry, unfortunately. Demand for certain ingredients and the ensuing competition to ensure supply of a desired ingredient invite unwelcome attention from unscrupulous parties willing to sell fraudulent raw materials. The pandemic has exacerbated this typical reality to an absurd extreme.

"With the COVID-19 pandemic kicking off 2020 as a major threat to our lives, the masses have run to the healthfood stores and bought all the supplements. In turn, our clients are frantically trying to replenish inventory," explains Elan Sudberg, CEO of Alkemist Labs. "No one predicted this in their 2020 plans for inventory and supply agreements. New vendors must be quickly qualified, and material must be fast-tracked into production to keep up with demand. To add to this challenge, the FDA informed the public that they—understandably—planned to decrease onsite inspections, which was music to the ears of the unscrupulous. The consequence of this is a fast track to more adulteration and less oversight."

Besides the adulteration of popular immune-health botanicals such as elderberry (Sambucus nigra) with compounds such as black rice¹, Alkemist Labs also discovered that Certificates of Analysis (COAs) from its own lab and other laboratories were being doctored². The COAs are reported to have been doctored in a number of ways, including changing or removing the client name, replacing the lot number, or even going so far as changing the results of the analysis.

"Oscar Wilde said that 'Imitation is the sincerest form of flattery.' To me, knowing that companies overseas are actively counterfeiting our
Certificates of Analysis for questionable material we have not actually tested and selling such material using our good name is way more frustrating than flattering,” says Sudberg. “This has been an issue for many years, but we’ve seen more of it with the coronavirus increasing demand for immune-support herbs. It’s an issue that the heavy hitters of the FDA identified as a threat to the supply chain when I spoke with them about it.”

While the current situation the world finds itself in is in many ways unprecedented, the adulteration taking place currently is laying bare the existing inadequacies of current Good Manufacturing Practices (cGMPs), explains Sudberg. Among these is the use of unvalidated testing methods that look good on paper but lack any substance.

“The existing cGMPs left a lot of room for dangerous interpretation that falls short of truly ‘fit for purpose’ test methods. From my understanding, there has been very little technology challenged by the FDA, which is a glaring vulnerability,” says Sudberg. “This means that material may show up as ‘lab tested’ but may still be adulterated, as those buying into the ‘too good to be true’ technology leave room for problematic ingredients to enter the supply chain.”

The solution, Sudberg says, is to question everything. This seems simple, though may be less so in the current industry landscape where business pressures may cloud sound judgement. Take nothing at face value. If you receive a COA, have it verified. If you get test results, make sure they consider adulterants common to the material. “Demand full transparency from seed to shelf, and when experiencing pushback on such, run to another vendor,” states Sudberg. “When you are responsible for ensuring that products the consumer is ingesting contain what they [should], and what your label says it does, you have to be absolutely, positively sure.”

Of course, it’s not all doom and gloom. The current moment is both a wakeup call and a proving ground for responsible industry players. “While the pandemic has stressed the supply chain and excited the unscrupulous, one silver lining is that it has woken up the industry, again, to talk about quality issues and pay more attention to supply chain challenges,” concludes Sudberg. “It’s given the good players another opportunity to show how good they truly are. Those of us who survive this temporary blip will emerge stronger and smarter than ever.”

References

From weekend warriors and professional athletes to active seniors, collagen provides the essential joint support that helps keep people moving. With Wellnex collagen peptides, you get the high-quality, clinically-backed collagen they require, along with the support you need to succeed in the marketplace. We’re with you every step of the way—providing the essentials including leading-edge R&D and full application support—so you can get to market faster.

Because demand for collagen isn’t slowing down anytime soon.
"Adapt, or die." It’s harsh advice, but it’s been an underlying rule of evolution ever since the process got rolling—which means pretty-much forever.

And as we find ourselves half a year into a disorienting new reality living with the COVID-19 pandemic, we’re witnessing our capacity to adapt being tested in ways we never imagined—and generating profound mental and physical stress as a result.

Which is why we may also be witnessing the dawn of the age of adaptogens—plant-based ingredients that purportedly help our bodies adapt to the stresses of trying times, including everyday life.

But those numbers may be ripe for a shift. “Consumers are seeking ways to relax and relieve stress and anxiety across their lives,” Mattucci says. If brands can deliver science-backed ingredients in palatable packages, the adaptogen era may be just the change of pace we need.

Adapto\what?
Writing in a May 2019 opinion piece for Euromonitor International titled “Adaptogens and Functional Relaxation Beverages,” Howard Telford, the market-research firm’s head of soft drinks, notes that most ingredients currently marketed as adaptogens trace their roots back to Ayurveda and traditional Chinese medicine—“although the term adaptogen itself originated in the twentieth century,” he notes.

And while neither industry, academia, nor the health-and-wellness community has established an agreed-upon formal
Soups
Made better with GPC starch

GPC PURE-GEL® modified starches significantly improve mouthfeel and can elevate a “good” soup to a “GREAT” soup. PURE-GEL® starches effectively thicken soups, creating a smooth, creamy mouthfeel without lumps, and preserve your soup’s quality texture through multiple freeze/thaw cycles. Contact GPC today.

grainprocessing.com/food

Non-GM available | Improves texture | Steam table stability | Neutral flavor | Gluten free

E-mail: food.sales@grainprocessing.com  Phone: 563.264.4265
© 2020 Grain Processing Corporation  PURE-GEL® is a registered trademark of Grain Processing Corporation.
Adaptogens

“High-stress lifestyles and environments, as well as a move toward greater self-care, are definitely driving interest in adaptogens,” says Veronica Eckl of SPINS.

The Body’s Thermostat

How they do so awaits definitive elucidation—as do further details about effective dosing, measurable effects, and long-term benefits. But for now, says Shanais Pelka, research and development manager for superfoods company Organifi (San Diego, CA), we can think of adaptogens “as sort of like a thermostat.”

Consider: When your living-room thermostat senses that the temperature’s too cold, it kicks on the heat to bring the temperature up; when it senses things getting too hot, it reverses course and cools the room back down. “The beautiful thing about an adaptogen,” Pelka explains, “is that, like a thermostat, it can actually decrease anxiety and calm you even while increasing energy.”

The secret, apparently, lies in the adrenals. “Adaptogens support our adrenal glands behind the scenes to ensure a balanced, healthy, functioning body,” Pelka says. These endocrine organs participate in everything from regulating the sleep/wake cycle and suppressing inflammation to keeping blood sugar in check and secreting neurotransmitter hormones like epinephrine, norepinephrine, and dopamine.

“These hormones,” Pelka goes on, “generate the primitive stress response that helps keep us alive in moments of trauma or danger.” Yet when our adrenal glands fatigue—whether from poor diet, physical, emotional, or environmental stress; or even the occasional all-nighter—“we may not be able to make the required hormones and neurotransmitters our bodies need.”

These downstream hormonal effects of continual stress can disturb sleep, memory, emotions—even immunity. And that, says Pelka, is where adaptogens provide support. “The effects may be subtle at first,” she notes, “but just wait a couple weeks and you notice real changes in your body.”

Stress Positions

Many consumers would likely welcome those changes now. A 2017 Euromonitor International online survey found 70% of respondents claiming that capping daily stress levels was an “important health objective.” And that was back in 2017.

According to Veronica Eckl, associate data product manager, SPINS (Chicago), that bodes well for adaptogenic ingredients. “High-stress lifestyles and environments, as well as a move toward greater self-care, are definitely driving interest in adaptogens,” she says.

By nourishing an overstressed endocrine system, Eckl contends, adaptogens “nourish the entire body rather than treat a singular symptom.” And with awareness of the relationship between endocrine function and stress growing, she believes, the way forward for adaptogens is up.

Multigenerational Appeal

Mintel’s Mattucci agrees, adding that younger consumers could give the category a concerted boost. “While stress is a universal phenomenon, today’s youth are more open about acknowledging stress and anxiety than previous generations were,” she notes. “Gen Z—born between 1995 and 2007—is now and will continue to be a key audience for formulations that help relieve stress and anxiety.”

Yet adaptogens have something for everyone. Because stress exacerbates the effects of aging, for example, “Adaptogens are making more appearances in skincare and beauty products like serums, moisturizers, and masks as an extra boost, as well as to fight inflammation,” SPINS’ Eckl points out. She believes the ingredients “hit the same note as the self-care revolution.”

And given that stressors like COVID-19, social unrest, and a looming economic downturn show no signs of relenting, “Demand for stress relief will only increase in 2020,” Mattucci predicts. “Adaptogens that offer a dual benefit of stress reduction and immune support have the potential to thrive in a post-COVID world,” she adds, “especially as stress takes a toll on the immune system, leaving us more susceptible to illness.”

Still Adapting

Some product developers are already signing on. “While still niche in foods, drinks, and supplements,” Mattucci says, “adaptogens like holy basil, ashwagandha, maca, and several types of ginseng have the potential to grow and are already showing up in functional foods and drinks designed for stress relief.”

But obstacles still block adaptogens’ route to the mainstream. Awareness of and familiarity with the ingredients “is still very low in most markets,” says Joana Maricato, market research
Healthy Aging
A Booming Market

Our Clean Label, Nutrient-rich ingredients are ideal for Healthy Aging products

Visit npnutra.com for free samples!

www.npnutra.com • admin@npnutra.com • Ph: 310.694.3031
Adaptogens

UP-AND-COMING ADAPTOGENS

Ginseng
“In the current wave of natural-product innovation, ginseng—both Asian and American varieties—remains prevalent and has been a popular ingredient globally,” Euromonitor’s Howard Telford notes. In fact, he goes so far as to crown ginseng “the most popular adaptogen overall.”

Ashwagandha
Calling ashwagandha a “prized herb in Ayurveda,” SPINS’ Veronica Eckl notes that ashwagandha is valued for its apparent role in supporting youth, fertility, and vitality, as well as immunity. “Clinical studies have also suggested that it could play a part in calming the nervous system.”

Tulsi
Tulsi, or holy basil, is another adaptogenic herb in the Ayurvedic pharmacopeia. “Holy basil has traditionally been used for bronchial and cardiovascular support, and animal studies in the last decade or so have shown it as a promising anti-stress agent, containing possible cortisol-reducing compounds,” Eckl says.

Maca
Maca, an indigenous Andean botanical, has claimed a measure of fame as a superfood, but Eckl notes that its history supporting hormonal health and energy levels dates back well before its current renown. “This herb is also a powerhouse of vitamins, minerals, and other nutrients,” she says. “It can easily be included in drink mixes or smoothies.”

Mushrooms Galore
And mushrooms—from maitake and shiitake to chaga, reishi, and beyond—are attracting attention as adaptogens. Practitioners of traditional Chinese medicine have administered both the fruiting bodies and mycelia of reishi mushrooms for more than two millennia thanks to their “impressive list of medicinal qualities,” Eckl says. She says reishi is even known as “the mushroom of immortality.”

Tonics made with reishi revitalize energy, Eckl notes, while reishi’s polysaccharides and beta-glucans support immune health. “There’s even been promising preliminary research showing that reishi can help promote sleep and decrease stress,” she says.

Adequate human clinical trials will pose another hurdle. As Eckl says, “While adaptogens have been used in traditional medicines for thousands of years, the exact mechanism of many of these plants is unknown, and most studies are based on animal trials, as in the case of holy basil and other adaptogens.”

And because consumers need time and consistent use to see results, the sense that the ingredients aren’t working may also discourage repeat purchase. “It can be difficult to feel a ‘destressing’ effect, and this can demotivate consumers,” Maricato says.

Eckl agrees. “Even coffees, tea mixes, and other drink preparations containing adaptogens may not create an immediate boost of energy or vitality and are best used over time,” she notes.

Special Delivery
Another potential problem: Many adaptogens don’t taste good. But, says Eckl, “Some do have a unique flavor profile that manufacturers can capitalize on.” Bitterness, for instance, may not stand out in a tea or dark-chocolate drink.

In fact, she continues, “Tea, matcha, and golden milk mixes have been formulated with adaptogenic herbs,” while protein supplements and electrolyte and functional beverages also make good candidates for what she calls “an added boost of sustainable adaptogenic energy.”

Mattucci believes that adaptogens will gain the most traction when delivered in products “that consumers already choose to help them relax and reduce stress, such as snacks and beverages.” But she also sees a home for them in sports nutrition, “as many consumers who exercise are doing so to relieve stress.”

An intriguing angle for future formulation might be to capitalize on the connection that adaptogens and brain-boosting nootropics have with sports nutrition and performance, Maricato suggests. “Many ingredients, like caffeine and taurine, are already associated with heightening mental and physical performance,” she notes, “while those connected to the relaxation and destressing effects of adaptogens are also needed for optimal performance.”

And as far as ingredient choice goes, Eckl points out that while single herbs “work well for targeted support, herbal blends can be as potent, if not more so, than the individual herbs they contain.” For example, reishi plus holy basil help support sleep, she says, while cacao “could complement the cognitive properties of the other herbs” in an adaptogenic product.

Euromonitor’s Telford advises keeping adaptogens “whole.” Consumers demonstrate a strong preference for simple, ‘whole-food’ solutions instead of artificial, highly processed, or unfamiliar ingredients,” he says. “The rise of adaptogens in foods and beverages is part of a much broader push toward whole foods, plants, and beverages as supplement solutions, away from pills and less palatable capsules.”

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.
Better performance, faster recovery.

Working out can take a lot of you. Now, there’s a better way to recover after a tough workout. With Indena’s Quercefit™ - quercetin Phytosome - that’s been shown effective for optimized exercise performance and recovery. And Quercefit™ delivers quercetin with guaranteed bioabsorption, thanks to its Phytosome proprietary delivery system. A human pharmacokinetics study showed bioabsorption up to 20 times higher than unformulated quercetin, in line with the levels of a diet rich in vegetables and fruits. And Quercefit™ has proven efficacy: a two-week study on triathlon athletes showed benefits in terms of endurance, performance, recovery times and oxidative stress. Human studies confirmed that Quercefit™ has a very good safety profile.

For your sport nutrition needs and better performance, select Quercefit™ from Indena.

These statements may not comply with your country’s laws and regulations or with Reg. EC n. 1924/2006 and have not been evaluated by the Food and Drug Administration. The products are not intended to diagnose, treat, cure or prevent any disease. Marketers of finished products containing this ingredient are responsible for ensuring compliance with the applicable legal framework.
Elderberry (Sambucus nigra) products are popping up everywhere, both in supplements and in functional foods. Mainstream consumer awareness of elderberry has grown significantly in recent years, buoyed by concerns about immune health and antioxidant support.

Data provided by Innova Market Insights show that elderberry food and beverage product launches grew by 12% per year from 2017 to 2019. More recently, though, Artemis International (Fort Wayne, IN) Vice President of Sales and Business Development Chris Tower told Nutritional Outlook that the COVID-19 pandemic has prompted a 400% increase in consumer demand for elderberry products. 1

A product that was once a “Monty Python” joke is now an emerging health trend on the cusp of becoming mainstream. As elderberry continues to become more popular, expect brands to push product innovation. Here are some of the trends emerging in elderberry products.

**Supplements Diversify: Gummies, Powders, and Drops**

Elderberry is a popular ingredient in immune-health supplements, and for good reason: elderberry’s anti-inflammatory and immune-supporting properties are well supported by clinical trials 2 and *in vitro* studies 3. Now, elderberry supplements are diversifying into various product formats that offer different advantages.
Immune Health Support

Build an enduring body and mind with Sensoril® Ashwagandha, Capros® Amla and PrimaVie® Shilajit to increase energy, support healthy aging and support Immune System Health.

Read more about Immune System Health Support in our white paper at www.natreoninc.com/immunesupport
Surveying product launches tracked by Innova, November 2019 saw the release of elderberry powder stick packs by New Chapter. In January 2020, baby products brand Mommy’s Bliss added organic elderberry drops to its product line. In February 2020, Nature’s Truth released black elderberry gummies. These supplements reflect the continued diversification of elderberry product formats, allowing consumers the flexibility to choose a supplement format that meets their lifestyle needs.

Elderberry a Hit in Yogurt and Tea
The functional food space is also seeing an influx of elderberry. Two of the emerging verticals in elderberry foods are hot tea and yogurt. Hot drinks accounted for 8% of new elderberry product launches in 2019, while dairy products accounted for 9% of launches, according to Innova.

Yogurts and loose-leaf teas are ideal product formats for elderberry because consumers are already familiar with other berry-based varieties of these products; major consumer brands have been selling blueberry yogurt and raspberry tea in supermarkets for years. Consumers have had widespread exposure to these products, and adding elderberry to existing berry blends is an easy way to encourage consumer adoption. Brands like Germany-based company Onken and Australia-based company T2 are already releasing products in these categories. In November 2019, Onken launched a zero-fat blueberry-elderberry yogurt for the UK market. Meanwhile, in September 2019, T2 launched its Berry Boost loose-leaf tea featuring elderberry, raspberry, strawberry, grape, and echinacea. As elderberry enters the mainstream, expect tea and dairy to be profitable verticals.

Cold Drinks Marry Berries and Buzz
Elderberry is also showing up as a base ingredient in soft drinks and alcoholic beverages. Together, these accounted for 16% of all elderberry products launched in 2019, according to Innova.

In January 2020, Canada-based brand Nuba Tisane debuted an organic hibiscus cold tea with elderberry at the Specialty Food Association Winter Fancy Food Show in San Francisco. This beverage, an herbal tisane made from an infusion of Egyptian *Hibiscus sabdariffa* and elderberry, claims to support healthy blood pressure and boost immune function.

Elderberry products are getting more creative, with more brands launching products in categories that haven’t traditionally included elderberry.

For consumers who prefer their drinks on the hard side, alcoholic elderberry drinks are becoming more common. September 2019 saw the launch of a cider by China-based company Taste Room, a subsidiary of Hangzhou Qiandaohu Beer Co. This 3.8% ABV cider is brewed from lychee (*Litchi chinensis*) and elderberry and is served in 245-ml glass bottles.

New Launches Keep Elderberry Fresh
Elderberry products are getting more creative, with more brands launching products in categories that haven’t traditionally included elderberry. Data and analysis provided to *Nutritional Outlook* by Innova Market Insights show that elderberry products are now springing up in confectionery aisles, hot and cold drinks, and even dairy products. Elderberry is increasingly used in natural products with an immune-health focus, and the COVID-19 pandemic is only raising its profile. As consumers gain more awareness of elderberry’s functional benefits, opportunities will arise for more elderberry products in more diverse formats.

Mike Straus is a freelance writer living in Kelowna, Canada. He has written for publications including Canadian Chiropractor, Grow Opportunity, and Massage Therapy Canada.

References

Nuba Tisane debuted an organic hibiscus cold tea with elderberry at the Specialty Food Association Winter Fancy Food Show.
TendoGuard™

COLLAGEN TYPES I,II,V,X, & MUCOPOLYSACCHARIDES

100% Avian Eggshell Membrane & Sternum Cartilage.

TendoGuard™ is a proprietary dietary supplement formula containing a perfect balance of collagen Type I, Type II, Type V, Type X, Hyaluronic Acid, Chondroitin Sulfate and Mucopolysaccarides.

TendoGuard™ naturally contains anti-inflammatory, antimicrobial, antifungal, antibacterial and antiviral compounds to support tendon recovery and to maintain healthy and strong mechanical properties of tendon, bone, and joint functions.*

For Information & Availability Please Contact:
Certified Nutraceuticals, Inc.
Tel: (951) 600-3899
Fax: (951) 600-8676
info@certifiednutra.com
www.certifiednutra.com

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

©2020 Certified Nutraceuticals, Inc. All rights reserved.

Human (30 day) Clinical Trial with TendoGuard™ Showed:

› General Pain (84.1% reduction; P = 0.006)
› Range of Motion Associated Pain (74.7% reduction; P = 0.020)
› Flexibility (45.5% increase; P = 0.001)

The study also showed a normalizing of saliva pH levels which is often indicative of a reduction in inflammation.

Conclusion: The study results showed that TendoGuard™ when taken at a dosage of 375mg – 500mg twice per day appears to benefit joint inflammation, secondary mobility and other tertiary effects. The study shows that TendoGuard™ may be a viable treatment option for the management of joint and connective tissue disorders.

Pain Scale Reduction Chart Recorded During Trial

Days of trial – Oral intake

* Clinical Trial conducted by Morton Scientific Group, Cambridge, Ontario, Canada
Innova Market Insights data indicate that turmeric products have held steady in snack food launches for several years. Snacks with turmeric or curcumin in the ingredients list accounted for 9% of all new turmeric product launches in both 2015 and 2019. One recent white paper on snacks by Cargill (Minneapolis) notes that turmeric is one of several emerging ingredients that brands are using to add functional benefits to snack products. While snacks have previously incorporated ingredients like protein and fiber, the report notes, the next evolution of snack food will involve ingredients that offer advanced functions and taste great.

One example of this evolution is a mango turmeric cashew and pistachio nut mix by Nature’s Heart (London, UK). Launched in February 2020, this packaged snack mix includes cashews, pistachios, and mango chunks in a light coating of coconut sugar. With product claims like “vegan,” “plant-based,” “high-protein,” and “gluten-free,” this snack mix is one example of how brands are positioning turmeric snack products as a smarter way to satisfy a case of the munchies.

Snack foods are fertile ground for turmeric. Innova Market Insights data indicate that turmeric products have held steady in snack food launches for several years. Snacks with turmeric or curcumin in the ingredients list accounted for 9% of all new turmeric product launches in both 2015 and 2019. One recent white paper on snacks by Cargill (Minneapolis) notes that turmeric is one of several emerging ingredients that brands are using to add functional benefits to snack products. While snacks have previously incorporated ingredients like protein and fiber, the report notes, the next evolution of snack food will involve ingredients that offer advanced functions and taste great.

One example of this evolution is a mango turmeric cashew and pistachio nut mix by Nature’s Heart (London, UK). Launched in February 2020, this packaged snack mix includes cashews, pistachios, and mango chunks in a light coating of coconut sugar. With product claims like “vegan,” “plant-based,” “high-protein,” and “gluten-free,” this snack mix is one example of how brands are positioning turmeric snack products as a smarter way to satisfy a case of the munchies.

Ready-meals accounted for a full 18% of all turmeric products launched in 2019, according to data provided by Innova Market Insights. As consumers’ lives become busier and more complicated,
health-conscious consumers are looking for ways to supercharge their diets with healthy ingredients in as little time as possible. Much of this trend is being driven by Generation Z, who are 26% more likely to eat frozen breakfasts and 29% more likely to eat microwave dinners than consumers in other age categories. Despite their preference for convenience meals, though, Gen Z consumers consistently express a strong preference for healthier foods with claims like “organic,” “natural,” “vegetarian,” and “additive-free.”

Brands are responding to this trend with turmeric product launches in convenient, ready-to-eat formats. For instance, in February 2020, Bio-Zentrale Naturprodukte (Wittibreut, Germany) launched its pre-packaged Lunch’n Go Vegetable Paella with Curcumin. As consumers increasingly come to expect healthier options in the convenience foods market, brands that can package functional ingredients into a healthy convenience product will thrive.

Drink Up: Turmeric Teas, Juices, and Waters
Turmeric is appearing more often in beverages of every kind, both inside and outside the ready-to-drink sector. In January 2020, for instance, Clearspring (London, UK) launched its organic Japanese matcha turmeric tea. Turmeric is even finding its way into coconut water with the March 2019 launch of CoCoFina’s (London, UK) organic Coconut Water & High Strength Turmeric.

While turmeric beverages still remain somewhat rare, data provided by Innova Market Insights indicate that new turmeric product launches in hot drinks and soft drinks grew by 1 percentage point from 2015 to 2019. Turmeric drinks remain a relatively niche product for the moment but likely appeal to particular subsets of health-conscious consumers.

Turmeric Products See Double-Digit Growth
Turmeric is quickly gaining ground, capitalizing on western consumers’ curiosity around exotic flavors and desire for healthier ingredients. While turmeric remains relatively unknown in product categories like spreads, according to Innova data, other categories are prime for innovation. Food and beverage launches involving turmeric grew by 10% per year from 2015 to 2019, according to Innova data, with the most popular applications involving ready-meals, sauces, and seasonings. As more brands launch turmeric products across various categories, consumers will become more familiar with turmeric, laying the groundwork for future segment growth.

Mike Strauss is a freelance writer living in Kelowna, Canada. He has written for publications including Canadian Chiropractor, Grow Opportunity, and Massage Therapy Canada.

References
2. Packaged Facts. “Gen Z adults seek foods fitting their busy, yet health conscious lifestyles.” Published online February 12, 2019.
Resveratrol Supports Bone Mineral Density in Postmenopausal Women Study


The second in a series of publications from the RESHAW clinical trial on consumption of Veri-te resveratrol (Evolva; Reinach, Switzerland) by 125 postmenopausal women was published in the Journal of Bone and Mineral Research. The previous publication found that the branded resveratrol ingredient supported cognitive health in postmenopausal women. The newly published findings show that resveratrol supplementation supports bone mineral density in postmenopausal women.

In the double-blind, placebo-controlled crossover study, 125 postmenopausal women were assigned to supplement with either 75 mg of resveratrol, or a placebo, twice daily for 12 months, then switched interventions for the next 12 months. Results showed that compared to placebo, supplementation positively affected bone density in the lumbar spine and femoral neck, and was accompanied by a 7.24% reduction in the levels of the bone resorption marker C-terminal telopeptide type-1 collagen. The lumbar spine and femoral neck are common fracture sites in postmenopausal women. Additionally, the magnitude of improvement was higher in women with poor bone health biomarker status. Sub-analysis revealed that the bone-protective benefits of resveratrol were greater in participants who also supplemented with vitamin D and calcium.

The results of the study can be attributed to resveratrol being a potent antioxidant and vasoactive compound. For instance, Professor Peter Howe and the research team observed a correlation between the resveratrol-induced improvements in femoral neck T-score and cerebrovascular responsiveness, which provides a general indication of the ability of microvasculature to deliver blood to tissues,” explained David Tetzlaf, director of marketing for Evolva, to Nutritional Outlook.

“The research team also pointed out that impaired blood flow to the lower extremities is associated with decreased bone mineral density of the hip and ankle.”

The potential quality-of-life improvements for aging women can be substantial—for example, by reducing the risk of hip fractures. “As life expectancy continues to increase, health-adjusted life expectancy is falling behind, particularly in women, who are at heightened health risk postmenopause. With the decline in estrogen levels, menopause can undermine quality of life and increase a woman’s risk of developing hypertension, osteoporosis, and dementia,” said Tetzlaf.

The RESHAW data show that resveratrol supplementation reduced the annual rate of decline in femoral neck bone mineral density to 0.34% from 0.96%, said Tetzlaf. In fact, the study found a correlation between the increase in bone mineral density of the femoral neck and a reduction in the 10-year probability of major and hip fracture risk.

Fucoidan from Brown Seaweed May Support Immune Health via the Gut


A recent pilot study found that fucoidan (from Marinova; Tasmania, Australia), a brown seaweed-derived bioactive polysaccharide, may support gut markers of immunity and inflammation. In the study, 22 professional team sport athletes and 11 healthy adults were given 1 g per day of fucoidan for seven days. Analysis was conducted on fecal samples taken before and after the seven days. Fecal concentrations of calprotectin, secretory immunoglobulin A (sIgA), and lysozyme were determined using enzyme-linked immunosorbent assays. At baseline, lysozyme concentrations were 73% higher in the healthy adults compared to professional athletes, but athletes experienced a 45% increase in lysozyme concentrations following the supplementation period.

The increase in lysozyme concentration is important because it is recognized as both antimicrobial and anti-inflammatory, and animal models have suggested that lysozyme promotes mucosal barrier integrity. “Considering these functions, the increase in fecal lysozyme may reflect improvements in mucosal health,” wrote the study’s researchers. “The increase in fecal lysozyme concentrations in professional athletes is also worth considering further given that lower fecal lysozyme concentrations were observed compared to the healthy adults prior to supplementation.”

Pycnogenol May Help Manage Migraine Headache Symptoms


A recently published study found that supplementation with the branded French pine bark extract, Pycnogenol from Horphag Research (Hoboken, NJ), may help manage migraine headaches. In the study, 46 subjects were divided into three groups assigned to receive standard management (SM) of oral magnesium and riboflavin on demand, 150 mg/day of pycnogenol with SM, or the medication topiramate for eight weeks. The topiramate group was a non-parallel, observational group.

Results showed Pycnogenol was well tolerated and, compared to SM, those taking the French pine bark extract saw significantly fewer migraine attacks as well as a significantly reduced reliance on rescue medication such as analgesics. At eight weeks, pain scores and working incapacity were significantly lower in the Pycnogenol group compared to SM.

While topiramate saw significant reductions in migraines, pain scores, and working incapacity compared to SM, the medication’s adverse effects include paresthesia, fatigue, dizziness, and nausea even at low dosages. Half of these side effects require some form of additional treatment. In addition to providing relief to subjects, at eight weeks plasma free radicals were significantly lower with Pycnogenol compared to SM and topiramate. [4]
Vi-spo™ is a new twist on an ingredient that has stood the test of time for supporting men’s health—saw palmetto.* Vi-spo™ provides prostate benefits at just 400 mg (oil) or 800 mg (spray-dried powder) per day.* Vi-spo™ exerts its benefits via the inhibition of 5α-reductase.*

- Carrier-free supercritical saw palmetto (Serenoa repens) berry extract standardized to both ≥ 85% fatty acids and 2-3% beta-sitosterol
- Clinically demonstrated superiority to conventional saw palmetto oil (≥ 85% fatty acids and ≥0.2% beta-sitosterol)*
- Up to 10 times the beta-sitosterol content compared to typical saw palmetto extracts
- Prepared from saw palmetto berries cultivated in the southeastern United States
- Backed by a double-blind, randomized, placebo-controlled trial in men that demonstrated improvements in:
  - Postvoid residual volume*
  - Urinary flow rate*
  - Prostate health*
  - Sexual health*
  - Quality of life*
- Patent pending for material composition and prostate health support* (U.S. Patent application 20200155573)
- Free of the 8 major food allergens:
  - Milk
  - Eggs
  - Fish
  - Crustacean Shellfish
  - Tree Nuts
  - Peanuts
  - Wheat
  - Soybeans

Next generation saw palmetto extract*

PLANT-BASED  NOW  CLINICAL RESEARCH  PRODUCT OF INDIA
CAPSULE  SOFTGEL  LIQUID EMULSION  FUNCTIONAL FOOD

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease. Claims should be reviewed under the guidance of regulatory and/or legal counsel for compliance.

331 Newman Springs Road
Bldg. 1, 4th Flr., Ste 143
Red Bank, NJ 07701

(732) 784-1587 | info@vidyahersbsusa.com
<table>
<thead>
<tr>
<th>Page(s)</th>
<th>Company Name</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>ABITEC Corp.</td>
<td><a href="http://www.abiteccorp.com">www.abiteccorp.com</a></td>
</tr>
<tr>
<td>21</td>
<td>AIDP Inc.</td>
<td><a href="http://www.aidp.com">www.aidp.com</a></td>
</tr>
<tr>
<td>33</td>
<td>Ashland</td>
<td><a href="http://www.ashland.com">www.ashland.com</a></td>
</tr>
<tr>
<td>9</td>
<td>Balchem Human Nutrition/Albion Minerals</td>
<td><a href="http://www.balchem.com">www.balchem.com</a></td>
</tr>
<tr>
<td>41</td>
<td>Bergstrom Nutrition</td>
<td><a href="http://www.bergstromnutrition.com">www.bergstromnutrition.com</a></td>
</tr>
<tr>
<td>50</td>
<td>Best Formulations</td>
<td><a href="http://www.bestformulations.com">www.bestformulations.com</a></td>
</tr>
<tr>
<td>45</td>
<td>BioCell Technology LLC</td>
<td><a href="http://www.biocelltechnology.com">www.biocelltechnology.com</a></td>
</tr>
<tr>
<td>59</td>
<td>Biova LLC</td>
<td><a href="http://www.biova.com">www.biova.com</a></td>
</tr>
<tr>
<td>47</td>
<td>Cepham Inc.</td>
<td><a href="http://www.cepham.com">www.cepham.com</a></td>
</tr>
<tr>
<td>75</td>
<td>Certified Nutraceuticals</td>
<td><a href="http://www.certifiednutra.com">www.certifiednutra.com</a></td>
</tr>
<tr>
<td>81</td>
<td>Charles Ross &amp; Son Co.</td>
<td><a href="http://www.mixers.com">www.mixers.com</a></td>
</tr>
<tr>
<td>17</td>
<td>Deerland Probiotics &amp; Enzymes</td>
<td><a href="http://www.deerland.com">www.deerland.com</a></td>
</tr>
<tr>
<td>Insert</td>
<td>Draco Natural Products Inc.</td>
<td><a href="http://www.draconatural.com">www.draconatural.com</a></td>
</tr>
<tr>
<td>25</td>
<td>DRT</td>
<td><a href="http://www.drt.fr">www.drt.fr</a></td>
</tr>
<tr>
<td>BC</td>
<td>DuPont Nutrition &amp; Biosciences</td>
<td><a href="http://www.dupontnutritionandbiosciences.com">www.dupontnutritionandbiosciences.com</a></td>
</tr>
<tr>
<td>63</td>
<td>Evolva</td>
<td><a href="http://www.evolva.com">www.evolva.com</a></td>
</tr>
<tr>
<td>55</td>
<td>FutureCeuticals</td>
<td><a href="http://www.futureceuticals.com">www.futureceuticals.com</a></td>
</tr>
<tr>
<td>67</td>
<td>Grain Processing Corp.</td>
<td><a href="http://www.grainprocessing.com">www.grainprocessing.com</a></td>
</tr>
<tr>
<td>IFC</td>
<td>HP Ingredients</td>
<td><a href="http://www.hpingredients.com">www.hpingredients.com</a></td>
</tr>
<tr>
<td>71</td>
<td>Indena</td>
<td><a href="http://www.indena.com">www.indena.com</a></td>
</tr>
<tr>
<td>43</td>
<td>International Dehydrated Foods</td>
<td><a href="http://www.idf.com">www.idf.com</a></td>
</tr>
<tr>
<td>5, 11</td>
<td>Jiaherb Inc.</td>
<td><a href="http://www.jiaherbinc.com">www.jiaherbinc.com</a></td>
</tr>
<tr>
<td>15</td>
<td>Jost Chemical Co.</td>
<td><a href="http://www.jostchemical.com">www.jostchemical.com</a></td>
</tr>
<tr>
<td>35</td>
<td>MORRE-TEC Industries Inc.</td>
<td><a href="http://www.morretec.com">www.morretec.com</a></td>
</tr>
<tr>
<td>31</td>
<td>NATCO</td>
<td><a href="http://www.natcohealthyliving.com">www.natcohealthyliving.com</a></td>
</tr>
<tr>
<td>Page(s)</td>
<td>Company Name</td>
<td>Website</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>73</td>
<td>Natreon Inc.</td>
<td><a href="http://www.natreoninc.com">www.natreoninc.com</a></td>
</tr>
<tr>
<td>65</td>
<td>Nitta Gelatin</td>
<td><a href="http://www.nitta-gelatin.com">www.nitta-gelatin.com</a></td>
</tr>
<tr>
<td>69</td>
<td>NP Nutra</td>
<td><a href="http://www.npnutra.com">www.npnutra.com</a></td>
</tr>
<tr>
<td>57</td>
<td>Nutrition21</td>
<td><a href="http://www.nutrition21.com">www.nutrition21.com</a></td>
</tr>
<tr>
<td>61</td>
<td>PAT Vitamins</td>
<td><a href="http://www.patvitamins.com">www.patvitamins.com</a></td>
</tr>
<tr>
<td>13, 52-53, 77, IBC.</td>
<td>Sabinsa Corp.</td>
<td><a href="http://www.sabinsa.com">www.sabinsa.com</a></td>
</tr>
<tr>
<td>49</td>
<td>Specialty Enzymes &amp; Probiotics</td>
<td><a href="http://www.specialtyenzymes.com">www.specialtyenzymes.com</a></td>
</tr>
<tr>
<td>39</td>
<td>Stauber Ingredients</td>
<td><a href="http://www.stauberusa.com">www.stauberusa.com</a></td>
</tr>
<tr>
<td>23</td>
<td>Vesta Nutra</td>
<td><a href="http://www.vestaingredients.com">www.vestaingredients.com</a></td>
</tr>
<tr>
<td>6, 79</td>
<td>Vidya Herbs Inc.</td>
<td><a href="http://www.vidyaherbsusa.com">www.vidyaherbsusa.com</a></td>
</tr>
<tr>
<td>27</td>
<td>Virginia Dare</td>
<td><a href="http://www.virginiadare.com">www.virginiadare.com</a></td>
</tr>
</tbody>
</table>

Start discovering today!
NutritionalOutlook.com

Nutritional Outlook®’s website delivers comprehensive and insightful industry coverage of the ingredient research, business developments, regulations, and manufacturing techniques that are shaping the industry.

Stay up-to-date with the latest news, trends, elearning tools, and more!

TUMBLE BLENDERS
“V” & Double-Cone in Stock.
Sanitary. Many Sizes. Lowest Prices!
Scan to learn more.
Try our mobile app: mixers.com/web-app
1-800-243-ROSS
www.TumbleBlenders.com
CLEAN-LABEL CONFIDENCE

As shoppers demand more from clean-label products, innovative native starches make it easier for manufacturers not to sacrifice quality.

BY SEBASTIAN KRAWIEC, ASSOCIATE EDITOR

Consumers are reading product labels, and the less they can understand on the ingredient deck, the less likely they are to commit to purchasing. Attributes consumers easily understand as positive, for instance, are organic and non-GMO product certifications.

“Transparency is a powerful purchasing driver for consumers, with many actively seeking out products that promote sustainability, organic and natural ingredients, as well as clean and clearer labels,” says Steven Gumeny, product manager for rice ingredients, Beneo Inc. (Parsippany, NJ). “Now, more than ever before, consumers want to make ethical and healthier choices, and with one in two consumers looking at the ingredients list on products before buying, what goes into our food and drink has never been so important.”

Modified starches, which provide a lot of the functionality product manufacturers rely on to make a palatable product, can limit how appealing a product is to a consumer because modified starches lack the clean-label clarity consumers desire. Luckily, starch suppliers continue to develop more alternatives.

“In recent years, consumers have placed such an emphasis on ‘cleaner’-sounding and more familiar ingredients, it’s forced us as an industry to come up with solutions to meet their changing needs,” explains Shiva Elayedath, senior technical services manager for Cargill (Minneapolis, MN). “In the starch world, that’s meant finding alternatives to the modified starches we relied on to provide process tolerance for so many years.”

“Anything that seems ‘added’ or ‘artificial’ raises concerns,” adds Victoria Stencel, global category marketing director for Tate & Lyle (Chicago, IL). “On the other hand, consumers do not want to change their current lifestyle and are still looking for good-tasting and convenient products. This is where clean-label starches will satisfy consumers’ demand and also deliver the desired functionality necessary to maintain the quality of their foods.”

For example, says Elayedath, label-friendly starches are in especially high demand for convenient meal solutions such as shelf-stable and frozen foods. However, consumers won’t tolerate lower functionality. “The 2020 Tate & Lyle Consumer Perception study revealed that 65% of U.S. consumers are less likely to purchase frozen meals that develop ice crystals, and 62% are less likely to purchase sauces that develop water separation either before opening or after opening and refrigerating,” explains Stencel.

Functionality

Innovative new clean-label starches make it easier to provide these process tolerances. Tate & Lyle’s non-GMO tapioca starches—Claria Everlast 565, 575, and 585, for example—work well in extreme process tolerance conditions such as multiple freeze-thaw cycles. “These new products deliver superior shelf stability and much improved levels of process tolerance, mouthfeel, fluidity, and texture compared with common clean-label or native starches,” says Stencel. “They provide some unique formulation benefits such as a translucent color and soft, gel-like texture that is especially appealing in certain applications such as dairy desserts and certain convenient foods such as frozen foods.”

Cargill’s recently launched SimPure waxy corn starches also provide excellent freeze-thaw stability as well as high performance when subjected to intense heat and shear conditions. Other botanical sources provide different attributes. “We have label-friendly potato starches that work well in applications like alternative meats, where their strong water-binding properties enable firm texture,” says Elayedath. “The current portfolio includes five starch products, from a growing list of botanical sources. This diversity enables us to offer starch solutions with a range of functionalities, from creamy textures in yogurts to process tolerance in retort to juiciness in meat alternatives.”

Beneo offers a variety of native rice starches. “Gluten-free baking and meat/poultry are two of the areas with the highest demand for clean-label starch. Standard native rice starches, of both waxy and non-waxy varieties, work very well in these applications,” explains Gumeny. “For areas that require higher process tolerance, like soup, sauces, and dressings, a functional native rice starch is the best fit.”

For example, native rice starch, says Gumeny, can improve the crumb structure of gluten-free baked bread for a lighter, less-cake-like product, as well as act as a fat replacer to create an indulgent, creamy, and/or spreadable texture. Functional native starches can add texture and viscosity, endure a high-shear mixer, and have good freeze-thaw stability. Newest to Beneo’s portfolio is Remyline O AX DR, an organic waxy rice starch, which improves viscosity of organic fruit fillings and can be used for texture improvement in organic, gluten-free bars and cookies.
LactoSpore® MTCC 5856 (*Bacillus coagulans*) can be added in a variety of foods and beverages ranging from baked goods to milk products, jams and jellies, gelatins and puddings, soups, snacks, candy, sugar, non-alcoholic beverages and even instant tea and coffee. Stable at room temperatures and tested in high heat conditions. Now with clinical studies which shows a healthy balance of natural microflora in the gastrointestinal tract, helping the body’s natural defenses to effectively combat stress and imbalances.*

*Sabinsa Corporation* | NJ: 732.777.1111 | UT: 801.465.8400 | sabinsa.com | info@sabinsa.com | Since 1988

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, mitigate or prevent any disease.
Protect What Matters
Clinically Mastered Probiotic Solutions From DuPont

Featuring our signature strain
*Bifidobacterium lactis Bl-04®
for immune health support

**High Performance**
We boast more than 100 years of probiotic experience with over 600 scientific publications on probiotics.

**High Stability**
Our products utilize efficient fermentation & concentration drying processes and patent-protected stability technology, which ensures perfectly active probiotics in optimal forms.

**High Functionality**
Our products are formulated with only the best probiotic strains and combinations to ensure your product delivers the results you desire.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

DuPont™, the DuPont Oval log, and all trademarks and service marks denoted with ™, SM or ® are owned by affiliates of DuPont de Nemours, Inc. unless otherwise noted. © 2020 DuPont. **Based on an IQVIA ProVoice® survey of Primary Care Physicians who preferred HOWARU® B. lactis Bl-04® for Respiratory Health after review of select clinical studies; December 2018. This claim cannot be used without a trademark licensing agreement from DuPont or its affiliates.

howaru.com