Also: People-to-Watch Directory, p. 21

The year’s top industry leaders and ingredient suppliers/service providers, p. 13

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Nutritional Outlook
The manufacturer’s resource for dietary supplements & healthy foods and beverages

BEST OF THE INDUSTRY 2017
The year’s top industry leaders and ingredient suppliers/service providers, p. 13
Ingestible skincare is going mainstream. And we’re helping it get there.

We’re proud to announce that our study, *Molecular Evidence That Oral Supplementation With Lycopene or Lutein Protects Human Skin Against Ultraviolet Radiation*, which was conducted by the Leibniz Research Institute for Environmental Medicine and recently published in the British Journal of Dermatology, won the 2017 NutraIngredients Award in the University Research Category.

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Each December as Nutritional Outlook celebrates its Best of the Industry Awards, those of us here at the magazine take a moment to pause and review the nutraceuticals industry’s most impressive achievements over the past year. After reviewing an extensive list of nominees this year, we selected four industry members whose achievements in 2017 deserve special recognition. Each of these winners is excellent for a different reason. Each has a different area of expertise, and all are helping to advance the state of the industry.

Take the American Herbal Products Association. This year, the association rolled out an extensive, hands-on best-practices assessment tool designed to touch all cogs of the herbal industry, from growing and harvesting to manufacturing. If industry embraces this tool as it should, the result will be tightened quality control, transparency, and accountability up and down the botanical supply chain.

Then there are the suppliers who are helping to take their specialty ingredients to new heights. First, we recognize Lycored, whose innovative consumer marketing campaign for its Lycoderm lycopene nutricosmetic is helping to raise consumer awareness of the overall notion of supplementing for beauty from within. Lycored’s extensive consumer education efforts not only benefit the company itself, but also the industry at large.

We also recognize Brassica, a company that has spent the past two decades educating industry about broccoli glucoraphanin. Now celebrating its 20th anniversary, the company is still finding new ways to innovate around its proprietary glucoraphanin ingredient, TrueBroc.

Finally, we turn to the future with Bühler Insect Technology, a joint venture between European firms Bühler and Protix. Bühler Insect Technology has a singular goal: to commercialize the production of insect-protein ingredients for human and animal nutrition. With the need for alternative protein solutions at an all-time high, the hope is that Bühler Insect Technology can show the rest of the world how to make insect protein a broadscale commodity.

Please join me in congratulating our 2017 Best of Industry winners!

Jennifer Grebow
Editor-in-Chief
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FEATURES

13 Best of the Industry
21 People-to-Watch Directory
26 Sustainability: Ugly Foods
32 Marine Sustainability
36 Clean-Label Starch
46 Functional Coffee

COLUMNS

4 From the Editor
8 News
10 Marketing: Beverages
54 Research Update
56 Advertiser Index/Classified
58 Last Bite
Dietary Supplement Industry Associations Join U.S. Anti-Doping Agency to Warn Consumers about Adulterated Sports Nutrition Ingredients

The American Herbal Products Association (Silver Spring, MD), the Consumer Healthcare Products Association (Washington, DC), the Council for Responsible Nutrition (Washington, DC), the Natural Products Association (Washington, DC), and the United Natural Products Alliance (Salt Lake City) joined forces with the U.S. Anti-Doping Agency (USADA) to combat the unlawful manufacturing of bodybuilding products containing illegal and dangerous ingredients known as selective androgen receptor modulators (SARMs). The associations, along with USADA, said they support FDA’s recent efforts to crack down on the unlawful manufacturing and distribution of illegal bodybuilding products containing these ingredients.

As Nutritional Outlook reported in April, the challenge of sports-supplement adulteration has seen significant improvement since the passage of the Designer Anabolic Steroid Control Act of 2014 (DASCA). DASCA named many anabolic steroids as well as drug-like derivatives as illegal to sell and possess as dietary supplements or over-the-counter products; however, since DASCA’s passing, many other metabolic agents, including SARMs, have found their way onto the market. Products containing SARMs are, in some instances, being illegally marketed as dietary supplements although they are in fact unapproved drugs that the trade associations say “have not been reviewed by the FDA for safety and effectiveness.”

According to the associations, SARMs are highly dangerous, and “have the potential to be misused for athletic performance enhancement due to their anabolic properties and their ability to stimulate androgen receptors in muscle and bone.”

Furthermore, SARMs are not approved for human use or consumption in the United States under the S1 Anabolic Agent category of the World Anti-Doping Agency (WADA) Prohibited List. Thus, FDA, USADA, and the dietary supplement industry are focusing efforts on rooting out adulterated products containing SARMs, sometimes listed as “Ostarine” on product labels. Ostarine, the organizations note, is one ingredient that falls within the SARMs ingredient category, though the ingredients may also appear on labels under alternative names or be entirely undisclosed.

The supplement industry organizations have taken steps to ensure that products containing SARMs are located and removed from the market. Specifically, the associations have alerted consumers to the dangers of using products containing SARMs. They have also “taken action to remind member companies of the responsibility to ensure that SARMs are not used in their products.” USADA, for its part, issues ongoing educational resources to inform athletes and sports organizations of the negative consequences of using products that contain SARMs, which include sanctions and suspension.

FDA believes it is highly important that consumers educate themselves about SARMs-tainted products. While there are many legitimate sports nutrition supplements that are safe and beneficial, it says, consumers should be wary of any product claiming to have drug-like effects.

There is a lot at stake for companies that manufacture and distribute these illegal products. FDA states that companies that fail to comply with the law regarding products containing SARMs are subject to strict enforcement actions.
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Wet Your Whistle

Healthy soft drink choices see less sugar and more coconut and kombucha.

BY INNOVA MARKET INSIGHTS

Health continues to be a key area of interest in the soft drinks market, with nearly 63% of global launches recorded by Innova Market Insights in the 12 months to the end of June 2017 carrying a health claim of some kind. This figure rises to nearly 74% in the United States, where an interest in health has long been a feature in product choices.

Within the fairly fragmented soft drinks market, the use of health positionings varies by sub-category. Some 90% of flavored bottled water and 100% for energy drink launches had a health claim, while a still substantial 50+% of carbonates did so.

Oh, So Sweet

Juice/juice drinks was the leading soft drinks sub-category in terms of overall launch activity, representing nearly 30% of the U.S. total. These beverages inherently carry a fairly healthy image, with more than three-quarters of launches having health claims. Nonetheless, the juice/juice drinks sub-category has been facing falling sales as concerns over sugar content rise.

The launch of lower-sugar options into the sub-category has been an area of particular interest, but is limited to non-100% juice products. The use of sugar-free, no-added-sugar, and low-sugar positionings were featured in 32% of U.S. juice drink launches in the 12 months to the end of June 2017.

The use of stevia as a natural sweetener has had a relatively high profile in recent years, with soft drinks being a major application area. The use of stevia by some of the world’s leading carbonate brands, such as Coca-Cola with Coca-Cola Life, has been the subject of much publicity, though the use of stevia in this category has not really taken off as one might have been expected.

Stevia was featured in just over 9% of U.S. soft drink launches in the 12 months to the end of June 2017, with the most common applications being drink concentrates and mixes, flavored bottled water, and juice/juice drinks. Drink concentrates and mixes led the pack, accounting for one-quarter of U.S. soft drinks launches featuring stevia in 2016, ahead of flavored bottled water with 21%, juices/juice drinks with 20%, and iced tea with 13%.

Tea Time

The iced tea market is relatively established in the United States, but it is still seeing good growth overall, boosted by a natural and healthy image, with some consumers now switching from carbonates.

The added convenience of ready-to-drink teas has driven the sub-category forward at the expense of more traditional bag and loose-leaf teas.

Not only do convenient ready-to-drink teas come in several varieties outside of just black and green (e.g., white, red, oolong, and numerous herbal and botanical options), but they are also available in a range of hybrid products that feature juices and fruit flavors, as well as in newer sectors such as sparkling teas, tea lattes, and coffee–tea blends. Japanese-style green matcha tea is also growing in popularity, both alone and as an ingredient in other products.

Another key growth area has been the rising availability of kombucha products. Although the fermented, lightly effervescent
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black or green tea drinks have been available in the United States for some years, interest in functional beverages has moved them from the specialty sector further into the mainstream.

Over 20% of iced tea launches in the 12 months to the end of June 2017 featured kombucha in several flavors and formats, with numbers up by nearly two-thirds over the previous year, although still from a relatively small base.

A review of product activity indicates the high penetration level of organic kombucha options, with launches in recent months including organic kombucha from Wild Tonic (Cottonwood, AZ) and Simple Truth (Cincinnati, OH). Kombucha is also being blended with ingredients outside the tea market, as illustrated by the range of kombucha and kefir beverages from One Breath Beverage (Hood River, OR).

Water, Water Everywhere
Activity in plant-based waters has been rising in line with interest in plant-based diets overall, with U.S. launches nearly tripling over a five-year period. Actual numbers remain relatively modest, but they have overtaken energy drinks and trail just behind unflavored bottled water. They have a strong health image, with over 80% of launches in the 12 months to the end of June 2017 carrying a health claim of some kind.

The sub-category is currently dominated by coconut water, which has seen rising levels of use in recent years in non-traditional markets, particularly in North America. It is featured in nearly 70% of the plant-based waters launched in the United States, with a growing variety of flavors and added ingredients, including coffee, tea and cocoa, as well as a range of fruit juices.

Meanwhile, other newly launched plant-based waters feature a range of ingredients, including aloe, almond, and chlorophyll. The Chlorophyll Water range from Verday (New York, NY) was extended in 2017 with a new blueberry variety. Like the others in the range, it is zero calorie, sweetener and preservative free, and positioned on gluten-free, non-GMO, paleo and vegan-friendly platforms.

Health continues to be an overall issue, but other factors also influence choice and are driving product development, including convenience, novelty, hydration, refreshment, and indulgence. With this background, new product activity is likely to continue apace, as companies look for something new not only to add value and profitability to their existing ranges, but also to differentiate their products from the competition.

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_Nutritional Outlook’s_ readers and editors highlight these four winners for their standout achievements in 2017.
Consensus seems in short supply everywhere except at the Silver Spring, MD, headquarters of the American Herbal Products Association (AHPA), a national trade group for the herbal products industry. AHPA’s harmony is noteworthy given the group’s membership of several hundred companies representing domestic and foreign growers, processors, manufacturers and marketers of herbal and botanical products.

Exhibit A: AHPA united members in 2006 when it crafted a comprehensive Good Agricultural and Collection Practices and Good Manufacturing Practices for Botanical Materials (GACP-GMP) guidance document; AHPA did so again mid-2016 when it updated the document amidst the fallout from the New York attorney general’s 2015 investigation into the supplement industry.

AHPA brought its membership together again in August when it translated the industry standards spelled out in the GACP-GMP guidance into a suite of assessment tools for measuring and documenting progress against them. The free tools, available for download on AHPA’s website, serve as an on-the-ground, in-the-field embodiment of botanical and herbal best practices. Just as important, the group gives companies actionable steps for living up to those values.

Within the 101-page document are checklists targeting nine areas germane to the herbal and botanical industry: 1) botanical identity and quality assessment, 2) cultivation, 3) wild collection, 4) farm standards, 5) harvest, 6) post-harvest handling, 7) processing, 8) food facility and farm facility practices and, finally, 9) an assessment tool for dietary ingredient suppliers. Operators can use them to guide and assess their procedures relative to the consensus standards.

The assessment tools also serve parties outside the herbal and botanical industry that use botanicals in their brands. Companies can consider completion of the checklists as non-negotiable for suppliers hoping to earn their business. As Jane Wilson, AHPA’s director of program development, says, “What we’re hoping is that everyone recognizes that for a given function—say, cultivation—there’s a recognized set of best practices independent of what form you’re filling out to document those practices...As long as you’re doing those practices, it helps facilitate those interactions up the supply chain.”

AHPA made the assessments open-source (i.e., editable Word documents that users can tailor to their needs). Wilson says the assessments are a living document: “We’re still getting feedback, and we’ll definitely take it into advisement and periodically update the assessments with changes as we get more information about how people are using them.” She sees the assessments as a two-way conversation, where industry members can suggest additional practices for inclusion.

These assessments are hardly the only thing AHPA is working on. In May 2017, the group released a white paper on Good Herbal Compounding and Dispensing Practices that provides basic GMP guidance for traditional Chinese medicine, herbalist, Ayurvedic, and alternative medicine clinics that compound and dispense herbal mixtures. AHPA is also generating templates and forms to support documentation of these guidelines.

Even more recently, AHPA updated its California Proposition 65 guidance to bring the industry up to speed on potential legal liabilities related to substances that naturally occur in some herbal and botanical products sold in the Golden State.

AHPA’s building consensus among its members and providing tools to collectively keep their operations on the up and up is essential for the good of the industry and for ensuring that consumers have access to the quality products they seek.
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Much has been said about the ever-growing “beauty-from-within” supplements market. Still, nutricosmetics just aren’t as popular in the United States as they are in many Asian and European countries. While the need to raise consumer awareness about the benefits of beauty-from-within supplements is clear, many companies haven’t engaged in this sort of education.

Lycopene ingredients specialist Lycored (Be’er Sheva, Israel), meanwhile, has been making serious inroads to increasing consumer awareness about the beauty-from-within category. Lycored’s “Letters of Love” tour, #rethinkbeautiful social media campaign, and consumer survey and education efforts offer bold and innovative marketing strategies that don’t seek solely to promote its skin-health carotenoid ingredient, Lycoderm, but rather to emphasize that beauty and wellness are inextricably linked.

“The global skincare market is in the midst of a revolution,” Zev Ziegler, head of global brand and marketing, health, Lycored, says. “There has been a major shift from appearance to health, and from outside to inside. Consumers...understand that beauty comes from within, and that healthy skin is about what you put into your body.”

He adds that Lycored’s consumer research reveals “high awareness” about the role proper nutrition plays in skincare, with consumers under 35, in particular, “increasingly recognizing the benefits of supplementation for healthy, resilient skin.”

In February, Lycored launched its Letters of Love tour at the Sundance Film Festival in Park City, UT. The mission was simple: to showcase its Lycoderm nutricosmetic ingredient while also highlighting the importance of beauty from within—both body and soul. Ziegler says Lycored wanted “to inspire consumers to love themselves the way they love others, and to show them that beauty blossoms everywhere they look—even within themselves.”

At the festival, attendees were invited to compose love letters to themselves. Lycored then mailed participants’ postcards back to them on a date kept secret from the writer in the hopes that re-reading kind words would bring back those positive feelings. Ziegler says the campaign was so successful, it drew attention from the likes of actors Charlize Theron and Jack Black.

He reports that Lycored saw a 288% growth in digital Letters of Love over the previous month, as well as a whopping 688% increase in views of its online “Love is Beautiful” video, in which regular people were asked what they love about themselves. All told, Ziegler says, 5,900 postcards were written over the course of the Letters of Love tour across seven states.

Lycored has been just as tenacious in its online consumer outreach about beauty-from-within. #Rethinkbeautiful is Lycored’s social media hashtag campaign, which like the Letters of Love project, is intended to get consumers to “rethink beautiful” as something that comes from within. In addition, its interactive educational hub, Lycopedia, “tells the narrative journey of Lycopene and its effect on the body during different stages of life.” In creating the Lycopedia, Ziegler says, “our team’s hope is that it will act as a timeless resource that showcases the incredible health benefits of lycopene, the red-hued tomato-derived carotenoid used in food and beverage and oral supplementation.”

While Lycored may be a pioneer in helping shoppers understand the ingestible beauty category, Ziegler says, “We’re not alone in believing that beauty comes from within. The ingestible skincare category is set to go mainstream with two-thirds of consumers we questioned stating that eating and drinking their way to beautiful skin is normal.”

What’s next for Lycored in 2018? “As ingestible skincare becomes increasingly mainstream, our ‘beauty-from-within’ message is resonating even more strongly,” Ziegler says. “We will continue our #rethinkbeautiful movement to help everyone define what makes them look and feel their best for themselves.” Lycored has planted the seeds for a fruitful year indeed.
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Tony Talalay never expected to join the family business. But when he got a call from his father—the esteemed Paul Talalay, MD, professor in the department of pharmacology and molecular sciences at Johns Hopkins Medicine; pioneering cancer chemoprotection researcher—Talalay the younger was given an offer he couldn’t refuse. Not long before, his father had published foundational research with Jed W. Fahey, ScD, MS, on the capacity of a phytochemical (i.e., glucoraphanin, [GR]) found in Brassica vegetables to trigger the phase-2 detoxification enzyme system that boosts levels of protective compounds in cells. When Drs. Talalay and Fahey realized that by fine-tuning the seed supply, they could grow broccoli sprouts “with high levels of this compound as a very consistent delivery system,” Talalay explains, they knew they had a viable business idea on their hands.

Talalay, whose background is in grocery and consumer marketing, was working at a San Francisco ad agency at the time. “Maybe you can help us figure out how to get some money for our research. You went to business school. Why don’t you write me a business plan?” Talalay recalls his father saying.

Thus, the seed of Brassica Protection Products (Baltimore) was planted, and 20 years later, Tony is its CEO. Dr. Talalay is still at Johns Hopkins, and the company has transitioned from supplying GR-rich fresh sprouts at retail to extracting GR and marketing it as TrueBroc, an ingredient for health-and-wellness and functional food brands.

The company basically put commercial GR extracts on the map. “We were probably the first to market a vegetable with a specific amount of a phytochemical in it,” Talalay says of the sprouts, and of the company’s move toward shelf-stable extracts. He muses, “We harnessed nature to produce something that we know is good for people.”

Their process is targeted and unique. “We grow a very specific type of broccoli seed in fields,” Talalay explains, which was developed using conventional breeding. Following harvest, the company uses a water-based extraction process. “By controlling all those elements,” Talalay says, “we can say that this gram of off-white powder that is TrueBroc came from this field and has this much GR content and so forth.”

Drs. Talalay and Fahey didn’t “discover a function of nature,” Talalay says, “but they did identify and quantify it...we spend an enormous amount of time testing to ensure that we’re delivering valuable compounds.”

No wonder the American Botanical Council (Austin, TX) gave Brassica its 2016 Varro E. Tyler award. Its anniversary year also saw Brassica’s entry into the Council for Responsible Nutrition (Washington, DC), the approval of TrueBroc as a novel food in China, and continued buzz about GR-fortified Brassica Coffee (with 15 mg of GR per K-Cup) which the company launched in 2016.

Future initiatives are planned in three areas, Talalay says. The first is continuously improving its signature product vis-à-vis GR concentration. “That involves growing better plants,” he notes, which they aim to do using conventional breeding. (Read: no GMOs.)

They also hope to introduce a stabilized myrosinase with standardized activity that they can pair with the GR extract. And, they’re conducting clinical “three-arm studies” to demonstrate how combinations of TrueBroc with other bioactives can yield synergistic health benefits.

Another critical task is to spread the world about GR, which Talalay feels should attract as much attention as higher-profile ingredients like polyphenols, omega-3s, lycopene, and lutein.

In light of it all, Dad must be proud. Says Talalay, “We’ve done something that I don’t think he thought we could do, which is get this out to the public. I feel a huge responsibility to the family, to Johns Hopkins, and to him that whatever we do is of the highest possible quality.”

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.
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With the global population set to reach 9.8 billion by the year 2050, and land and water resources already strained, the issue of protein supply is likely to become a major concern for consumers and suppliers alike. One alternative protein source that has the potential to provide for the long haul is insect protein. Insects—both as human food and livestock feed—have long been a staple in many countries, but here in the United States, insects are still largely the province of adventurous travelers and experimental foodies. That may soon be changing.

In January, food- and feed-ingredients supplier Bühler (Uzwil, Switzerland) and insect-ingredients producer Protix Ingredients, partnered to create Bühler Insect Technology Solutions (Liyang, China), a joint venture that aims to address the looming protein-supply problem. In June, the company announced plans to build its first industrial-scale insect-processing plant in the Netherlands. Currently, its focus is on the larvae of the black soldier fly “because it grows quickly, has a short development cycle, is able to recycle protein from a large variety of feedstocks, and is relatively easy to rear in large numbers,” says Andreas Aepli, CEO, Bühler Insect Technology Solutions. He adds that the company’s R&D department is also looking at other potential insect sources that can efficiently develop protein and other nutrients and that are “suitable for mass rearing.” The plant is projected to be the largest industrial insect-processing plant in Europe.

Aepli says that the investment shows that the company is committed to tackling sustainable insect-protein production and raising awareness about the benefits of insect protein. He explains: “On the feed side, we are actively promoting insects both as a new protein source and as an option to valorize side streams to our clients, both through information as well as trials.”

Regarding insects as food, he says, “the largest impact can be made by companies focusing on the development and marketing of attractive insect products.” Aepli points to protein bars and pasta as prime product categories in which to integrate insect proteins. “We are in touch with many of these companies and try to support their efforts from a producer's point of view,” he adds.

What it comes down to, in the end, is the not-so-simple issue of supply and demand. “In order to feed nine billion people by 2050,” Aepli says, “we need to increase our total protein production by about 50%, which cannot be accomplished with our existing food and agricultural resources.” According to Aepli, this means one of two things that most of the world’s population will need to embrace a vegetarian lifestyle—and fast—or, that we need to find alternative protein sources. “Insects,” Aepli explains, “specifically the ones we focus on, need the least amount of water, energy, and space to produce animal proteins. In addition, they can also help recycle a lot of the organic byproducts that today are put in landfills, burned, or otherwise turned into little value.”

The benefits of a six-legged protein supply don’t end there, says Aepli. Beyond being a high-quality source of protein for humans, they can also be used in animal feed. This is an especially promising category for introducing the concept of insects as protein while the idea of eating insects marinates among consumers.

“While directly eating insects may be the more sustainable option in the long term,” Aepli says, “it will take more time until customers have gotten used to and like this new food source.” Feed, meanwhile, has two advantages: first, it’s a bigger market, accounting for 60% of primary proteins. Second, he says, “insect protein meal and oils can replace existing ingredients such as fish meal and coconut oil in feed formulations with little adjustments, making adoption a lot more likely.”

For now, the company is focused on scaling up and establishing a network of partners and a fully functioning supply chain, Aepli says. Ultimately, he adds, the goal is “to make insect-producing technology available for all companies that can benefit from it...rolling out 30 or more plants per year—that’s the number required if we want to make an impact in our food system and realize the potential that insects hold.”
Nutritional Outlook’s

People-to-Watch Directory

A Who’s Who of the natural products industry
Since its launch in 2009, Elite Ingredients has managed to implement essential improvements necessary in improving business concepts in the Nutraceutical Industry. Lorraine Aboughanam, Vice President of Sales and Marketing, is the key component in the company's successful growth. Research and Development are continually obtaining exclusive distribution rights for elusive international raw materials. Lorraine and her team perform multiple quality-assurance checks to ensure optimal customer satisfaction. Elite Ingredients continues to build its reputation of excellence through attention to detail and consistent product analysis. They believe the best approach to a successful operation is customer satisfaction and optimal quality at the best value in the current market. Company standards and strategies are consistently updated, ensuring smooth and expedient services in step with current market trends. Elite Ingredients has recently expanded its customer base to include a greater scope of products offering more Organic as well as Conventional Ingredients. They are proud to announce that Elite Ingredients has received their Organic Certification through CCOF in July 2017. They are very excited to be offering a wide array of over 2,500 Organic Products including Organic Fruit and Vegetable Powders, Organic Herbal Powders, Liquids and Extracts, Organic Oils, Organic Flavors, Organic Spices, and Organic Instant Coffees and Teas. In addition to being the Vice President of Sales and Marketing, Lorraine has extended her services to a new demographic as a consultant for finished products. Her expertise and proficiency has been recognized by companies around the world. Lorraine Aboughanam and Elite Ingredients strive to raise the bar in the industry year after year with an overall increase of yearly production and sales by over 200%.

www.elite-ingredients.com

Anurag completed his M.Sc in organic chemistry from Lucknow University. He joined the National Botanical Research Institute, a CSIR institute, as a research fellow and completed his PhD from RML Awadh University. His research interest is related to traditional Indian medicinal plants and their antioxidant and nutraceutical potential. After completing his PhD, Anurag joined the Sami Labs’ Sabinsa group as a research scientist in 2004 and worked at a research facility at Sami Labs, Bangalore, on various nutritional and cosmeceutical projects. He later joined the technical support group at Sami Labs responsible for providing interface between R&D and various Sabinsa marketing offices located globally. After a brief stint at Sabinsa Europe GmbH, where he was exposed to the European market, in 2007 he joined Sabinsa Japan Corp., Tokyo, as senior manager, technical affairs, and was responsible for handling the technical and regulatory requirements of the Japanese as well as Korean markets. In 2011, he joined Sabinsa Corp., New Jersey, as vice president, scientific affairs, and explores new product concepts as well as technical and regulatory matters related to the U.S. and Canadian markets. He has been a speaker at various internationally held conferences, such as the Sustainable Cosmetics Summit, the SupplySide Science Tour, FI Korea, HBA, and the CME group of the American Chemical Society. He is passionate about Sabinsa products and loves to talk to R&D and product development groups about the innovation and science behind the products.

www.sabinsa.com

Steve Holtby has been involved in the natural products industry for over 21 years. In August 2008, Steve took over the role of President and CEO for Soft Gel Technologies, Inc. (SGTI). He formerly held the position of National Sales Director for SGTI and Vice President of Sales of OptiPure. Steve has been with the company since 1998.

Prior to joining Soft Gel Technologies, Steve worked in Marketing as a Brand Manager for Nature’s Way. While there, he oversaw the introduction of their vitamin line. The Nature’s Way vitamin line was the first entire line of products in the natural products marketplace to carry the newly introduced structure/function claims and was a bold entry into that segment for the company that had previously focused on the herbal segment of the market.
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Curtis Whetten, Senior Vice President of Sales
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Curtis Whetten is a highly driven, performance-focused executive with proven expertise in cultivating mutually beneficial relationships with food companies around the globe. Currently, he serves as the Senior Vice President of Sales at Mount Franklin Nutritionals, where he applies his 15 years of experience in mogul production to the company’s gummy nutraceutical and nutritional products. Leveraging his deep experience in the co-manufacturing and private label worlds, Curtis provides innovative solutions for customers in the rapidly growing nutritionals industry. Curtis holds a Bachelor of Arts degree in International Trade with a Business Management and Spanish double minor, a Master’s Degree in Business Administration and is fluent in both English and Spanish.

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Louis Pallay, President
PallayPack • Montreal, QC, Canada

Louis Pallay is the founder of PallayPack and the current President. Louis brings more than 37 years of experience to the packaging machinery industry where he started his career at Kalish in 1980 and then opened PallayPack in 2001. Louis’s success is due to his commitment to customer service, which is built into all of his products, from concept, design, fabrication and programming. Everything is focused on machinery, which is easier to integrate, operate, change over and service. With the PallayPack freeze dryers built by Tofflon, Louis believes customers now have access to an economical line of freeze dryers that provide the highest quality output in the shortest cycle time. Tofflon has more experience than any other manufacturer with loading and unloading systems and their quality is excellent. They also offer turnkey installations of complete freeze drying processing systems, which Louis believes offer the market unique value.

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Tomo Kirimoto, General Manager/ VP of Operations and QA
Soft Gel Technologies, Inc. • Los Angeles, CA

Tomo Kirimoto was hired at Soft Gel Technologies, Inc. as assistant plant manager in 2001. Prior to joining Soft Gel, Tomo worked at its parent company, Japan-based Kenko Corporation. Tomo now serves as the General Manager and the Vice President of Operations and QA. He is responsible for quality control in the plant as well as overseeing engineering improvements of the factory and machinery. He is also in charge of all aspects of plant management, including overseeing the mechanical facilities and improving the efficiency of the plant. Tomo graduated from the Tokyo Institute of Technology and has a master’s degree in Material Science. He is an avid golfer and enjoys spending time with his wife and two children.

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*Changing the Way you see Nutrition*
The Beauty of Ugly Food

"Ugly" ingredients look better every day.

BY KIMBERLY J. DECKER

One person’s trash is another’s treasure. And, what’s gaining increasing attention is the shockingly large amount of the edible treasures many people simply toss out because of a small blemish or bruise.

Squandered riches are rampant at cafeterias, supermarket, and restaurants. Expand the loss to a global scale and add the waste generated on farms, in manufacturing, and elsewhere, and you wind up with a sustainability situation that’s downright shameful. Why? In a world where roughly 870 million people don’t have enough to eat, we lose or waste approximately 1.3 tons, or $1 trillion worth, of food each year, according to the Food and Agriculture Organization of the United Nations (FAO). Recover just one-quarter of that waste, FAO says, and we could end global hunger.

Statistics like those have lit a fire under conscientious consumers, civic organizations, and even corporations. In an effort to take a bite out of food waste, there is now a legitimate market for “ugly”—or otherwise castoff, undesirable or presumably useless—ingredients. Misshapen produce, spent grains, skins, scraps, hulls and shells have all found a home in food and beverage products that wear their imperfections on their sleeves—and proclaim them on their labels.
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We lose or waste approximately 1.3 tons, or $1 trillion worth, of food each year, according to the Food and Agriculture Organization of the United Nations.

But while it’s easy to see why ingredient suppliers might jump on this bandwagon—it lets them tap a previously unexplored revenue stream that would otherwise have gone out with the garbage—the upside for manufacturers that source and incorporate imperfect inputs into their finished products is a little less obvious. But brands are finding that upside nonetheless, and they’re learning that it benefits their product profiles and creates a more sustainable food system in the process.

Second-String Spuds

The paths brands take toward embracing ugly ingredients vary—and not all are shaped, at least initially, by sustainable sympathies.

One example is Dieffenbach’s Potato Chips (Womelsdorf, PA), which crafts its Uglies brand of kettle-cooked chips from “rejected potatoes with minor imperfections,” per package copy. The company started when founder Mark Dieffenbach would store his own chipping potatoes and noticed that “when it was time to run them, there was always some quantity that was ‘ugly,’” explains Mike Marlowe, the company’s chief operating officer.

Dieffenbach would thus sequester these B-team taters from the first-quality run and eventually created an entire product line dedicated to using the “seconds.” Today’s Uglies brand is “really the next generation of that product,” Marlowe says, “just on a much higher scale.”

Marlowe emphasizes that notwithstanding the potatoes’ cosmetic defects, all the ingredients in the formulation—the potatoes, oil, seasonings, and so forth—are “first-notch, clean ingredients,” and that the company is just as assiduous in ensuring the safety and quality of Uglies as it is in monitoring those of all the other products it makes.

So, the only difference is the starting spud—and the contribution to sustainability that the whole project makes. About that contribution, Marlowe notes, “Dieffenbach’s works hard to reduce waste throughout the entire process and, in fact, all potato waste, including the water used to clean the potatoes, goes back to the agriculture communities near the plants we operate.” Also, the company sees what it does as an opportunity “to give back” beyond pure sustainability. As Marlowe says, “We’ve committed to giving a portion of profits to fight hunger.”

Reject Revolution

The benefits accrue to the potato farmers supplying Dieffenbach’s, too. Marlowe notes that the partnership saves the farmers money they might otherwise have plowed back into the ground with the rejected potatoes—or perhaps would’ve lost if they’d had to sell their harvest “for other uses that wouldn’t provide as a good a return.”

This opportunity to support local farmers is yet another way the reject revolution is winning hearts, minds, and stomachs. As Jeff Rubenstein, chief marketing officer, WTRMLN WTR (Denver, CO), says, “By using ugly fruit, we’ve been able to provide a new revenue stream to our farmers while reducing food waste that continues to challenge our planet.”

That’s because WTRMLN WTR made a name for itself by leveraging a part of the watermelon that normally goes unconsumed—the rind—as the foundation for a healthful fruit water. As Rubenstein explains, cofounders Harlan Berger and Jody Levy originally got into the fruit-water business after tasting watermelon water and falling in love with the mission of helping reduce food waste. Their natural curiosity and business instincts
piqued, Levy started researching the health benefits of watermelon flesh and rind, as well as the technological nuts-and-bolts of building a beverage business. Berger, meanwhile, looked into the watermelon supply chain and “started to understand the gravity of our country’s food waste problem,” says Rubenstein. “Hundreds of millions of pounds of watermelons were wasted each year in the United States alone.”

Their model made it possible “to manufacture our favorite beverage using ugly melons,” Rubenstein continues. “Ours could be fruits with an irregular shape, sunburned skin, subtle discoloration or some other cosmetic imperfection that would send them prematurely into a compost heap.” With their advocacy of ugly fruit a perfect fit for their business model and mission to run a sustainable business, Rubenstein says, “There was no turning back.”

TLC

Fully understanding “ugly fruit” has been a learning experience for WTRMLN WTR and for its patrons. Notes Rubenstein, “Of course, we’ve had to educate consumers about the problems with superficial selection practices and have had to call attention to the benefits of eating more of the rind.”

But just as important has been their engagement with their farmer partners, with whom Rubenstein says the company had to consult “about how to handle ugly fruit for it to be useful for our purpose.” To keep its product “delicious and hydrating,” he adds, “We don’t use produce that’s been punctured or opened in any way. So, we needed farmers to be even gentler with ugly fruits that were previously tossed aside.”

The farmers’ response? “They understood immediately and agreed to give our ugly produce more special treatment, refrigeration and tender love and care,” Rubenstein says. As for the payoff, “Our relationships with farmers have only improved over time because they’re truly sympathetic.”

Taste Still Matters

Such relationships undergird the supply chains that keep this sector growing—and that sustain a steady market for ingredients at risk of becoming waste. The importance of this was hardly lost on the team at Sir Kensington’s (New York, NY), which makes, among other products, Fabanaise, “the first and only vegan mayo made with aquafaba,” according to the company website.

Aquafaba is the water left after cooking chickpeas. As Laura Villevieille, vice president of product at Sir Kensington’s, explains, “Aquafaba has been overlooked to the point of being a waste product until recently.” Chickpeas release starches and proteins as they cook that bind with the cooking water to create a substance that the Sir Kensington’s team suspected might make an excellent egg replacement.

And given that the company’s R&D team “had been experimenting with vegan mayos, but hadn’t found the right egg replacement,” Villevieille continues, “when a summer intern suggested aquafaba, we realized that the slightly savory, viscous ingredient was a perfect fit.”

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Soon enough, they found that the first iteration of their Fabanaise “was better than the 200 iterations we’d tried previously.”

With help from vinegar, lemon, seasonings, and 100% sunflower oil, the product has gained a foothold with consumers. But “as the first brand to bring a product using aquafaba to market,” Villevieille says, “we had to create the first-ever supply chain.” Any pioneering brand faces hurdles, she says, and theirs “required a lot of good faith on the part of our partners to grow with us in unexpected ways. Despite the challenges, aquafaba is worth the effort because it makes such a delicious vegan mayonnaise.”

And good thing, as product hedonics have been instrumental in its success. Upon the product’s launch, “most people—even our peers in the natural-food community—hadn’t yet heard about aquafaba,” explains Allison Marchesani, Sir Kensington’s marketing communications manager. First-year marketing efforts centered on defining the ingredient. Ultimately, though, “It’s been the combination of the ingredient story and the difference in taste and texture that’s resonated most with people getting to know the product,” she says.

After all, though Sir Kensington’s mission is “to bring integrity and charm to ordinary and overlooked food,” Villevieille says, they’ve learned that sustainability alone can’t seal a product’s long-term success. Rather, she says, it “must go hand-in-hand with our guiding product value: taste.” They’ve been able to give aquafaba a new lease on life “because the sustainable ingredient option aligned with the most delicious option.”

Diefenbach’s has had a similar experience. The bottom line, says Marlowe, is that regardless of Uglies’ appearance, when consumers “taste the product for the first time, they fall in love with it.” Although the starting potato “might look a little less favorable in its raw state, the finished product is simply a little darker—and let’s face it: many people like a slightly darker chip.” In fact, he adds, it seems some consumers expect a product “that’s perhaps a little uglier than we make sometimes.”

So, is this a going concern? If nothing else, Mother Nature will continue to supply the raw product. As Marlowe notes, “There appears to be a plentiful supply of ugly produce out there, and if there’s a viable market for farmers to sell them, they’re not likely going to focus on eliminating them.” Besides, who wouldn’t feel good about eating ugly? Says Marlowe, “Our ability to help the farmers who support our everyday business, and the fact that we can give back to the community by helping fight hunger, make this a product that everyone can get behind.”

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.

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In 2015, krill oil ingredients supplier Aker BioMarine (Oslo, Norway), together with scientists, the World Wildlife Fund (WWF), and the Antarctic and Southern Ocean Coalition (ASOC), founded the Antarctic Wildlife Research Fund (AWR). This fund is designed to facilitate and promote research on the Antarctic ecosystem. For Aker BioMarine, the initiative is a key way to ensure that the company’s krill oil business operates sustainably and responsibly while protecting the Antarctic ecosystem.

In October, the company announced that it is supporting AWR with an additional USD $1 million in funding over the next five years. “It is important for us to support krill-related research in order to protect the Antarctic krill biomass and its surrounding ecosystem,” said Matts Johansen, CEO, Aker BioMarine, in a press release announcing news of the funding. “We need to have the science and data available to make educated decisions on how to take the best care of the ecosystem in which we work to safeguard the future of the Antarctic fishery.”

Since its inception in 2015, AWR has funded numerous research projects, including three in 2017. One study, for instance, examined how the foraging behavior of humpback whales relates to krill catches in the Antarctic. Aker has helped to fund AWR since its inception. Other commercial supporters include dietary supplement firms such as Dr. Mercola, Blue BioTech International GmbH, Ridley Corp., BioMar, Floral, and Swisse Wellness.

Aker BioMarine and the Antarctic Wildlife Research Fund strengthen their mission to protect the Antarctic krill ecosystem.

BY JENNIFER GREBOW, EDITOR-IN-CHIEF

INVESTING IN THE ANTARCTIC

Nutritional Outlook recently spoke to Cilia Holmes Indahl, Aker BioMarine’s director of sustainability, about AWR’s near-term goals for the coming year.

Nutritional Outlook: What are the biggest challenges around krill sustainability today?

Cilia Holmes Indahl: Antarctic krill is an essential food source for many Antarctic wildlife species such as whales, seals, and penguins. It is, therefore, crucial that the krill biomass remain at a sustainable level to maintain the marine ecosystems balance. Krill has the largest biomass on earth, with 60.3 million metric tons of krill. While the quota of allowable catch is less than 1% of this biomass, in reality, less than 0.3% of the biomass is actually being fished. Krill harvesting is, therefore, [being] carried out at a responsible and sustainable level in respect to the Antarctic ecosystem.

Although the krill fishery is managed at sustainable levels today, it is important to continue research to better understand krill
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and the interlinkages between species in the Antarctic ecosystem. There are, for example, many potential challenges such as those imposed by global warming. There are insecurities about how climate change and its [rise of] ocean temperatures will affect the krill's behavior, movements, and reproduction. Continued Antarctic wildlife research, such as the research the Antarctic Wildlife Research (AWR) Fund is funding, is crucial to monitor these potential challenges.

What have been the AWR Fund's biggest accomplishments since it launched in February 2015?

Indahl: The AWR fund has already had many milestones in its two first years. Most importantly, the fund has granted funds to five research projects. Three of those research projects are coming to their end and have already given new, interesting knowledge about the wildlife in Antarctica.

To mention one example, Dr. Raouf Kilada and his research team developed a methodology to determine the age of krill based on studying krill's eyes. Whereas in the past, determining the krill's age was impossible, now, thanks to Kilada's research, krill fisheries can estimate the age of the krill and thus improve their knowledge of the biomass.

Another accomplishment is the wide range of support from commercial partners. The commercial partnerships are essential to fund the research and also to set an example and sustainability standard for companies who base their businesses on marine resources. It is part of their responsibility not only to harvest sustainably, but also to take care of the future of the ecosystem where their marine ingredients are harvested. Together with our customers, Aker BioMarine is proud to be leading the way on science-based sustainability and hopes that this will be the way forward—that all companies who depend on the biodiversity in the oceans contribute to research that ensures the health of the oceans.

We are also proud of and grateful for the continued support and good relationship we have with the World Wildlife Fund (WWF) and the Antarctic and Southern Ocean Coalition (ASOC), both founding partners of AWR and part of the AWR Board. It is very important for AWR to work in collaboration with environmental NGOs which have long experience with safeguarding the Antarctic ecosystem. We are also grateful to the Science Advisory Group that gives their input to the AWR on where we need more research and what research projects deserve funding. Having the scientists on board ensures a high level of credibility, and we are experiencing a very high quality in the project proposals that are submitted.

Working cross-sectoral and pairing responsible business with environmental NGOs and scientists is a new way of working in the Antarctic and has resulted in a bigger impact than if any of the actors would have taken the initiative on their own. When you are working toward solving global challenges and the United Nations Sustainable Development Goals (SDGs) as a company, working together with your key stakeholders are essential to moving things forward.

In 2017 specifically, what milestones or achievements has AWR seen?

Indahl: The third round of call for research proposals in 2017 was very successful, with eight proposals. This continued, strong in-
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Interest from researchers demonstrates that there is still a lot we do not know about the Antarctic ecosystem and confirms the relevance of AWR.

One recent and important milestone is the aforementioned renewed financial commitment from Aker BioMarine to AWR, which was announced at the EU’s Our Ocean Conference, to support AWR with USD $1 million over the next five years. The grant will further AWR’s work on promoting and facilitating research on the Antarctic ecosystem.

What are the biggest goals and areas of study for AWR for the rest of 2017 and going into 2018?

Indahl: Every invitation to apply for funds details the current priorities of the fund. The current priorities for the last call in 2017 can be found at www.antarcticfund.org/call-for-proposals-2017. We have not yet set the new priorities for the 2018 call; they will be launched when we open the fourth call for proposals in March 2018. The deadline for submitting research proposals is mid-June 2018. The board decides on research projects to receive grants in September.

Please describe how AWR and the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) continue to work together.

Indahl: AWR and CCAMLR have continuously been working closely since the fund’s creation in 2015. Already in the early creation process, AWR developed the Scientific Research Plan in collaboration with CCAMLR to ensure a high quality of research. This led to the first aim of the Scientific Research Plan, which was to “contribute to CCAMLR’s work on the development of a feedback management for the commercial fishery for Antarctic krill.”

How have the key learnings of AWR so far impacted the way that Aker BioMarine does business?

Indahl: Our principle has always been: the more we know, the better. Both the projects on how age of krill can be determined and how the humpback whales move during their forage area will impact how we operate. More importantly, it is the idea of bringing all the findings together so that we can better understand the interdependencies of the species in the Antarctic and have better estimates for both the biomass of krill and the needs of predator species.

Today, it [has been determined] that the species depending on krill as a food source require approximately 50% of the biomass. Today, the fishery harvest is 0.3% of the biomass, meaning that there is an excess amount to ensure the wellbeing of the ecosystem.

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Starches for food and drink are now available for clean label food and drink products.

By Maureen Kingsley

In the food and drink industry, “clean” ingredient labels continue to increase in desirability and demand. Indeed, “with 65% of consumers in the Americas considering natural products as ‘better’ and 47% actively looking for natural products when making food purchase decisions,” stated Marc-Etienne Denis, commercial managing director at BENEO-Remy (Belgium) in a recent press release, “clean-label and natural claims are becoming ever more important in the creation of food products.”

The term clean as it relates to food and drink ingredients can refer to various characteristics, including non-GMO, not chemically modified, recognizable, simple, minimally processed, natural, or organic. It may also point to gluten-free and/or vegetarian. A clean label is not a term defined or explicitly regulated by FDA, USDA, or local agriculture departments, so its interpretation remains fairly loose. Nonetheless, a clean label is often considered ingredients that consumers recognize, are likely to keep in their kitchen cupboards, are pronounceable, and are not perceived as artificial or chemically altered. The term can also signal transparency or sustainability.

One such food and drink ingredient whose recent evolution reflects the clean-label movement is starch—the versatile additive used to impart viscosity, stability, creaminess, texture, binding properties, pleasant mouthfeel, and more to foods ranging from frozen baked goods to powdered instant puddings to bottled salad dressings.

What Is “Clean-Label Starch”?

In the case of starch, to be clean-label friendly means it must be free from chemical modification. For instance, “modified corn starch” on a product’s ingredient list is not considered “clean,” but “corn starch,” “rice starch,” “tapioca starch,” “potato starch,” or some blend of these (and others) is considered clean. Consumers perceive chemical modification as undesirable, so clean-label starches are either native starches or starch blends, which may or may not be heat or moisture controlled. Physically modified starch is “clean,” while chemically modified starch is not.

Current Clean-Label Offerings

Interest in clean labeling has existed for a couple of decades, but there has been a significant uptick in the past two years.

To meet customer demand for clean-label-friendly starch, BENEO-Remy, for instance, developed Remypure, a native...
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Ingredient suppliers can produce a clean-label starch from most starch-yielding plant sources. “Some botanical sources of starch may be preferred in certain regions because the consumers there are inherently more familiar with them,” says Tate & Lyle’s technical manager for global ingredient technology Rachel Wickland, PhD. “For example, in the United States, corn is very common, a recognizable kitchen-pantry ingredient. But in Asia, tapioca is more widely used.”

Sources for clean starch include:
- Corn (also identified as maize)
- Wheat
- Rice
- Tapioca (from cassava root)
- Potato

Rice starch that has been “functionalized through a specific process to increase its performance,” says Jon Peters, president, BENEÖ Inc. (Parsippany, NJ). The company’s proprietary “thermal-inhibition process,” Peters explains, is physical, not chemical, and enables the Remypure starch to be considered “native, natural, and clean-label, but with a level of performance that is comparable with chemically modified starches.”

Peters adds that this starch provides stability during a retail food product’s entire shelf life, as well as excellent freeze-thaw stability and a delicate texture, “while still having a very clean and pure taste,” he says. Adding to the starch’s perception of purity is the fact that rice is known to be hypoallergenetic and easy to digest.

Cargill (Minneapolis, MN) has also embraced clean-labeling requests and is actively marketing clean-label starch. SimPure, a line of functional native starches, includes “new blends of native starches from a variety of botanical sources,” explains Technical Services Manager Michelle Kozora. “Branding the portfolio as ‘SimPure’ helps our customers more easily identify Cargill’s clean-label starches, she adds.

SimPure 99560, the line’s flagship starch, is a blend of native starches from different botanical sources that “matches the performance of [chemically] modified starches at a level unparalleled in the native-starch world,” she says. 99560 was designed specifically for culinary and convenience-product applications such as frozen meals.

Another supplier closely following and responding to the popularity of clean labeling is Ingredion (Westchester, IL). The firm introduced its HOMECRAFT Create line of process-stable, clean-label-friendly waxy rice flours in June of this year and announced via press release this past summer that the products in this line will “help
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food manufacturers respond to consumer demand for smooth, silky textures in clean-label and gluten-free products. Ingredion touts its HOMECRAFT Create rice flours as “highly desirable” to customers interested in clean labeling and claims the flours “achieve the robust functionality, stability, and shelf life previously associated with the use of hydrocolloids, modified starches, and other ingredients not considered clean label.”

Ingredion also offers its Novation Prima 340 and 350 native functional corn starches. These physically—not chemically—modified starches can be identified on food labels simply as “corn starch,” yet possess “superior sheen, smoothness, process tolerance, and cold-temperature stability when compared to traditional pregelatinized native starches,” says Sharon Chittkusol, an Ingredion spokesperson and associate marketing manager for Wholesome Innovation.

The Novation line debuted a full 20 years ago, and the new HOMECRAFT Create multi-functional rice and tapioca flours “represent the expansion of our broad clean and simple portfolio of functional clean-label texturizers, expanding into ‘flour’ labeling,” Chittkusol explains. Ingredion’s marketing studies have consistently shown that flours are generally recognized, trusted, and preferred by consumers, Angelina De Castro, Senior Marketing Manager, Wholesome Innovation, adds. This affinity for flour is related to its association with minimal processing, says Chittkusol. (Flours retain the original grain’s protein and some fiber, while starches do not.)

For Tate & Lyle (Hoffman Estates, IL), offering non-GMO clean-label starch ingredients has been a priority. Citing Innova data from 2016, Rachel Wickland, PhD, technical manager for global ingredient technology at Tate & Lyle, says that in the past three years, non-GMO product sales in the United States have grown by 270%. That same Innova data revealed that 73% of American consumers find it important to know and understand most ingredients listed on a product’s ingredient list, Wickland adds. “In response to this trend,” she explains, “Tate & Lyle recently introduced 17 non-GMO starches with the
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Food & Beverage

same functionality as their GMO counterparts to help customers create extraordinary food textures, all while delivering label-friendly options to consumers.”

The introduction was “part of an ongoing program of non-GMO ingredient expansions across Tate & Lyle texturants, fiber enrichment, and sugar- and calorie-reduction portfolios,” according to the press announcement of the launch. All the company’s non-GMO offerings are certified by third-party organizations SGS International and/or Eurofins, and the CLARIA line of functional clean-label starches relies on a proprietary processing technology that enables the starch granules to remain intact throughout various food-processing conditions, thereby providing “optimal thickening with the most pleasant texture,” Wickland says.

Ody Maningat, PhD, vice president of ingredients R&D and chief science officer at MGP Ingredients (Atchison, KS), notes that at his firm, “requests for non-GMO wheat starches are becoming a norm.” Non-GMO claims “are important for our North American and international customers who manufacture flour-based foods such as bakery, pasta, noodle, breakfast cereal, and various snack products,” he says.

Other clean-label attributes MGP Ingredients addresses through its product offerings include no chemical modification, certified organic, and sulfite-free. The company’s portfolio in the clean-label realm includes Midsol 50 native wheat starch and Pregel 10 native wheat starch. “These ingredients deliver a multitude of functional benefits across a wide array of food applications,” according to an MGP press release from 2016, “and they are Non-GMO Project Verified.” The starches provide moisture-control capabilities, desired texture and tenderness, smooth-film-forming properties, increased viscosity, improved binding, and “enhanced” product shelf life to baked goods, baking mixes, soups, sauces, and salad dressings.

Challenges to Making Clean-Label Starch Functional

Historically, starches have been chemically modified to increase their tolerance of and hardiness in harsh food-processing conditions; however, clean-label starches are, by definition, free from chemical modification. Suppliers have had to think creatively to produce starches that can withstand challenging processing conditions without chemical modification.

“In general, harsh food-processing conditions curtail the ability of clean starches to exhibit their desired functionality in foods,” MGP Ingredients’ Maningat explains. He points to high-temperature processing (“retort” conditions), high-shear processing (those involving high-speed agitation or extrusion), low-pH/high-acidity processing (such as for fruit fillings and salad dressings), and frozen or refrigerated-frozen conditions (such as for fruit pies) as examples of processing types that pose challenges to “clean” starch.
GET BACK IN THE GYM

DigeZyme®, a multi-enzyme complex, incorporated with specific enzymes that are clinically proven to be helpful in supporting a healthy digestive system, has been recently evaluated for Delayed Onset Muscle Soreness (DOMS). The latest study from Sabinsa demonstrated statistically significant improvement in both subjective pain and muscle tenderness after eccentric exercise. This study establishes the role of DigeZyme in sports nutrition, especially as a post exercise recovery supplement. DigeZyme is available as a powdered blend which can be mixed with other sports nutrition ingredients and commercialized as a standalone product.

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"The most common procedure for imparting the desired functionality," he says, "is physical modification of starch using heat-treatment technology."

Kozora shares how Cargill approached the challenge of marketing a clean-label starch line that would meet customer expectations: "First, we invested in research and development," she explains, "charging all of our teams to take a creative look at the botanical sources already available to us. For example, within our starch-development group, we’ve gone back to the basics, studying and quantifying all of the attributes of each individual starch in our portfolio."

By gaining greater insight into the structure and unique properties of each starch, the company can learn how to get more performance from them, she says. "Second, we’re coupling that work with our extensive formulation expertise, partnering with our customers to rethink their recipes," Kozora continues. "Now when we meet with customers, we define the specific textural attributes, functional characteristics, and processing requirements needed. Then, we compare those needs to the documented characteristics of our individual starches, enabling our researchers to select the best attributes for a customer’s specific application."

Cargill has worked with a customer to develop a clean-label and shelf-stable salad dressing formula, for instance, using a blend of native starches and pea protein.

Ingredion, says Chittkusol, sources specific varieties of rice and tapioca for its clean labels, mills those in its own facilities, then applies "a proprietary physical process" (likely related to moisture or temperature control) to prevent gelling, water release, and loss of viscosity in the finished retail food product. Meanwhile, Peters cites Rempyure’s "new thermal production process, which is entirely natural," for conferring high performance levels to its functional native rice starches.

Tate & Lyle’s CLARIA clean-starch line utilizes a proprietary processing technology (not chemical) that "enables starch granules to remain intact throughout different processing conditions. We can do this through a variety of methods," explains Wickland. "Some are actually inhibiting the starch granule or controlling the degree of swelling. This essentially makes the starch granules more robust, strengthening them so they are less likely to break during various processing conditions. We can also tailor the degree of process tolerance to different applications."

Maureen Kingsley is a freelance writer, editor, and proofreader based in Los Angeles. She covers a variety of industries, including medical technology, food-ingredient manufacturing, and cinematography.
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A NEW KIND OF PERK

Functional coffee brings new opportunities to the healthy-drinks space.

BY MIKE STRAUS

Tea and coffee are big business. Ready-to-drink (RTD) products, in particular, have seen impressive growth. Market research firm Grand View Research predicts the RTD tea and coffee market will exceed $115 billion in annual revenue by 2024, with functional benefits being a significant driver of demand.

Coffee and tea are becoming more advanced, and manufacturers are now using their products to address health concerns like brain support and protein intake. Here are just a few of the unique new functional coffee trends that are changing the definition of “health drink.”

Cashing in on Cashews: Mood-Regulating Cold Brew Coffee

Launched in 2016, Coffee So Good (Minneapolis) manufactures RTD, cold-pressed coffee that uses raw cashew milk from the nuts of the cashew tree (Anacardium occidentale) as a creamer.

Founder Rita Katona says that Coffee So Good’s flavored coffees provide several functional benefits, including mood regulation: “Cashew milk is rich in protein, iron, and magnesium. Magnesium has great benefits in terms of stress relief and anti-anxiety, and it also increases dopamine production.”

Katona says that the recent rise in RTD cold-brew coffees presents new opportunities in the cold-brew space. “Customers are buying more cold coffees, and that’s made it easier for the grab-and-go category to grow.”

Coffee So Good is the first clean-label, dairy-free alternative to the traditional latte, Katona says, and giving latte-drinkers a healthier alternative simply seemed like a natural evolution of the product.

The New Vitamin “C”: Vitamin Coffee Targets Workout Enthusiasts

Clinical studies have shown that coffee improves speed and respiration, psychomotor function, and fat oxidation. Now, manufacturers are optimizing coffee formulations to improve athletic performance. AlphaMind Vitamin Coffee founder John Waldon (Greenville, SC) says that he’s aiming to create the “Gatorade” of coffee.
AlphaMind coffee contains B vitamins to promote muscle gain, potassium for maintaining electrolyte balance, sodium for regulating nerve function, and iron to stimulate red blood cell production.

Says Waldon: “We saw a gap in the market for a coffee that appeals to workout enthusiasts. Folgers and Maxwell House are for 50-year-olds who don’t care about what kind of coffee they’re drinking. We’re targeting 20-somethings who live an active lifestyle.”

Waldon says younger consumers are looking for more convenient workout supplements. “There are other functional coffees out there, like Bulletproof—but Bulletproof is a smoothie that you have to prepare. [Consumers are living] fast-paced lifestyles and just want to make a cup of coffee.”

Vegetable Extract Coffee: Detoxing with a Broccoli Brew

Ashley Koff, a dietician and member of Brassica Coffee’s (Baltimore, MD) scientific advisory board, says that consumer interest and clinical research are driving demand for detox-oriented coffees rich in antioxidants. Brassica is meeting that demand by using glucoraphanin, a naturally occurring phytonutrient found in broccoli (Brassica oleracea var. italica), in its coffee and tea products.

Some animal studies have found that broccoli sprout extract has a protective effect on the liver, enhancing the expression of genes that regulate detoxification.7

Says Koff: “Glucoraphanin is a water-soluble detoxifier, and it maintains its effectiveness at different temperatures, making coffee a good match.” Koff says Brassica is unique in its dosage control. The concentration of glucoraphanin in one serving of broccoli can vary significantly, she says, whereas every Brassica K-cup and tea pouch contains one 15-mg dose.

Koff anticipates the functional coffee space to expand in the near future and says she expects adaptogens to be a major focus.
Drink the Pounds Off: Losing Weight with Thermogenic Coffee

Coffee and green tea have been shown in prospective cohort studies and randomized clinical trials to contribute to weight loss. Coffee manufacturers are now optimizing this effect with weight-loss coffees.

Lean Cup from Coffee Blenders promotes weight loss by incorporating Naturex’s (Avignon, France) branded and patented Svetol green coffee extract (Coffea arabica) in its coffee. The companies say that Svetol differs from generic green coffee extract in that its chlorogenic acid (CGA) level is standardized at 45%, whereas lab studies show that wild-grown coffee and generic coffee extract can vary in their CGA levels depending on the growing region and species of the coffee plant in question.

Coffee Blenders sales manager Callan McCollister (San Diego, CA) says thermogenic coffees and functional cold brews are the next evolution of thermogenic drinks, but she expects consumers to lead the trend. Says McCollister: “I think people will find ways of making functional craft coffee at home. We’re already seeing homemade cold brews.”

No More Jitters: Calm Energy and Stress Relief

Stress relief is another growing function coffee manufacturers want to address. According to McCollister, Coffee Blenders’ patented Relax cup uses the L-theanine amino acid to relieve stress and create a calming effect, so you get the energy without the jitters.

McCollister says this is a popular function, and she cites as evidence a copycat brand she recently encountered at a trade show. McCollister says this is proof that interest in a more “relaxed” coffee is growing.

“We’ve seen other interesting blends. People are now mixing their coffee with tea—Arabica with chamomile. There was talk at the National Coffee Association’s Annual Convention, which took place March 23–25 in Austin, TX, about how functional tea-coffee hybrids are the next big thing,” McCollister notes.

Instant Energy: Concentrated Coffee Shots for On-the-Go Buzz

The energy shot niche has been dominated by 5-Hour Energy, but the growth of the functional-coffee category may be reinvigorating a stale market. Forto Energy Shots

Manufacturers are now using coffee and tea to address health concerns like brain support and protein intake.
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Founder Neel Premkumar says he devised the idea for Forto shortly after becoming a father to twin girls in 2012, during which time he struggled to maintain his energy and focus. Premkumar says that sales of the Forto shot have been strong, with Forto reporting category growth of 25%. The company differs from other energy shots in its clean-label approach.

**Protein coffees are making it easy for consumers to incorporate added protein into their diets.**

Forto is also capitalizing on the growth of multiple categories. Functional RTD coffee has consistently outperformed other beverage and snack categories since 2015. IRI Consulting reports that in 2016, the category grew 20% over 2015, outpacing yogurt drinks, vegetable juice, sports drinks, and energy drinks.

**Protein-Rich Coffee Provides Sustained Energy and Muscle Growth**

Protein drinks have long been a staple of the nutritional supplement market, but now, protein coffees are making it easy for consumers to incorporate added protein into their diets. Food ingredient company Arla Foods (Aarhus, Denmark) has developed an ingredient solution for high-protein coffee drinks. Arla’s first such drink, a whey protein iced coffee, was launched in November 2016.

Arla’s head of science and sales development Peter Schouw Andersen says that protein coffee has positive impacts on muscle growth, bone health, and brain function. He says that Arla’s protein coffee also uses milk minerals to promote neurotransmission.

Schouw notes that creating a RTD protein coffee has been a challenge until now due to the restrictions of the RTD format and taste concerns. "Most iced coffee beverages are UHT [ultra-high temperature] products with a long shelf life," Schouw says. "In the past, it hasn’t been easy to formulate with whey protein for UHT applications. Our development team overcame this obstacle, creating an iced coffee ingredient solution that tastes great and delivers health benefits."

Schouw says he expects high-protein iced coffee to become a major niche in RTD functional beverages in the future.

**Mediterranean-Style Coffees: Coffee with Mediterranean Diet Benefits**

Creating coffee with functional benefits has never been easier thanks to ingredient supplier Frutarom Health’s (Haifa, Israel) NutraT line of powdered drink boosters inspired by the Mediterranean Diet. Coffee brand Mongibello chose to use several NutraT ingredients in its new line of functional coffees, which are designed to be dispensed using ETNA coffee machines.

The NutraT ingredients used in the Mongibello coffees are based on staples of the Mediterranean diet such as olive, artichoke, and ginseng. The line of four coffees includes Detox, which contains NutraT’s Cynax artichoke extract; Cardio, with OliveT olive extract; Relax with RosT, a lemon balm extract; and Mental, with Ginseng EFLA 913. Frutarom’s own unique ginseng (Panax ginseng) extract produced using the company’s proprietary HyperPure technology.

NutraT ingredients are a noteworthy addition to the functional-coffee market because they are formulated to dissolve quickly and easily in beverages (including water, soft drinks, and dairy products). Frutarom says that beverages using NutraT remain clear, without turbidity. Yannick Cappelle, product manager for Frutarom Health, said in a press release: "With NutraT, drink manufacturers can fortify their products with exceptional natural extracts from Mediterranean origin that typically are not water soluble. We are excited about these functional coffees from Mongibello. This demonstrates that the possibilities for natural and soluble functional ingredients can go beyond the standard cold beverages. The NutraT line helps developers of new functional drinks combine fresh flavors with extracts delivering the essence of the Mediterranean diet."

**Eat Your Coffee: Energy Bars Packed with Caffeine and Micronutrients**

For those looking for a more-portable way to consume their coffee, new Kickstarter hopeful Eat Your Coffee (Boston, MA) has created the concept of a food bar packed with the same dose of caffeine as a full cup of coffee.
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Coffee and tea brands’ next evolution will involve pinpointing consumers’ most pertinent health concerns.

According to Eat Your Coffee’s founders, the Eat Your Coffee Bars contain natural, not synthetic, caffeine. According to the company, it’s as “if your favorite energy bar and coffee had a baby.”

Eat Your Coffee Bars co-founders Ali Kothari and Johnny Fayad say they often found themselves running behind for their early-morning classes at Northeastern University. Unable to grab breakfast—let alone coffee—they sought to create a product that would meet both needs. First developed in their dorm room, Eat Your Coffee energy bars are formulated with gluten-free, vegan, and organic ingredients.

The company’s Kickstarter campaign was activated on June 13, 2017. The brand’s first bar flavor is Peanut Butter Mocha.

What Kind of Coffee Do Consumers Want?

This June, flavors supplier Comax Flavors (Melville, NY) released the results of its first consumer-research survey on coffee examining coffee-buying habits and consumer attitudes, with a particular focus on the specialty coffee and RTD coffee segments.

The company collected feedback from 500 U.S. adult respondents of all ages and found that flavor is the single biggest driver of coffee purchases across all ages, with nearly three-quarters (73%) of respondents citing it as the most important quality. Of that 73%, Generations Y (Millennials) and X said they preferred flavored coffee most, at 49% and 44%, respectively.

Catherine Armstrong, vice president of corporate communications, Comax, said in a press release: “Coffee is a universal staple engrained in many cultures. With so much market activity, especially in flavored coffees and RTD products, Comax wanted to better understand coffee consumption habits and usage among the general population.”

Other notable findings from the survey included that RTD coffee is most popular among the younger generations. A total of 32% of respondents said they drink RTD coffee regularly. The company says it was also surprised to find that instant coffee was most popular with Millennials (65%). The research reflected significant consumer interest in coffee-flavored foods and other applications, and widespread use of flavored creamers, seasonal flavors (43%), and indulgent coffees (such as mochas, frappuccinos, and the like) in place of traditional desserts.

Functional Coffee: A Growing Market for Manufacturers

Consumers’ search for a healthier coffee is driving expansion of the functional coffee space in a variety of ways, with an ever-diversifying array of products entering the market to address the health concerns of various niches.

Both RTD and ground coffee are seeing more functional ingredients added to their formulations, and functional tea is also gaining ground. Coffee and tea brands’ next evolution will be finding a niche within the functional space, which will involve pinpointing consumers’ most pertinent health and wellness concerns and then formulating appropriate products.

References

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Salacia Extract Modulates Appetite, Blood Sugar, in New CARBS Study

Hao L et al., “Appetite and gut hormones response to a putative α-glucosidase inhibitor, Salacia chinensis, in overweight/obese adults: a double blind randomized controlled trial,” *Nutrients*, vol. 9, no. 8 (August 2017): 869

A recent Carbohydrate, Appetite Reduction, Blood Sugar, and Satiety (CARBS) study, published in *Nutrients*, examined the effects of *Salacia chinensis* extract on appetite and satiety. *Salacia* extract has been shown in animal studies to reduce body weight; in this study, researchers posited that *Salacia* extract’s α-glucosidase inhibitor properties might, in turn, reduce appetite in a human study. The study authors note that there are no other studies published on the relationship between *Salacia* and appetite. The CARBS study found that *Salacia* extract, as the proprietary OmniLean ingredient from OmniActive Health Technologies (Morristown, NJ), may help to control subjects’ appetites and improve overall satiety.

In the placebo-controlled, three-way, crossover study, 48 overweight or obese but otherwise healthy adults were supplemented with one of three dosages: 300 mg of *Salacia* extract, 500 mg of *Salacia* extract, or an identical placebo capsule. The subjects were instructed to eat the same dinner before each of the three test days. After an overnight fast (from 9:00 PM), subjects filled out 24-hour diet recalls. Then, the study authors recorded participants’ body weight, blood pressure, body fat, and waist circumference. For more subjective criteria like appetite sensation and taste perceptions, the subjects completed visual analogue scales. Finally, once all the above measurements were recorded, each participant was given a breakfast meal along with a capsule containing either 300 mg of *Salacia* extract, 500 mg of *Salacia* extract, or the placebo. There was a one-month washout period between each of the three treatment visits.

After examining the above criteria, the study authors found that both *Salacia* groups exhibited improved glycemic response and changes in gut hormones, which in turn reduced blood sugar spikes and helped to modulate appetite. In addition, both dosages of *Salacia* extract lowered the “peak serum glucose” when compared with the placebo group. The study authors note that *Salacia* extract had no appreciable effect on postprandial appetite, though among the women studied, hunger was reduced compared to the placebo group at several time points over the course of the study.

In a press release from the company, Abhijit Bhattacharya, president, OmniActive, noted: “The CARBS Study demonstrated that OmniLean reduced the feeling of hunger and reduced spikes in blood sugar—key components of weight management—which may be the missing piece for a vast population struggling with maintaining a healthy weight.”

**Krill-Derived Ingredients May Reduce Atherosclerosis in Animal Study**


Biotechnology company Rimfrost (Fosnavåg, Norway) announced the online publication of a study in the *Journal of Molecular Nutrition and Food Research* showing that krill-derived ingredients—the company’s specialty—reduce atherosclerosis in mice.

The study is the latest product of a long-term collaboration that Rimfrost established with the University of Bergen in Norway for the purpose of learning more about the biological effects and mechanisms of action of proteins and lipids derived from Antarctic krill.

Aware of Antarctic krill as an excellent source of omega-3 fatty acids and high-quality proteins, the researchers set out to investigate the effect of those components on blood lipid levels and atherosclerosis development in *apoE* knockout (*apoEKO*) mice—experimental models for dyslipidemia and atherosclerosis. The researchers assigned the mice to four groups that then fed either a Western diet containing casein protein and fat (the control) or “Western-like diets” differing from the control in that the casein and/or fat was partially replaced by krill proteins, krill oil or both krill oil and proteins.

Study results showed that the mice fed krill oil plus protein and krill oil alone saw a significant reduction in cholesterol levels vis-à-vis the control. Further, atherosclerosis development in the aorta was lower in all experimental groups—krill protein, krill oil and krill oil plus protein—compared to the control. However, atherosclerosis reduction in the aortic sinus was apparent only among mice in the krill oil group. Liver steatosis, or fatty liver—another measure the researchers tracked—was sporadic in the krill oil and krill oil plus protein mice, but common in the control and krill protein groups.

Based on the results, the researchers conclude that diets containing krill oil not only inhibit plaque development and prevent liver damage, but can also reduce cholesterol levels by affecting expression of genes involved in cholesterol metabolism, including the gene that codes for the key enzyme HMG-CoA reductase. But while krill proteins also reduce atherosclerosis, they do so through mechanisms unrelated to lipid metabolism.

“It was interesting to find that krill protein reduced atherosclerosis by a different mechanism than krill oil,” noted Rolf Kristian Berge, a professor at the University of Bergen and one of the study’s authors, in a press release. One explanation for its action might be krill protein’s high level of arginine, an amino acid precursor to the synthesis of nitric oxide, which improves human vascular function. Another explanation Berge posits is that proteins digested in the gastrointestinal tract might release bioactive peptides “also known from the literature to have cardiovascular protective effects,” he says.\[\]
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</tr>
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<thead>
<tr>
<th>Page(s)</th>
<th>Company Name</th>
<th>Website or E-mail</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAB, IBC, 29, 43</td>
<td>Sabinsa Corp.</td>
<td><a href="http://www.sabinsa.com">www.sabinsa.com</a></td>
<td>732/777-1111</td>
</tr>
<tr>
<td>11, 45</td>
<td>Soft Gel Technologies Inc.</td>
<td><a href="http://www.soft-gel.com">www.soft-gel.com</a></td>
<td>800/360-7484</td>
</tr>
<tr>
<td>44</td>
<td>Suzanne’s Specialties</td>
<td><a href="http://www.suzannes-specialties.com">www.suzannes-specialties.com</a></td>
<td>800/762-2135</td>
</tr>
<tr>
<td>17</td>
<td>Synergy Flavors Inc.</td>
<td><a href="http://www.synergytaste.com">www.synergytaste.com</a></td>
<td>847/487-1011</td>
</tr>
<tr>
<td>3</td>
<td>TSI Health Sciences</td>
<td><a href="http://www.tsiinc.com">www.tsiinc.com</a></td>
<td>877/549-9123</td>
</tr>
<tr>
<td>6</td>
<td>Vidya Herbs Pvt. Ltd.</td>
<td><a href="http://www.vidyaherbs.com">www.vidyaherbs.com</a></td>
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</tr>
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<td>Wellmune, A Kerry Brand</td>
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Tea has roots as a medicinal drink going back thousands of years. Although tea is just about as familiar a beverage as water, health-conscious consumers seeking a beverage that isn’t water continue to turn to tea over carbonated or high-calorie options. 

Sian Cunningham, market research and consumer insights analyst, Kerry Ingredients (Beloit, WI), tells *Nutritional Outlook* that four in five consumers identify themselves as tea-drinkers, according to Mintel. More adventurous tea-drinkers, however, are no longer satisfied with a simple cup of green or black. Cunningham also points to research from Datassential that shows 96% menu growth for rose flavors between 2013 and 2017, and 227% menu growth for lemongrass flavors during the same period.

With herbal and botanical flavors poised to become major players in the tea category, companies like Synergy Flavors (Wauconda, IL), Gold Coast Ingredients (Commerce, CA), and Kerry Ingredients are keeping a weather eye on the horizon and seeking points of differentiation in a crowded category with sophisticated new flavor offerings.

**Tea-riffic New Flavors**

Millennials’ preferences and buying habits, in particular, are driving this wave of flavor innovation, says Cynthia Bethscheider, beverage technologist, Synergy. "Millennials have been called ‘experience collectors,’” she tells *Nutritional Outlook*, "which has caused companies to shift from traditional tea flavors to new combinations of flavors, sensations, and nutritional benefits that Millennials are interested in trying.” She says the Tea House Collection from Pure Leaf (New York, NY)—which includes Organic Black Tea Sicilian Lemon & Honeysuckle, Organic Black Tea Wild Blackberry & Sage, and Organic Black Tea Valencia Orange Peel flavors—are good examples of how tea companies are capitalizing on increased consumer interest in alternative flavors.

This trend does not mean the category is saying goodbye to traditional favorites. Kevin Goodner, PhD, product manager of essences and extracts, Synergy, and Megan Trent, marketing representative, Gold Coast, agree that old flavor standbys—peach, blueberry, raspberry, and the like—are still the most commonly used flavors for tea products. "Tea-drinkers tend to ‘stick with simple flavors from nature,’“ says Trent. But, consumers are also likely to be wooed by these familiar flavors in combination with newer, more unique flavors. For instance, Trent says that Gold Coast’s flavor portfolio includes turmeric mango, peach rose, and lavender vanilla flavors.

Goodner adds that Synergy has developed a line of floral teas “as well as products with added health benefits, such as turmeric and hibiscus, that marry well into a tea drink.” Synergy uses natural flavor essences, “which are captured and added back into the beverage for natural flavors and smells that the consumer wants,” adds Goodner.

But, flavor-matching can be challenging. According to Trent, “Customers [often] want to match specific flavor profiles. Matching flavors just takes more time and expertise; the targeted flavor profile needs to be analyzed before the new flavor is formulated, matched and approved,” she says.

Norman Khan, director, research and development, Kerry, concurs. He adds that while Kerry has the capability to develop most flavor profiles, "the biggest challenge will be understanding what the consumer expectation [is] for a new and adventurous flavor," he says. "Developers must spend time with culinary to first develop a gold standard flavor profile and then would translate that to a tea product.”

Angie Lantman, product development manager, Synergy, says that some popular ingredients can add additional challenges, and require experienced flavor technologists to deal with them. She states, "As developers add more functional ingredients, such as turmeric, the potential for off-notes increases. Those ingredients can cause cloudiness, sedimentation, and unwanted bitterness.”

**Tea Time**

So, if we’re reading the tea leaves, what does the future hold? According to Trent, creamy, dairy-free, tea-based lattes are the next big “it” tea products. The astronomical rise of the matcha latte, for instance, has paved the way for turmeric lattes, she says. “We have already seen the chai tea latte, matcha latte, and now turmeric latte. Next, we predict we’ll see more beet root lattes, cocoa lattes, cocoa with matcha latte, red rooibos lattes, and more.”

Goodner adds that his company combines different varieties of vanilla and floral essences to make base of tea lattes.

Ultimately, says Cunningham, globalization and “a growing multicultural population” have made once-exotic flavors and spices more accessible. For consumers looking for tea with a little more flair—or a beverage with natural ingredients that still tastes great—there’s no shortage of options.
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