Also: People-to-Watch Directory, p. 29

The year’s top industry leaders, suppliers/providers, and retail brands

BEST OF THE INDUSTRY 2019

The year’s top industry leaders, suppliers/providers, and retail brands

December 2019
Vol. 22, No. 10
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Leaders at Their Best

“Lead, not follow” are words that exemplify all four of Nutritional Outlook’s 2019 Best of the Industry award winners. The individuals and companies we’re recognizing this year are at the helm, whether of an entire segment of the market they represent or as stewards of a new ingredient.

Our industry leader is Michael McGuffin of the American Herbal Products Association who this year celebrates his 20th anniversary as association president. Under Michael’s tenure—and even before that, when he served on the association’s board of trustees—AHPA has been a leading influence and guiding hand in shaping the safe, responsible, and prosperous herb commerce market that so many consumers rely on today. With Michael at the lead, AHPA’s influence extends beyond the herbal community; AHPA has been promoting the interests of the entire dietary supplement industry for decades.

OmegaQuant has likewise served as a key advocate for the omega-3 industry. The company and its leader, William Harris, PhD, have been key messengers about the importance of the Omega-3 Index, a measure of a person’s omega-3 status that serves as a risk indicator for developing cardiovascular disease. Harris and his colleagues were not only the earliest proponents of the Omega-3 Index, which is increasingly recognized by researchers as a reliable metric, but OmegaQuant’s Omega-3 Index test kits have given consumers a tangible, practical way to test their own Omega-3 levels and have helped spread awareness about low omega-3 intake and the importance of supplementation. For this reason, we’ve selected OmegaQuant as this year’s retail brand/product leader.

Two of our other company winners are ingredient suppliers embarking on new ground. The first is ChromaDex, who is creating a market for its Niagen nicotinamide riboside ingredient, which in November the European Commission approved as a novel food. Perfect Day is another ingredient supplier, one that has created an innovative non-animal, flora-based dairy protein that offers the best of both worlds: the enjoyment of a dairy product without sustainability drawbacks attached.

Congratulations to all of Nutritional Outlook’s 2019 Best of the Industry award winners!

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Dietary supplement industry groups are pressing FDA to legalize the use of the hemp cannabinoid cannabidiol (CBD) in dietary supplements, but FDA is wary of setting a bad precedent by authorizing CBD supplements without convincing safety data, said an FDA commissioner. Lowell Schiller, FDA principal associate commissioner for policy, told attendees of the Council for Responsible Nutrition’s 2019 The Conference in Carlsbad, CA, on Thursday, November 7, that the agency is concerned with the message it would send to the public if FDA were to create a legal exception for CBD at this time.

During his speech to conference attendees, Schiller said that FDA’s biggest concern regarding CBD is whether or not CBD is safe for people to consume in food and supplements. (Drugs are a different matter. FDA already approved the CBD drug Epidiolex last summer.)

In October, leading industry trade associations sent a joint letter asking Congress to create and pass legislation that would establish CBD as a lawful dietary ingredient by creating a waiver of § 201 (ff)(3) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. § 321(ff)(3)(B)).

At the CRN conference, Schiller said that even as FDA mulls the request to create a legal pathway to market for CBD in dietary supplements and food, the agency is still concerned about CBD’s limited safety data. “[W]e’ve been getting requests to look at an exemption, which allows FDA to go through notice-and-comment rulemaking to issue a regulation excluding CBD...As we consider this issue, safety is top of mind,” Schiller said.

Currently, Schiller said, FDA does not feel it has enough data to determine whether CBD is safe for consumers in supplements and food. “At FDA, we’re trying to learn as much as we can about CBD as quickly as we can,” he said. “But there’s still much we don’t know about the consequences of long-term use, about the risks to vulnerable populations, and lots more.”

He added: “CBD doesn’t have the same euphoric effects as another cannabinoid you’ve heard of, THC [tetrahydrocannabinol], but it’s also not a risk-free substance. In fact, there are a number of known health risks, including, among other things, potential liver toxicity and drug interactions. We’ve also seen animal studies indicating potential risk to the male reproductive system.”

Until FDA feels it has solid safety data, “it’s important to remember that there are no special rules for CBD,” Schiller said. FDA has taken the position that CBD is not a legal dietary ingredient for food and supplements, meaning that “it’s unlawful to sell a food or a dietary supplement with CBD in interstate commerce,” he added.

In this context, Schiller said, “We look at an FDA-regulated product containing CBD the same as we would look at an FDA-regulated product containing any other substances. We apply the same tools and authorities and statutory provisions. At FDA, we don’t have one set of rules for cannabis-derived substances and another set of rules for other substances. We don’t approach CBD or other cannabis-derived substances with any sort of animus or imposing new burdens.”

“If we don’t think that we’ll have the data to say that some level of CBD can be safely added to a food or a dietary supplement, then we wouldn’t want to create an exception for CBD. If, for example, we wouldn’t allow a new food preservative or flavoring substance to be added to foods that have the same safety data as CBD, well, why would we apply a different rule for CBD?” he asked.

Concerns about the Market

Schiller also talked about questionable products that FDA does not authorize but currently sees in the market. “Many of the manufacturers entering this space lack experience with FDA or DSHEA [the Dietary Supplement Health and Education Act of 1994], and we have serious concern about issues like harmful contaminants such as pesticides, heavy metals, or other drugs like THC. We’re also seeing some egregiously irresponsible behavior, like marketing CBD products for use by infants, or promoting...
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**FDA Remains Cautious**

Schiller said FDA is concerned about making CBD legal given the agency’s current worries about both safety and the fast-growing marketplace containing some irresponsible actors. What kind of message it would send about the agency’s regulatory actions if it were to authorize CBD now, in light of these concerns, he asked?

“We’re unable to conclude that CBD is safe for use in foods or dietary supplements, and yet, if we were to make an exception to allow for such uses, what would that mean for the next substance to come along with similar unknown safety risks?” he asked.

Later, he added, “If we were to create some kind of exception for CBD, what would that do to our ability to identify and address these kinds of violations? By some estimates, the CBD market has already grown to roughly half the size of the entire dietary supplement market at the time DSHEA was passed. Think about that.”

FDA authorization could also spur more questionable companies to enter the market, he said. “If we were to create some kind of exception for CBD, how many new products will come on the market—and manufacturers without a history of complying with basic requirements like good manufacturing practices or truthful labeling? Do we at FDA have the tools and the resources we would need to identify all the potential violations we might see, let alone to address them? And what would that mean for our existing work?”

For now, said Schiller, “The CBD market is growing rapidly, and I’m concerned that in many cases, the excitement is outpacing capability.”

FDA is also concerned that the public would read a CBD exception as an endorsement of the ingredient by the agency, Schiller said. “[I]f we were to—we have to go through the notice-and-comment rulemaking to create an exception to this provision, to this exclusion—if we were to do that and come out with a big new rule allowing CBD in supplements...then what is the public perception of that? I think it will inevitably be perceived as an FDA endorsement of the safety of the product. I think just consumer perceptions will necessarily fall that way. And if we haven’t come to a conclusion that it can be safely used in a dietary supplement, why would we go through that process and create that public perception if that’s not where we are? And frankly, this is a space where we don’t need more consumer confusion.”

Schiller said FDA is grappling with these issues as it continues actively deciding how to handle CBD’s regulatory status. “We plan to report on our progress soon,” he said.

“As we continue to work as rapidly as possible to figure out how to address this popular ingredient, which until very recently was a controlled substance, it’s important to remember that there no special rules for CBD,” he said.

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The Best of 2019

*Nutritional Outlook*’s editors highlight these four winners for their standout achievements.
Michael McGuffin

McGuffin celebrates his 20th year as the renowned president of the American Herbal Products Association.

BY JENNIFER GREBOW, EDITOR-IN-CHIEF

Everyone in the U.S. herb industry owes a profound and genuine debt of gratitude and appreciation” to McGuffin, says ABC’s Mark Blumenthal.

The American Herbal Products Association (AHPA; Silver Spring, MD) has been the chief U.S. trade association for the herbal products industry for nearly four decades. More than half of the association’s existence has been led by AHPA’s current president, Michael McGuffin. This year, McGuffin celebrates his 20th anniversary as AHPA president, and Nutritional Outlook is honored to recognize his longstanding work on behalf of the industry by naming him our 2019 Industry Leader.

The American Herbal Products Association (AHPA; Silver Spring, MD) has been the chief U.S. trade association for the herbal products industry for nearly four decades. More than half of the association’s existence has been led by AHPA’s current president, Michael McGuffin. This year, McGuffin celebrates his 20th anniversary as AHPA president, and Nutritional Outlook is honored to recognize his longstanding work on behalf of the industry by naming him our 2019 Industry Leader.

McGuffin’s dedication to “health, herbs, and good food” is personal and far-reaching. His journey began long before he joined AHPA. “Before moving to California in 1973, I had made a few gallons of sassafras tea during my youth in pre-paved Maryland suburbs. And though I’d eaten wild ‘poke salat’ as a kid, I gained my first appreciation of proper plant identification by mistaking the toxic *Nicotiana glauca* in a Venice alley as a Western cousin of poke,” he tells Nutritional Outlook.

In 1974, McGuffin cofounded a retail store called Venice Fruit Tramps—an “accidental collective,” he calls it—selling fresh produce and bulk herbs on California’s Venice Boardwalk. In 1979, McGuffin and a business partner, Janet Zand, who is now a doctor of naturopathy and oriental medicine, and a board-certified acupuncturist, took their combined fortune of $2200 to build an herbal tincture manufacturing and marketing firm called McZand Herbal. In 1985, McZand Herbal became a member of the recently formed American Herbal Products Association. (The association was founded in 1982.)

In 1990, McGuffin was elected to AHPA’s board of trustees. “In late 1989, I was contacted by Shel Weinberg of Trout Lake Farm to solicit my candidacy for an open board seat,” McGuffin says. “When I told Shel I was just too busy with my company to take on a volunteer role, he replied: ‘We’re all too busy, Michael. But it’s your turn.’ This message somehow resonated with me, and I was elected to AHPA’s board of trustees in 1990 and served there until I was hired as AHPA’s president in 1999.”

Twenty years later, McGuffin and AHPA are a leading voice not only for the herbal products industry but for the entire dietary supplement industry, helping to shape the regulatory environment and the multibillion-dollar market for these products.

More importantly, AHPA’s work has benefitted the growing number of consumers relying on natural products and herbal remedies for healthcare. “This really is my life’s work,” McGuffin says. “I think there is a tendency for trade associations to be thought of as only advocating for industry. That isn’t true, at least not for AHPA. We’re doing this for consumers and my fellow American citizens who want to use herbs without undue legal obstructions. That’s why I have devoted my life to advocating for ready, informed access to herbal products in a regulatory framework that protects public health and simultaneously ensures the right to make personal healthcare choices.”
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A Crucial Advocate

One would be hard-pressed to find a regulatory issue related to the herbal and dietary supplement industry in which AHPA’s voice isn’t heard.

In the early days, even before McGuffin came on board, AHPA had begun speaking out to protect the herbal category. McGuffin says, “For example, in 1983 AHPA went on record as supporting the efforts of the Fmai- li Herb Company in its lawsuit against FDA in response to FDA’s refusal to allow import of an herbal product containing schizandra seed (Schisandra chinensis) and other herbal ingredients with a long history of human consumption in Asia. This enforcement position was based on that agency’s interpretation of the 1958 food additive amendments to federal law as disallowing consideration of food use outside of the U.S. as relevant to a food’s history of use. Fmaili eventually won this case on appeal, which had ramifications for the entire food industry.”

That was just the beginning. During McGuffin’s presidency, another key win was the association’s push for the USDA’s National Organic Program (NOP) to allow supplement products to be labeled as “organic” and to carry the USDA Organic seal. At the time in 2005, the NOP was only granting use of the seal to conventional food products. AHPA was also involved when FDA was establishing its 2006 law for serious adverse event reporting (AERs).

AHPA’s advocacy has not only helped the herbal products industry but the larger dietary supplement industry as well. The association has been one of the leaders in conversations with regulators, including through public comments submitted to federal and state agencies. Notably, AHPA submitted more than 400 pages of comments regarding regulations proposed under the Food Safety Modernization Act (FSMA), as well as voluminous comments regarding FDA’s new dietary ingredient (NDI) draft guidance (both the initial draft in 2011 and the revised draft in 2016). This year alone, AHPA submitted comments to regulators expressing its opinion on topics ranging from FDAs intention to revamp dietary supplement regulations, tariffs on herbal ingredients during the current U.S.-China trade war, crop-grouping regulations under the purview of the U.S. Environmental Protection Agency, and even a matter as specific as the use of dairy names for plant-based products.

With McGuffin as its head, the association regularly engages with federal agencies, including FDA, the FTC, USDA, the U.S. Department of Commerce, and the U.S. Fish & Wildlife Service. AHPA actively monitors government activity at the state level as well, stepping in when issues and legislation could negatively impact herbal commerce. It has, for instance, been a leading participant in regulatory issues involving California’s Proposition 65 law. The association also extends its representation abroad via its International Committee, which works to ensure responsible international commerce of herbal products. AHPA is also an active member of the International Alliance of Dietary/Food Supplements Associations (IADSA) and regularly updates AHPA’s membership on international regulatory developments. McGuffin himself has served as an industry representative for groups such as FDA’s Food Advisory Committee Working Group on Good Manufacturing Practices for Dietary Supplements (1998-1999) and California’s Office of Environmental Health Hazard Analysis Food Warning Workgroup (2008-2010).

Always Looking Forward

It’s hard to separate AHPA’s achievements from McGuffin’s own; they are one and the same. McGuffin attributes the association’s accomplishments to its members.

“One of AHPA’s strengths, reflected in the breadth and diversity of our membership, is the ability to connect many industry leaders to address the many, evolving issues and opportunities we encounter,” he says. “[W]e focus this combined experience and expertise, both through active engagement with regulatory working groups and with other authoritative bodies, such as the U.S. Pharmacopeia, AOAC International, and NSF International, and through submission of comments during rulemaking procedures.” Under McGuffin’s stewardship, AHPA’s Board of Trustees has grown nearly 40%.
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"I would like to be able to report that our positions are always embraced by regulators, but of course it would be unrealistic to have any such expectation!" says McGuffin. "But we have had important influence on many and diverse regulations adopted by federal agencies and occasionally by states. And we maximize opportunities for such outcomes by first engaging with our members and then communicating to regulators with as much clarity as we can. Importantly, we have also built and continue to maintain respectful relationships with government agencies, even when we disagree with them." AHPA will always serve first and foremost as a resource for its members—nearly 400 companies, including growers, processors, manufacturers, and marketers of herbs and herbal products (foods, dietary supplements, cosmetics, and non-prescription drugs).

AHPA's educational and technical tools for its members are vast, including the association's AHPA NDI Database, created in 2005, which helps the entire supplements industry by providing a searchable repository of new dietary ingredient notifications submitted to FDA. During McGuffin's presidency, AHPA's board has adopted nearly 30 trade requirements or guidance policies to help promote responsible herb commerce and, in AHPA's words, "represent meaningful self-regulation for the herbal products industry." During McGuffin's tenure, the association also issued second editions of its *Herbs of Commerce* (an incorporated reference in FDA's labeling rules for herbal supplements) and *Botanical Safety Handbook*—both key industry primers, with McGuffin serving as managing editor. It also regularly hosts in-person events and webcasts on regulatory and technical issues, and keeps its membership informed through newsletters and e-mail alerts.

McGuffin also ensures that the association monitors the current market, keeping its eye on which herbal categories are growing and in need of guidance and exchange of information. Under McGuffin's watch, the association has created additional committees reflecting some of the most active herbal markets in the past 20 years: Sports Nutrition, Cannabis, Ayurvedic Products, Chinese Herbal Products, Analytical Labs, Tea & Infusion Products, and Sustainability. Says McGuffin: "It is important to remember that the herbal products industry is not monolithic. We see emerging niche interests, expertise, and needs. In order to serve the many and diverse needs of the industry, it has been vital for AHPA to tap the experts in various of these niches, and we do that by chartering committees that serve these separate and specific segments."

AHPA serves a unique function that no other trade association does. Says McGuffin, "I am probably biased, but...I certainly think there would be a void of leadership for the herbal community without AHPA. There are other herb-focused organizations—the
American Herbal Pharmacopoeia, the American Botanical Council, the American Herbalist Guild—and each of these also plays important roles in service to the herbal community. But AHPA plays a different role than any of these, as we have come to be relied on to serve the interests of the trade and to be the primary resource for industry advocacy. There are also several trade associations and other organizations that focus exclusively on the supplement and natural product markets—the Council for Responsible Nutrition, the Natural Products Association, and the United Natural Products Alliance—and each of these also makes significant contributions. But AHPA is again unique among these with the focused expertise of both our staff and our membership on the unique needs of the herbal products sector of the trade.”

According to the American Botanical Council’s (Austin, TX) journal HerbalGram and its latest Herb Market Report1, 2018 marked the U.S. herbal supplement market’s strongest year of sales growth yet—9.4% in 2018 to $8.8 billion. This means that U.S. herbal supplement sales are the strongest since McGuffin became AHPA’s president. AHPA’s guidance, both within and outside of the industry, will remain invaluable as this category increasingly goes mainstream and encounters more regulatory pressure and criticism. As AHPA continually monitors media coverage, it will continue to disseminate accurate information and correct misinformation. One pressing example of how AHPA’s voice is especially valued today is in the emerging hemp cannabidiol (CBD) market. To this end, AHPA has hosted both in-depth in-person and online events to bring regulators and stakeholders closer together and to help the industry navigate the waters to ensure a responsible market. With more than 40 years of experience with herbal product regulation and what McGuffin calls a “decade of engagement with this controversial herb,” AHPA is an authoritative figure on Capitol Hill, urging FDA to create a lawful pathway to market for CBD products.

In looking back on his 20 years of AHPA leadership, McGuffin says, “I have been a member of the natural products industry for nearly 45 years, and the bulk of my education has come from on-the-job experience. This experience in the industry and at AHPA has provided me with a valuable understanding of the distinct, but compatible, needs that individual businesses and the broader industry require to succeed.”

We turned to an equally respected authority in the herbal community to offer a few words about McGuffin’s many contributions. Mark Blumenthal, founder and executive director of the American Botanical Council, shared these words with us: “It is highly appropriate for Nutritional Outlook to be acknowledging Michael McGuffin for his immeasurable contributions to the American herb and dietary supplement industries. Everyone in the U.S. herb industry owes a profound and genuine debt of gratitude and appreciation to him for his strategic contributions to the overall industry. This debt applies to all companies that sell botanical ingredients, whether or not they are members of AHPA—whether they consider themselves ‘herb’ companies or simply dietary supplement companies that happen to sell herbal ingredients as part of their product line.

Michael’s impact goes well beyond the U.S. market; it also includes benefits to foreign companies, whether they manufacture their own herbal products that they’re selling in the U.S. or whether they are botanical ingredient suppliers trying to sell to U.S. manufacturers. Either way, Michael’s excellent work for over 20 years as president of AHPA has helped to create a strong and stable American herb industry where many businesses have been able to flourish due to his efforts. Under his tireless and strategic leadership, AHPA has grown to be a major trade association dealing with many different issues on numerous fronts: AHPA is very possibly the most significant trade association dedicated to botanicals in the entire world.

As one of the founders of AHPA in 1982, I know that none of us ever envisioned the size and complexity of the modern herbal industry, and by extension, the various communities of industry and non-industry stakeholders with which Michael has so deftly worked and supported. Michael has worked very strategically and has mastered many key areas of the herb industry, including the compelling areas of standardizing botanical nomenclature for herbs sold in the U.S.; providing guidance to companies on issues of safety labeling; exerting leadership on the intricacies of GMPs, California’s Proposition 65, adverse event reporting; and so much more. His deep knowledge of government regulations and energetic efforts in submitting public comments to various agencies is well-known and highly respected, including within the government agencies themselves.”


Reference

OmegaQuant

OmegaQuant is giving consumers a way to measure omega-3 content—and a reason to take supplements.

BY SEBASTIAN KRAWIEC, ASSOCIATE EDITOR

The omega-3 category has had its highs and lows over the years. Occasional bad press has hurt public opinion about the benefits of omega-3 EPA and DHA supplements, affecting sales, but the category always seems to bounce back. That’s probably because omega-3s remain among the most well researched and recognized nutrients on the market. Over 4,000 studies have demonstrated the role of EPA and DHA in the health of our heart, eyes, and brain, as well as the healthy development of fetuses and children in utero and after birth.¹

One company working to keep omega-3s at the forefront of consumer attention is OmegaQuant, based in Sioux Falls, SD. The company provides simple at-home kits for consumers to test their Omega-3 Index—a measure of the level of omega-3 EPA and DHA fatty acids in red blood cells. This Index number can help to indicate one’s risk for cardiovascular disease and allows people to take preventative action by either eating more fish and foods rich in omega-3 fatty acids or taking omega-3 dietary supplements. OmegaQuant’s kits provide users with everything they need to administer testing. Via a simple finger stick, consumers send back a drop of blood for analysis. OmegaQuant also provides fatty acid analytical services for researchers.

More than 200 clinical studies have utilized the Omega-3 Index methodology, and OmegaQuant continues to study the Omega-3 Index and build its library of research validating the role of omega-3s in our health, especially cardiovascular health. By providing this reliable scientific metric for gauging omega-3 status as it relates to heart health, OmegaQuant is empowering consumers and giving dietary supplement brands the ability to more effectively market their products. That is why OmegaQuant is recognized as the Best of the Industry this year.

Planting the Seed

The turn of the 21st century was a very important moment for omega-3 research. In 1999, the landmark GISSI-Prevenzione trial found omega-3 supplementation significantly reduced the risk of death, cardiovascular death, non-fatal myocardial infarction, and stroke.² In 2002, expanded analysis of the study results showed just how fast omega-3’s effects occurred (in as little as three months) and hypothesized that the effects were due to a reduced risk of arrhythmia.³ Meanwhile, confronted with the recent revelations about omega-3s and heart health, William S. Harris, PhD, president and CEO of OmegaQuant, and his colleague, a German cardiologist named Clemens von Schacky, MD, pondered whether omega-3 EPA and DHA levels in the blood could be a risk factor for sudden cardiac death.

In 2004, Harris and von Schacky published a paper proposing that a person’s Omega-3 Index can be a new means of measuring the risk of cardiovascular death.⁴ More specifically, the paper posits that the fatty acid composition of red blood cells, dubbed the Omega-3 Index, reflects long-term intakes of omega-3 EPA and DHA and can indicate risk of coronary heart disease death. They concluded that an Omega-3 Index of greater than 8% was associated with the greatest cardioprotection, while an index less than 4% was associated with the least.

The immediate response to the article was “exceedingly quiet,” says Harris, but this eventually changed. “It was like a seed planted in

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Saliva pH - Inflammatory Response

* Clinical Trial conducted by Morton Scientific Group, Cambridge, Ontario, Canada
a field that only slowly began to emerge from the dirt and grow and grow,” he says. “I think the watershed event for the test was probably our first publication using the test in the Framingham Cohort\(^5\). Being associated with that well-respected study gave it more legitimacy than anything we’d done before.”

Since then, the Omega-3 Index has been making its way into more and more research. “The logic of the red blood cell membrane serving as a repository for EPA and DHA and thus a marker for omega-3 status of other tissues has been compelling,” says Harris. He explains that omega-3 EPA and DHA levels in red blood cells remain more stable over time compared to plasma-based samples. “Plasma levels can go up immediately after a big salmon meal, but red blood cell levels don’t. In other words, the red blood cell is not artificially influenced by a one-time load of omega-3, while plasma is.”

This makes the Omega-3 Index a better long-term measure of omega-3 status. Harris compares it to HbA1c testing for diabetics, which is preferred to plasma glucose testing. This is because HbA1c is red blood cell–based and a much more stable long-term marker of glucose status than plasma glucose, which can fluctuate.

The challenge remains to get broader acceptance of the Omega-3 Index from physicians. “Detractors [of the Omega-3 Index] are typically physicians who are not experts in the field who read only headlines of studies and who think there’s nothing to the omega-3 story,” says Harris. “They obviously see no value in measuring omega-3 status. If they knew that the Omega-3 Index is considered a superior marker of risk for heart disease and death than cholesterol, they might change their minds.”

That’s true. A study published in Lipid Journal\(^6\) found that in a head-to-head comparison between the Omega-3 Index and total cholesterol as a predictor of cardiovascular disease and mortality, the Omega-3 Index was significantly associated with total cardiovascular disease, coronary heart disease, and any mortality, while cholesterol was not significantly associated with any of these.

This is why OmegaQuant exists, Harris says. It gives people greater control and knowledge of their own health. “We realized that the medical community was going to be slow to take up the Omega-3 Index test, and that insurance companies—because it’s ‘new’—would not be paying for it,” says Harris. “The movement toward self-healthcare and personalized nutrition also pointed us to consumers.”

Most recently, OmegaQuant launched its Prenatal DHA Test, allowing expecting mothers to monitor their omega-3 DHA level, which has a profound effect on the development of the baby before and after birth. Recent research has found that supplementation with omega-3s is associated with a significantly reduced risk of preterm birth. One Cochrane meta-analysis of 70 randomized controlled trials found that preterm birth (<37 weeks gestation) and very preterm birth (<34 weeks gestation) were reduced by 11% and 42%, respectively, when women took omega-3 supplements.\(^7\)

Another study found the risk of early preterm birth was ten times higher among women with an EPA and DHA omega-3 concentration less than 1.6% of total blood plasma.\(^8\) Using this data, OmegaQuant converted EPA and DHA plasma levels to red blood cell DHA levels and determined that pregnant women would need at least 5% DHA content in red blood cells to prevent early preterm birth. In a proposal of this prenatal DHA test published in Nutrients, Harris and OmegaQuant’s research associate, Kristina Harris Jackson, PhD, RD, determined that 70% of women of childbearing age are below the 5% DHA cutoff.\(^9\)

OmegaQuant is also giving researchers a more reliable way to study omega-3 supplementation with its recently devised Omega-3 Calculator. The Omega-3 Calculator is an attempt to model the effects of omega-3 supplementation on the Omega-3 Index. In a study published in The American Journal of Clinical Nutrition, Harris and Jackson, along with other researchers, created a model equation that estimated the final Omega-3 Index of a population based on the dosage of omega-3 EPA and DHA and baseline Omega-3 Index.\(^10\)

For example, a population with a baseline Omega-3 Index of 4.9% that is given 840 mg EPA and DHA per day for 13 weeks, as a 1-g ethyl ester capsule, would reach an Omega-3 Index of about 6.5%. Using this equation, one can also calculate the approximate dosage necessary to achieve a mean Omega-3 Index of 8% in 13 weeks. According to the study, for a population with a baseline Omega-3 Index of 2%, 2200 mg of EPA and DHA is required, while for those with a baseline Omega-3 Index of 4% and 6%, 1500 mg and 750 mg of EPA and DHA is required, respectively.\(^11\)

“The calculator, imperfect as it may be because of unknown factors that cause the Omega-3 Index response to fish oil supplementation to vary from person to person, really should be used for groups, not individuals.”

The Word Is Out

When OmegaQuant launched in 2009, the science behind the Omega-3 Index test was well-established, but getting the Omega-3 Index tests in the hands of consumers was the real challenge, says Harris. “Implementing the logistics was not difficult; the difficulty was in marketing and education,” he says. “We’ve done a lot of free testing at meetings and for ‘influencers’ over the years, and will no doubt keep that up.”

The Omega-3 Index can also be an invaluable tool for finished product manufacturers. For example, supplements brand MegaRed recently did a campaign that tested the Omega-3 Index of 234 individuals in...
and around Newport, RI, a coastal city with easy access to seafood. Results showed that the 96% of Newport-area residents were below the target Omega-3 Index range of 8%, with an average score of 5.2%. The campaign highlighted the importance of supplementation even for those who live in a place where seafood consumption is an everyday part of life.

The word is out, apparently. Inc. magazine recently recognized the company in its 2019 Inc. 5000 list, ranking OmegaQuant at #2271. According to Inc., the company has grown 177% in three years. One can only hope that OmegaQuant’s continued growth reflects greater consumer awareness of the benefits of omega-3 supplementation and the importance of the Omega-3 Index.

References
7. Middleton P et al. "Omega-3 fatty acid addition during pregnancy, Cochrane Database of Systematic Reviews. Published online November 15, 2018.
Establishing oneself as a category leader with a relatively new ingredient is no easy task, but ChromaDex (Los Angeles), with its novel vitamin B3 formulation—nicotinamide riboside (NR), branded Niagen—has done just that. NR was discovered by Charles Brenner, PhD, now chief scientific advisor for ChromaDex, in 2004 while he was a researcher at the Geisel School of Medicine at Dartmouth College. In 2011, ChromaDex acquired the exclusive patents for the ingredient from Dartmouth College, Cornell University, and Washington University. In a relatively short amount of time, NR has accumulated a robust library of clinical research, with continued interest from scientists.

“There are 43 human clinical trials currently registered on ClinicalTrials.gov, six of which have now led to peer-reviewed publications. This is an unprecedented number of clinical trials for this type of supplement,” explains Rob Fried, CEO of ChromaDex, to Nutritional Outlook. “Scientists approach ChromaDex all the time seeking new research opportunities, and we are happy to partner with them to further understand the full potential of NR. We are committed to be the best in the industry by having a brand that’s trusted because of our science, our quality, and our safety. Research is a big part of that. We would not put a product on the market unless we had conducted rigorous testing not only on safety but also on efficacy.”

Why all this interest? NR is a highly efficient precursor to nicotinamide adenine dinucleotide (NAD+), an essential coenzyme and regulator of cellular metabolism that plays an important role in the production of cellular adenosine triphosphate (ATP). ATP generated by our mitochondria, is a major energy carrier in our cells.

“Because declining NAD+ levels have been associated with aging and a variety of age-associated conditions (i.e., metabolic disease, diabetes, Alzheimer’s disease, hearing loss, cognitive loss), we anticipate that these would be targets for NR’s therapeutic benefit theoretically, and researchers are pursuing that potential,” says Fried.

The therapeutic potential for NR is huge, and ChromaDex’s dedication to science and product integrity in past years, this year, and beyond is a testament to its commitment to improving consumer health. That is why ChromaDex is being recognized by Nutritional Outlook as the Best of the Industry.

**Cellular Health**

Before Brenner discovered NR (nicotinamide riboside), a form of vitamin B3, as a nutrient that can boost NAD+ levels, nicotinic acid and nicotinamide, also in the B3 family, had been the only known vitamin precursors of NAD+ since the 1930s.1

Fast forward to 2019, and the scientific literature on NR continues to grow. A recent randomized, double-blind, placebo-controlled, parallel-arm study published in Scientific Reports found that, compared to placebo, subjects taking 100 mg, 300 mg, or 1000 mg of ChromaDex’s brand name NR ingredient Niagen daily for eight weeks experienced an increase in whole-blood NAD+ levels of 22%,
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51%, and 142%, respectively. There were no reports of flushing, a side effect of taking nicotinic acid, or significant adverse events, supporting the establishment of a tolerable upper intake limit for Niagen of 1 g, which was found to be safe and bioavailable. The recommended daily dose of Niagen is 300 mg.

“We believe NR is the best way to safely and efficiently elevate NAD+ levels, and its NAD-boosting properties have been validated in multiple published human trials,” says Fried. “First, it boosts levels of NAD+, supporting the same cellular energy production pathway as industry standards like CoQ10. Second, cells can also convert NAD+ to NADP (nicotinamide adenine dinucleotide phosphate), which functions in the same way as the antioxidant glutathione. Finally, NAD+ acts as a cellular signal, activating cellular processes that support mitochondrial efficiency for improved energy production.

Essentially, Niagen feeds the organic surge already occurring within the body by bolstering our mitochondria to promote healthy aging at the cellular level.”

Interest in cellular health, mitochondrial health, and so-called antiaging products is huge. For example, mitochondrial health made it into SPINS’ “Top 10 Trend Predictions for 2019,” a report in which the market research firm compared growing interest in mitochondrial health to early-stage interest in trending topics such as the microbiome and the endocannabinoid system.3

“Mitochondrial health has surpassed the ‘trend’ category and become an important focus beyond early adopters,” explains Fried. “The NAD+ market has exploded. Awareness of NAD+ and its impact on cellular health has hit a tipping point—from the biochemistry and nutrition communities to the general population. ChromaDex has been at the vanguard of NAD+ and cellular health research for many years.”

Branching Out
Not only is ChromaDex a supplier of NR, but the firm also has its own finished supplement brand called Tru Niagen, in the form of capsules. It launched in September of 2017 and is sold directly to consumers. ChromaDex has expanded retail distribution of the product to Hong Kong, Singapore, New Zealand, and, most recently, Canada. The expansion into Canada also coincided with the launch of Tru Niagen stick packs for the consumer market, and the Tru Niagen powder is also available in full tubs for professional sports teams.

“There are a number of reasons why we opted to create our own consumer brand. The first was economic—it’s expensive to make NR, so by vertically integrating we’re able to reduce our cost basis,” explains Fried. “The second was that several of the companies to whom we were supplying NR were being quite irresponsible in their manufacturing processes, as well as with the messages they were using with consumers. By creating our own brand, we can ensure that consumers receive accurate information and a safe and effective product. We recognize the importance of this molecule and take our responsibility as stewards of NR seriously.”

Speaking of stewardship: not only is Niagen generally recognized as safe (GRAS) and the only NR ingredient with a new dietary ingredient (NDI) notification, but in November the European Commission approved NR as a novel food at a daily adult serving of 300 mg.

“We are pleased to be extending our global footprint into Europe,” said Fried in a press release. “We are committed to offering Tru Niagen to health-conscious people worldwide.”

The footprint of Niagen is likely to grow even larger, considering a global commercial license and supply agreement deal ChromaDex signed with Nestlé Health Science at the end of 2018. This agreement provides Nestlé Health Science the exclusive right to include Tru Niagen in its branded medical nutrition portfolio and co-exclusive rights to include Tru Niagen in certain products within the consumer health category. The territories in the agreement include North America, Europe, Latin America, Australia, Japan, and New Zealand.

“We like the idea of combining NR with other complementary ingredients and are looking to implement more product concepts in that arena,” says Fried. To that end, the collaboration with Nestlé Health Science will fuse ChromaDex’s revolutionary science with Nestlé’s robust creative portfolio, he adds.

With such impressive growth and huge long-term potential, ChromaDex is bound to push the cellular health category to great heights.4

References
Creating a genuine dairy experience isn’t about adding a single taste. Such an experience has layers of depth and substance. And consumers demand the whole thing — plus a clean conscience. Unlike some solutions that lack traceability, Synergy’s are born from — and stay true to — nature. Whether they start with humanely raised grass-fed cows, or with plant-based, vegan-friendly alternatives, our solutions can be trusted to deliver it all. For simply enhancing dairy indulgence or for cleanly building it back,

Synergy delivers a more complete expression of dairy. By nature.

Perfect Day

Perfect Day is offering consumers and companies a new choice: non-animal, flora-based dairy protein.

BY JENNIFER GREBOW, EDITOR-IN-CHIEF

One of the leading criticisms of animal proteins is that their production is not environmentally friendly. Carbon emissions, waste byproducts, and high water and land usage—not to mention animal welfare—are all considered drawbacks of the dairy production process. And still, people love dairy protein. Consumers like its clean, neutral, milky flavor/texture, and food, beverage, and dietary supplement makers love that dairy proteins’ organoleptic properties ease formulating. Plant proteins are proposed as an earth-friendlier option to dairy proteins, but the fact is that many plant proteins’ grassy or beany flavors can run astray of the dairy protein experience that consumers like and, more importantly, are used to. But what if you could have both? What if you could have a dairy protein that tastes delicious but that can also be produced without harming the welfare of animals or the planet? Sounds like a dream come true? Thanks to a startup ingredient supplier called Perfect Day (Emeryville, CA), this solution now exists.

Perfect Day has devised a way to produce dairy proteins using microbial fermentation. Perfect Day was founded in 2014 by Ryan Pandya and Perumal Gandhi. Both became vegan as adolescents, driven by their concerns about animal welfare and the environmental unsustainability of producing and consuming animal products. Even as committed vegans, however, they still hated the taste and texture of the non-dairy protein products available at the time, and they sorely missed the dairy products they had loved. When the two met, “what we didn’t realize at the time was that we were both vegans but not exactly happy with the options that were out there,” Pandya says.

In 2014, Pandya had just started his career as a biomedical scientist in the U.S. Gandhi, meanwhile, was in India working as a research assistant. Prior to that, he had studied biomedical engineering at The State University of New York at Stony Brook, working in the lab of associate professor David A. Rubenstein, PhD, to develop tissue scaffolds. A mutual friend, Isha Datar, the executive director of a nonprofit research institute called New Harvest, introduced Pandya and Gandhi via e-mail. New Harvest funds research focusing on “cellular agriculture”—processes to “make animal products—without animals.” Shortly after they met, Pandya and Gandhi set out to find a way to make non-animal dairy proteins. They decided to turn their focus to dairy products first—and the milk proteins within, specifically whey and casein—for one simple reason: they both loved dairy.

Shortly after founding Perfect Day in 2014, the two worked with a team of scientists, engineers, chefs, and food developers to improve and perfect the fermentation process ultimately used to produce Perfect Day proteins. Perfect Day owns the patent to its process.

The process works like this. The company uses a microflora from the *Trichoderma* genus, a genus commonly used in the bioproducts industry to produce protein. (“*Trichoderma* produces a lot of protein naturally and is one of the top performers in the bioproducts industry,” Pandya says.) Perfect Day harnessed this ability to create milk proteins in microflora. Using what it says are common tools of biology, the company inserts the genetic information responsible in cows for making specific milk proteins
(casein and whey) into the microflora so that the flora can produce the proteins via fermentation in tanks instead. “We call this flora-based dairy protein, since it comes from flora instead of animals,” the company says. “By combining the milk protein genes with *Trichoderma*, we successfully domesticated the world’s first dairy-producing flora.”

The company uses this process to create vegan, lactose-free, hormone- and antibiotic-free dairy proteins that it says formulate with just as much ease as conventional dairy proteins and that sidestep the sustainability negatives of dairy protein. Nutritionally and organoleptically, Perfect Day’s non-animal dairy protein is a match with conventional animal protein, including amino acid profile, offering consumers the same clean, appealing taste as dairy protein, the company says.

“We’re the only company doing flora-based dairy,” Pandya says. “There are a few other companies using a similar model using fermentation to create ingredients and products, but Perfect Day is the first to bring a product to market for people to actually taste, and to use the term *flora-based* to try to educate consumers on this new category.”

This past summer, as Pandya mentioned, Perfect Day gave customers a taste of its flora-based protein in the form of a test-run, limited-edition, animal-free dairy ice cream sold through the company’s website only. By combining the flora-based protein with water, non-lactose sugars, and plant-based fats in the same proportions as found in cow’s milk, the company was able to create the animal-free milk with which to formulate the ice cream.

“The first product we chose to launch, back in July, was ice cream made from our animal-free milk base,” says Pandya. “The protein is what enabled it to have that creamy texture and mouthfeel. Those who have tasted our ice cream note that it lacks the iciness or chalkiness of many plant-based products, and brings the experience in line with what you’d expect from a premium ice cream made with cow’s milk.”

Consumer appreciation for this innovation is high: the test-run ice cream sold out on Perfect Day’s website in *just one day*. “We were thrilled by the overwhelming response to our limited release,” says Gandhi. “There was so much buzz and excitement amongst our community of supporters, and we are still riding the wave from that initial launch.”

Companies, both finished-product brands and ingredient firms, are also interested in the possibilities Perfect Day offers. The flora-based dairy proteins can be used in many ways, not only to produce the same dairy-based foods we know and love (milk, cheese, yogurt) but also, potentially, products like dietary supplements. “Because it’s the same kind of protein that food makers are already familiar with, it’s simple to use flora-based dairy protein in exactly the same ways you’d use dairy protein from cow’s milk,” the company says.

Pandya adds, “While our current focus is on whey protein, we’re committed to developing all major milk protein fractions, because the fermentation process is surprisingly simple. We combine our microflora with plant-based sugar and put it through fermentation. Afterward, we filter out the flora and remaining sugar and dry the protein into a powder that can be implemented into all sorts of products.”

In November 2018, Perfect Day and the Archer Daniels Midland Co. (ADM; Chicago) signed a joint agreement to develop and commercialize animal-free dairy proteins. (“These animal-free dairy proteins will be the first in the world to be produced at large scale via fermentation instead of using farmed animals, which have historically been the only way to produce dairy proteins,” the companies’ press release states.)

“We are working with ADM to optimize and scale up the production of our protein,” says Gandhi. “ADM has been a leader in plant proteins for many, many years, and working with them has and will enable us to propel this source of dairy protein that can lead to endless opportunities for food innovators and consumers.”

And it’s likely just the beginning. Perfect Day says that as of October 2019, it has received $62.5 million in funding. (It currently employs just over 70 people.) Says Pandya, “While we cannot share specific details about the number of requests [we’ve received] to partner, we have been overwhelmed by the positive response and are excited for what’s to come in the near future.” The company says interest is coming from “some of the most well-known food and dairy companies in the world,” as well as from smaller food makers and even culinary chefs.

Education will still be needed to introduce flora-based protein to consumers, the company says. To those who question the naturalness of a Perfect Day protein, the company points out that the fermentation techniques used to create Perfect Day’s dairy proteins are the same as those used for more than half a century to create ingredients like vitamins, probiotics, and natural flavors. “Fermentation is natural,” the company says.
Ingredient Supplier

“It’s been used for centuries to preserve and improve foods.”

Says Gandhi: “We, at Perfect Day, are dedicated to transparency, and we truly believe in educating consumers about this new category: flora-based foods. On our website and in our external communications, we include a breakdown of how the fermentation process works and how our protein is created. As we work with partners and continue to work through educating consumers on this category, we’re constantly assessing receptiveness and overall understanding of this category so that we can continue to share a clear message.”

Perfect Day is also communicating with the U.S. FDA regarding its proteins’ status as generally recognized as safe (GRAS). A third-party assessment affirmed the flora-based protein as GRAS. Says Pandya: “We submitted the GRAS filing for our non-animal whey protein to FDA in April 2019. Since 2014, we have been briefing the FDA on our process and discussing labeling for clear consumer communication.”

Milk made from non-animal dairy protein does not fall under FDA’s legal definition of milk, which FDA defines as “the lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows.” Keeping these regulatory definitions in mind, Perfect Day says, “We have referred to our protein on packaging as ‘non-animal whey protein.’” (It adds: “There is precedent in the dairy industry and with the FDA for similar nomenclature as ‘non-animal rennet,’ a common component in cheesemaking. Non-animal rennet is also made through microflora fermentation.”)

“We are the first and only company scaling flora-based dairy, so we are on a mission to educate consumers on this new category and ensure we are working closely with the FDA,” the company says.

And, at the end of the day, Perfect Day’s proteins are all about expanding the options for consumers.

“Consumers want choices, and we recognize that there is no single type of protein that will satisfy every consumer,” says Pandya. “Our goal is to enable food makers to offer a new choice: products that not only taste great but that are also nutritious, sustainable, and humane. We are expanding the total ‘protein pie’, so to speak, by providing food companies with a third, flora-based protein option.”

When will the first commercial foods be available featuring Perfect Day’s flora-based protein? “Given the timelines of our brand partners, we expect to be able to launch the first commercial product(s) within the next year,” says Pandya. The good news for consumers? Soon, very soon, you will be able to have your dairy proteins and eat sustainably, too.
Nutritional Outlook’s

People-to-Watch Directory

A Who’s Who of the natural products industry
Nicholas Guariglia, Chief Operating Officer
Bibita USA LLC (FLEXWATER) • Brick, NJ

I worked as a logistics-operations officer in the U.S. Marine Corps from 2011-2016. Upon returning to New Jersey, I began an import company with three of my childhood friends: Frank Gonnello Jr., Joseph Testa, and Nick Giunta. We developed a strong relationship with a beverage producer based in the Kosovo Alps. In July 2019, we launched FLEXWATER: an enhanced fitness-wellness water (BCAA and Collagen) that comes in multiple flavors. Less than six months into operations, we have surpassed 400 single points of sale throughout the Northeast. Consumers love the unique packaging (each bottle is designed like a dumbbell). We are now gearing up for Phase II in Q2 2020—national marketing—and are looking for the right distribution partners.

My wife (of one month) recently moved to the U.S. from Europe. She’s motivated by what is possible in America.

Contact: 732/581-4382
E-mail: info@drinkflexwater.com
www.drinkflexwater.com

Steve Geiger, Vice President of Sales
Vidya Herbs • Red Bank, NJ

With over 25 years of experience in the nutritional industry under his belt, Steve Geiger brings a vast array of experience to his role as Vice President/General Manager of Sales and Operations at Vidya Herbs Inc. He leads the fast-growing U.S. business based in Red Bank, NJ. Steve is already making a splash at the global company, with fast-growing sales numbers, and launching new, patented products in the U.S. such as: “fat-burning” CGA-7™ and the “beauty from within” ingredient, SKIN-CERA®. Steve is passionate about bringing high-quality, natural extracts to clients in the U.S. market and is committed to providing innovative solutions for product development across the food, beverage, nutraceutical, and supplement industries.

www.vidyaherbsusa.com

Ken Langhorn, Vice President of Sales
Charles Ross & Son Company • Hauppauge, NY

Ken Langhorn, recently promoted to Vice President of Sales at Charles Ross & Son Company, has helped manufacturers perfect their mixing and blending processes for over 20 years. Named Technical Director of the Ross Test & Development Center in 2006, he has worked side by side with customers on over 150 tests annually, contributing directly to the development of new products and formulations across many industries. With expertise in natural supplements and food applications, Ken provides technical support to customers and the Ross sales team, and has authored and contributed to many articles on mixing in trade publications across the process industries.

www.mixers.com
Asha Ramesh has been with the Sami-Sabinsa Group for 25 years in positions of increasing responsibility, most recently as Sabinsa’s Vice President of Business Development prior to her promotion to CEO in 2018. She joined the Group as Manager of Purchasing & Special Projects at Sabinsa’s parent company, Sami Labs Ltd., in Bangalore, India. She moved to the Sabinsa staff in January 2000, focusing primarily on sales and business development with involvement in a range of departments of the organization. Asha has a Bachelor’s Degree in Science and an MBA with specialization in Marketing Management from Bangalore University, India.

www.sabinsa.com
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Description
The Wright Group is a turnkey provider of customized nutritional blends and nutritional ingredients to global leaders in the growing functional food and nutritional supplement markets. With a strong reputation built over its 60-year history, Wright manufactures and supplies high-quality products composed of nutrient-rich raw materials with enrichment applications in a broad line of functional foods, beverages, dietary supplements, and other nutrition-based end-products.

The Wright Group works with our clients across the globe to offer ingredient insights and solutions such as custom nutrient premixes; microencapsulation of vitamins, minerals, and omega-3; direct-compressible granulations; and a complete line of value-added bakery ingredients and enrichment systems for rice and grains that are second to none.

Products
Wright offers a variety of fortification options to enhance an array functional foods and beverages. **SuperCoat**® microencapsulations offer superior nutrient protection, taste, and odor masking, as well as extended stability and shelf life. In addition, **SuperCoat**® flavor microencapsulation offers sustained and extended flavors release, especially in confectionery applications, and can be utilized to create **SuperBlend**® valued-added premixes in applications that may adversely affect nutrient potency and performance. **SuperCoat**® and **SuperBlend**® offer excellent function and flexibility in a variety of fortified foods, beverages, and wellness products.

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Nutritional supplement applications can benefit from our **SuperTab**® direct-compressible granulations, which deliver even particle distribution, high bulk density for consistent compression, and excellent flowability in multivitamin and other tableting applications.

Services
With such a diverse portfolio of products, Wright is one of only a select group of manufacturers with the resources and technology to deliver independent manufacturing of custom premixes, microencapsulates, and granulations. But we also understand that superior service is just as important as technology and expertise. That’s why Wright delivers quality-assured custom blends, microencapsulations, and granulations within two to four weeks of order placement. In addition, we provide you with prompt quotations, fortification technical assistance, and support documentation to help you efficiently deliver your products on time.

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Wright operates out of GFSI-recognized FSSC22000-certified facilities. All of The Wright Group’s nutrient solutions are thoroughly tested by our in-house laboratory, ensuring product safety, potency, and performance. Wright also accompanies each order with a Certificate of Analysis. The Wright Group continues to be committed to providing cost-effective fortification, while maintaining our core values of innovation, quality, integrity, and customer commitment.
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For over 50 years we have been taking our customer’s products from good to great. Providing value-added, innovative and BALANCED SOLUTIONS™ that drive profitability are our focus and our commitment to service and quality is unmatched in our industry. Connect with us to find out more about how our history of innovation and strategic solutions can help bring out the best in your product line.

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If you’re ever in doubt about our culture’s comfort with technology, consider that even a small child can access more processing power from the palm of her hand than our ancestors could fathom over their entire lifetimes.

Yet when it comes to food and drink, an increasing number of us would rather technology get nowhere near what goes down the proverbial hatch. Far better to choose products with ingredients plucked from a field, nurtured on a free range, or gently squeezed from their “natural” source.

That’s the most environmentally sustainable way to source, right?

Not necessarily. Sometimes harvesting ingredients from nature exacts a larger toll—in energy, water, land, or carbon emissions—than does generating them in a lab. And yet one technology currently generating ingredients in labs is as “natural” as metabolism itself.

It’s fermentation. And it may be the ingredient engine of the future.

**Trends a-Brewing**

“Historically,” says Noah Michaels, team leader, culinary, Symrise (Teterboro, NJ), “fermentation has been used to produce and preserve foods. But as we see increasing fear of technologically processed ingredients, manufacturers are looking toward these ancient processing methods to find new ways to make ingredients.”

You can’t blame them. Fermentation enjoys a stellar reputation among wellness-minded consumers. Notes Chris Speed, senior vice president, global sales and marketing, NattoPharma (Oslo, Norway), “Fermented foods can be healthy, as they add beneficial bacteria to the gut microbiota, increasing digestive and immune system health.”

Fermented foods and beverages even constitute a bona-fide trend, one that Christopher Naese, vice president, business development, Florida Food Products (Eustis, FL), says, “follows a greater consumer movement toward healthier, better-for-you products that are recognizable on ingredient legends.”

**Ingredient Engine**

But while consumers largely “get” fermentation’s role in producing items like wine, beer, cheese, tempeh, and kombucha, fewer understand that it can create ingredients. Indeed, many in the food and nutrition industries might not fully appreciate fermentation’s ingredient-generating power.

The process diverges from traditional fermentation in that rather than inoculating a starting material with fermentative organisms that transform that material into something quite different, producers insert a targeted gene into a host organism—usually a yeast—that then ferments a nutrient medium, producing the targeted ingredient as a byproduct. Producers then harvest the ingredient from the fermentate and purify it for use.

“Fermentation’s been used in food and beverage preparation for thousands of...
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years,” notes Andy Ohmes, global director, high-intensity sweeteners, Cargill (Minneapolis). “But on the ingredient side, it’s a relatively new approach to production.”

The number of fermentation-generated ingredients now available remains somewhat small, but as suppliers master the technique, the ranks are growing. Existing options like citric acid and other acidulants, and the sugar alcohol erythritol.

“Surprisingly, a large portion of table sugar is made from fermented beets and not from sugarcane,” notes Dillon Friday, PhD, category director for the North American culinary flavor division at Symrise. “Another common ingredient made from fermentation is MSG. And we often see that sodium benzoate and potassium sorbate, which aren’t label-friendly, are being replaced by ‘cultured dextrose’, which is a naturally fermented preservative.”

**The Upside**

“The fermentation process doesn’t just produce one or two molecules with bioactivity,” Friday continues, “but perhaps hundreds. We’re finding that fermentation of natural ingredients like rice or other proteins naturally creates bitter maskers, taste enhancers, cooling agents, sweetness enhancers, and more.”

And the process pays dividends beyond the ingredients themselves. Elzaphan Hotam, vice president of global marketing and CEO, NextFerm Technologies USA Inc. (Berkeley Heights, NJ), calls fermentation “the ultimate sustainable solution,” given its minimal land, water, and energy requirements compared to traditional sourcing, and its use of waste sugars as the fermentation medium.

Erythritol is exhibit A. ”While some fruits and mushrooms produce small quantities of erythritol, it’s economically prohibitive to extract the same sweetener from these sources,” Ohmes explains. His company’s workaround: fermentation. “This process isn’t just more affordable,” he claims. “It also delivers a consistent, high-quality product and ensures supply-chain reliability. Ingredients produced through fermentation aren’t subject to the fluctuations in quality and supply we sometimes see with plant-sourced ingredients.”

Further, in an environment that prizes transparency, fermentation presents a refreshingly open book. As Elyse Lovett, senior marketing manager of nutrition, pharmaceutical, and CCM, Kyowa Hakko USA (New York City), notes, “Not only do consumers want to know an ingredient’s specific benefits to their supplement regimen; they’re looking deeper and asking questions like, ‘How is this ingredient made, and where is it from?’ Fermentation may not strike the romantic chord of tugging an ingredient from the soil, but it’s unambiguously traceable, quantifiable, and safe.

**Ingredients in Action**

**Where do we see fermentation in action?**

At Impossible Foods, to cite one high-profile example. The company is leveraging fermentation to produce a vegetarian version of heme, the protein that makes red meat red and gives Impossible Foods’ plant-based meats their convincingly meaty quality.

Nitrogen-fixing plants—think soybeans and legumes—naturally generate heme and store it in their roots. And while Impossible Foods could extract that heme from such plants, the economic and environmental costs of doing so made them to transplant heme-producing genes from soybeans into yeast cells, which then produce heme via fermentation.

A similarly sustainable impetus compelled Cargill to tap fermentation for the production of its EverSweet stevia sweetener. “The biggest problem with accessing the best-tasting parts of the stevia plant, Reb M and Reb D, is doing so in a commercially and environmentally viable way,” Ohmes explains. The compounds appear in the plant’s leaf in such small quantities that extracting them via a “traditional approach” is too costly and inefficient.

So Cargill employs a “specially crafted yeast” to produce the same rebaudioside M and rebaudioside D molecules as found in the stevia leaf, but at scale. “Using fermentation,” Ohmes says, “we can provide our customers with a great-tasting product in quantities and at a price that make widespread commercial use possible, but produced with the environment in mind.”

Vitamin K2 is another fermentation windfall. While we can obtain this fat-soluble vitamin—key to bone and vascular health—from foods like cheese and the Japanese soybean delicacy natto, “the only way to produce the active ingredient naturally is via bacterial fermentation,” Speed notes. “It’s a sustainable process with very low emissions and waste, and it allows for a natural label.”

His company uses *Bacillus* species with a high capacity for producing menquinone-7, the most bioactive form of vitamin K2, to ferment the ingredient from a vegetable-based substrate. “Applying a proprietary technology, we isolate the natural MK-7, purify it, and concentrate it to a superior active ingredient free of known allergens,” Speed adds. The commercial products are vegan-suitable and Non-GMO Project verified—“both features that resonate with today’s natural- and clean-label-conscious consumers.”

NextFerm’s Hotam claims that her company developed the first yeast-derived astaxanthin for human consumption using fermentation and downstream extraction, yielding “a product with much better physical properties and greater market potential than the existing source,” she says, “and at a competitive cost structure.”

The finished astaxanthin beadlets are four times more potent than astaxanthin from other sources, “enabling greater and easier use of this powder technology in various food formats,” she says. “We also have a 10% odorless fluid—something algae technology simply doesn’t carry—thus opening another compelling area of gummies and related applications.” More carotenoids, proteins, and prebiotics are in the company’s fermentation pipeline.

Embria Health Sciences (Ankeny, IA) makes its dietary ingredient EpiCor through a highly controlled fermentation that starts with baker’s yeast deprived of oxygen. “Under these high-stress conditions, the yeast produces a host of metabolites and nutrients,” explains Cashlyn Lovan, senior marketing associate for the company. Those, along with “beneficial yeast cell components,” comprise EpiCor, “a whole-food fermentate that supports a properly functioning, strong, and balanced immune system,” she says.
And Florida Food Products’ line of fermented juices and powders sourced from plants like carrot, mushroom, and beet “follows the increasing drive to derive flavors from foods,” Naese says. Using a lactic-acid fermentation that lowers beet juice’s sugar content by about 10%, the company creates an ingredient with “a fresh flavor and light sweetness, coupled with beet’s inherent health benefits,” according to Naese. “Fermented fruit and vegetable products like fermented beet juice give formulators clean-label alternatives without the need to add flavors, acids, or flavor enhancers to the finished product.”

**Ready for Primetime?**
But fermentation still has hurdles to clear before reaching its apotheosis as an ingredient engine.

As Symrise’s Friday explains, “Fermentation is a complex biological process. The knowhow to create ingredients this way is a very sought-after skill that requires years of training and experience.”

Achieving cost effectiveness and organic certification also remain on the to-do list. And fermentation requires “impeccable control and sanitation to ensure that the desired microorganisms can flourish unchanged by undesirable microbes,” Symrise’s Michaels adds.

So in the scramble to capitalize on fermentation’s promise, some industry players are acquiring or investing in companies already adept at the method, while other “traditional” baker’s and brewer’s yeast companies “have entered or are looking to enter the ingredient world through leveraging their existing knowhow and capacity,” Hotam says. She considers AB-inBev (Belgium) and Lesaffre (France) “great examples of this approach.”

**Fermenting Forward**
In any case, it may take some effort to secure widespread consumer buy-in of fermented ingredients. But once educational principles are in place, experts hope, the momentum for mainstreaming will take care of itself.

“I think it’s important to emphasize that the fermentation process, versus chemical synthesis, yields ingredients of high quality and purity,” Kyowa Hakko’s Lovett notes. “This is a key aspect in consumer education. While the cost may be high, Millennials are willing to pay for quality, so telling your story is important.”

And fermented ingredients simply have a compelling story to tell. “We believe the growing popularity of fermented foods will help drive consumer acceptance of ingredients produced through fermentation,” Ohmes says. They may come from a lab, but they’re down to earth.

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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.
When companies talk about environmental sustainability, they tend to talk about it in terms of reduction, avoidance, and maintenance. New conversations, however, are using terms like rehabilitation and regeneration because, let’s face it, sustaining what we have isn’t enough; ideally, we would leave the earth and its resources healthier than we found it. At the center of these conversations are such questions as: How much do we know about the impacts of harvesting? How do we leave the earth and soil better than we found it? How do suppliers maintain a sustainable supply chain when natural disasters and other environmental factors are greatly impacting yields?

Take the world of herbal ingredients. “Herbal product companies are already experiencing disruptions in their supply chains from shortages from unprecedented rains, droughts, fires, hurricanes, and other weather events caused by climate change,” says Ann Armbrecht, PhD, director of the Sustainable Herbs Program. “These disruptions will only increase in the future.” Armbrecht, an anthropologist, founded the Sustainable Herbs Program in 2015 to spread education about the medicinal plant supply chain and garner support for sustainability, ethical sourcing, and transparency in the industry. In 2018, the educational group the American Botanical Council (Austin, TX) added its clout to the program, coming on board as a partner.

The American Herbal Products Association Foundation for Education and Research on Botanicals (AHPA-ERB)—which promotes education and research on medicinal, therapeutic, and health-promoting herbs—funds a lot of harvest-impact studies. “We give money to academics and not-for-profits to collect scientific data in the field to understand how these populations of wild plants are being impacted by harvest,” says Holly E. Johnson, PhD, chief science officer at the American Herbal Products Association (AHPA; Silver Spring, MD).

One of AHPA-ERB’s harvest-impact studies is on oshá (Ligusticum porteri), a sacred Native American plant used in herbal supplements. “We have had an ongoing six-year
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study with Kelly Kindscher, PhD, a botanist at the University of Kansas, and his team of students who have gone out and done [research] in northern New Mexico and Colorado where the herb grows,” Johnson says. “Right now, there’s a forest ban, so we can’t harvest much at all on forest land. But we’re trying to figure out what’s going on. Is there a lot of it out there? If there was a commercial harvest, how much could we take? We’re harvesting different amounts and seeing how the herb recovers over a number of years.”

Wild-harvested herbs are not only affected by climate change, but resource allocation. “There are fewer wild places these days,” Johnson says. “And, of course, the demand for botanicals has gone up. As that happens, you have to keep an eye on it to make sure these wild plants are sustained.”

When it comes to cultivated plants, “At the current rates of soil degradation, the world’s topsoil could be lost within 60 years, a senior UN official has said,” says Armbrrecht.

According to the World Wildlife Fund (WWF), half of the topsoil in the world has been damaged in the last 150 years. Decarbonization, erosion, desertification, and chemical pollution all damage soil. And in addition to the loss of arable topsoil, soil scientists say our food will lack vital nutrients and trace minerals due to the current rates of soil damage.

The herbal industry has an important role to play in supporting biodiversity preservation and regenerative ecosystems. “It’s important because in sourcing raw materials in a responsible way, the industry can be part of regenerating the ecological, economical, and cultural systems of communities, bringing wellness not just to the consumer of the finished product but to all of the communities—human and ecological—involved,” Armbrrecht says.

Regenerative Agriculture
According to the nonprofit group Regeneration International, regenerative agriculture is defined “as farming and grazing practices that, among other benefits, reverse climate change by rebuilding soil organic matter and restoring degraded soil biodiversity, resulting in both carbon drawdown and improving the water cycle.”

“It is a holistic land-management practice that leverages the power of photosynthesis in plants to close the carbon cycle, and build soil health, crop resilience, and nutrient density,” the group explains on its website.

In a 2017 article they wrote for the publication GreenBiz1, Martin Stuchtey, founder and managing partner of SYSTEMIQ, and Morten Rossé, expert associate principal at McKinsey Center for Business & Environment, urged: “It is time to move away from what has become a linear food system: a take, make, dispose system in which, too often, synthetic inputs go into the land; the
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land gets overused, and a huge proportion of the food produced is wasted and ends up in landfill. In addition, many nutrients never make it back to the field, stacking up in contaminated sludge. The goal should be to move toward a regenerative model in which land is restored as it is used and in which nutrient and material loops provide much-needed inputs, resulting in a healthier food supply.

Often these practices involve assessments and certifications to ensure they are being adhered to, Armbricht says. “And often, the burden—both in time and cost—falls on producer groups and/or growers. Companies can help shift this burden in different ways, from supporting farmers in their network to participating in the increasing number of regenerative farmer-training programs to sharing the costs of participating in certifications like FairWild.” The FairWild Foundation is a third-party certification program designating companies that are sourcing and producing products using socially and ecologically responsible methods.

Ryan Siroli, global row crop sustainability director for ingredients supplier Cargill (Minneapolis), says that as farmers adapt practices that improve soil health, they help “build drought resilience, increase yield stability, reduce nutrient loss, and increase carbon sequestration”—benefits that could come back to the company itself.

“There is strong evidence to support that these efforts translate into more stable yields with lower input costs,” he says.

Cargill fosters a partnership with the Soil Health Institute, bringing farmers and ranchers together with industry to invest in soil health. One way in which soil health is improved is through cover crops—for instance, typically soybeans are planted one year, followed by corn the next. Planting a cover crop helps bring about many of the benefits mentioned above. “In some locations, yellow peas can serve as the cover crop, allowing farmers to earn additional income, enabling them to grow and harvest three crops over the span of two years. They earn income from an extra crop; plus, yellow peas bring a host of soil health benefits. And, since peas put nitrogen back into the soil, less nitrogen fertilizer is needed to grow corn the next year, saving farmers input costs while improving water quality,” Siroli explains.

**INITIATIVES IN PRESERVATION AND REGENERATION**

**The FairWild Foundation**

The FairWild Foundation provides a global framework for implementing a sustainable and fair-trading system for wild-collected plant ingredients and their products.

“Collection practices of wild botanicals impact entire ecosystems,” says Wilson Lau, vice president of sales and marketing for Chinese herb supplier Nuherbs (San Leandro, CA) and a FairWild Advisory Board member. “Sustainable harvesting of wild plants can provide an incentive to maintain the habitats for the benefits of other species.”

The FairWild Standard “protects plant species and local wildlife from the effects of over-harvesting and makes sure local collectors enjoy fair working conditions,” says the group’s website. The standard addresses four areas: sustainable harvesting, resource management, ethical working conditions, and traceability in trade.

In addition to FairWild, there are many certifications, foundations, programs, and initiatives that offer frameworks, guidelines, standards, research, and protection efforts to further the natural product industry’s sustainability efforts.

**Sustainable Herbs Program**

The Sustainable Herbs Program, in partnership with the American Botanical Council (Austin, TX), helps protect herbs and supports sustainability in the industry through various mediums. The program offers resources and guides for companies in the herb industry with best practices, case studies, exercises, and more.

“We are continuing to produce educational content, primarily with videos about what a range of companies are doing to address these issues because our belief is that these stories are one of the best ways to inspire action,” says Ann Armbricht, PhD, director of the Sustainable Herbs Program. “We are also collaborating with others to organize panel discussions, multi-stakeholder meetings, and other gatherings in order to mobilize conversations and actions on these issues in the industry as a whole.”

**The Indian Kino Tree Initiative**

“Pterocarpus marsupium is often described as one of the most multipurpose forest trees,” says Shaheen Majeed, president worldwide of ingredient supplier Sabinsa Corp. (East Windsor, NJ). Although the Indian Kino Tree is highly valued, it is also listed on the International Union for Conservation of Nature’s Red List of Threatened Species. “Continued depletion of this species without any replanting initiative endangers the tree’s population and continued availability over a period of time,” says Majeed. “We want to prevent such a possibility.”

The Sami-Sabinsa Group supports reforestation for cultivating *Pterocarpus marsupium* through its good agricultural practices program. The company says: “Under the initiative, Continued on page 44
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the land in the Seoni and Balaghat regions in Madhya Pradesh, India, is provided by the forest department of the state of Madhya Pradesh, with the Madhya Pradesh Rajya Van Vikas Nigam performing the cultivation and maintaining the plants for a minimum period of five years. After five years, the trees are self-sustaining.

The Panda Friendly Program
The Panda Friendly Program’s goal is to teach local farmer co-ops in China to harvest herbs in a way that reduces damage to the panda habitat area, allowing wildlife to safely reside in their natural habitats.

“The Southern schisandra berry harvest is usually quite destructive, as the whole vine is pulled down, killing the vine and often damaging the tree that supports it,” says Brien Quirk, director of R&D at Draco Natural Products (San Jose, CA). Optimal harvesting is also less than desirable, he adds. “Oftentimes, immature green berries are harvested in the summer, scalded in boiling water, then sundried, giving the appearance of autumn-harvested, mature, brownish-red berries.”

Draco is exercising its knowledge and reach to help promote better practices by participating in the Panda Friendly Program alongside other partners. Says Quirk: “[The] program developed a quality standard for wildcrafting, where only mature berries are taken, bunches are clipped from the vine without destroying the vine or the supporting tree, and the top one-third of the berries on the vine are left alone to ensure regeneration and sustainability. This helps protect the habitat from unnecessary destruction and teaches the locals to place value on the integrity of the ecosystem for future harvests.”

Draco Natural Products joined the program 11 years ago. Additional plants, herbs, and roots are being considered for the Panda Friendly Program, including Traditional Chinese Medicinal (TCM) plants, turmeric, and ginger. And efforts are already underway to add more villages and households of wildcrafters to the co-op.

The Antarctic Wildlife Research Fund
To protect the Antarctic ecosystem through research and education, the Antarctic Wildlife Research Fund (AWR) was established, in partnership with krill ingredients supplier Aker BioMarine (Oslo, Norway) and other organizations, to facilitate and promote research on the Antarctic ecosystem through support from commercial partners and individuals.

“In order to help safeguard the future of the Antarctic fishery, we need to continue filling the knowledge gaps around the krill biomass and its surrounding ecosystem,” says Runa Haug Khoury, director of sustainability, Aker BioMarine AS. “With the work of AWR, ongoing science and data will become available, helping the industry make educated decisions on how to better understand krill and the interlinkages between species in the Antarctic ecosystem, and how to best care for and protect the ecosystem. As we continue to face potential challenges, such as those imposed by global warming, AWR will look at how the rise of ocean temperatures will affect krill’s behavior, movements, and reproduction.”

Through its sustainable wildcrafting program, 10%-20% of the material is left on the field to prevent over-harvesting or depletion of the plant-resource biome.

“Since wild plants are often more efficacious, over two-thirds of our products are made from ethically wildcrafted plants,” says Brien Quirk, Draco’s director of R&D. This means that plant materials are only harvested in areas that are not affected by pollution, and only partial harvests of the healthiest plants are taken, among other practices.

“Another interesting component of this program is utilizing the benefits of partial cultivation in wildcrafting by reseeding in areas to help replenish and ensure the plant-stock survival,” Quirk explains. “It’s similar to how birds and wildlife spread seeds by eating them but not fully digesting all of them, which allows the plants to be reseeded and established in new areas.”

The benefits of these practices are many, Quirk says. “Diversified flora and fauna in more wild and sustainable ecosystems allow plants to thrive better by resisting insect attack or fungal diseases that are otherwise more susceptible to spread of diseases or infestations in crop monoculture. With
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birds, insects, and other wildlife in a more natural setting, no one insect can multiply unchecked as in typical agricultural settings because the more natural prey-and-predator interactions will keep a dominant population in check.”

**Sustainable Farming Methods**
Implementing sustainable practices and establishing new techniques, and even supply chains, can be overwhelming. Faced with these daunting challenges, where should companies start?

“As [medicinal plant expert] Josef Brinckmann advises, the best thing to do is just start somewhere,” says the Sustainable Herbs Program’s Armbrecht.

“Pick one plant in your supply chain that is important to your business and follow it to the source. Identify the threats to biological diversity and degraded ecosystems and begin to take action. There are plenty of resources available for what to do when you identify the threats.”

Like many companies, pea ingredient supplier Puris (Minneapolis) diversifies its efforts and its portfolio to support regenerative practices and diverse crop rotations, which include yellow field peas.

“We don’t believe the one-seed-fits-all model supports a regenerative ecosystem,” says Nicole Atchison, chief technology officer. “We believe growers deserve more high-quality choices for their farms. Our portfolio of beans, pulses, and other non-GMO plants is adapted to the unique conditions of our partner farms.”

The company’s website states: “Every variety is naturally bred for superior yield, disease resistance, and vigor, and regenerates the soil, leaving the soil healthier than it started.”

Atchison says Puris has seen many successes as a result of this, including releasing pulse varieties that excel in new geographies, providing additional options for diversity and double cropping on these farms, and leveraging the shorter growing cycles of peas to ensure winter cover crops are established to add beneficial nitrogen naturally to the soil.

Education is also a key act that companies can play a role in. Groups such as the Midwest Row Crop Collaborative (MRCC) support the production of row crops in the Midwest. Cargill, a founding member, says MRCC’s goal is to demonstrate how changes in farming practices can viably benefit the environment, using science-based approaches to identify and develop solutions to meet a set of goals that include soil health, water conservation, and nutrient loading reduction.

Cargill’s cocoa and chocolate products also adhere to sustainable practices. In addition to “We started the program to ensure we would have a continued supply of raw material, but the program became much more—a social mission where we fund the small rural schools and improve local infrastructure,” says Shaheen Majeed, president worldwide, Sabinsa.

Today, Sabinsa’s farming network expands over 40,000 acres and involves more than 6,000 farmers all over India. “I have heard stories of these farmers on the land and heard them say that their child will be the first in the family to go to a university thanks to our efforts,” says Majeed. “Planning ahead, we’ve expanded the program into parts of Africa and Southeast Asia as we continue to look toward the future and anticipate the effects of weather patterns and climate change.”

Full-iD is an internal certification system at ingredients supplier Vidya Herbs (Fullerton, CA) that measures different categories, including farming practices that preserve natural resources and respect the farm ecosystems. “Through regular on-field visits and trust-based relationships with our farmers, we avoid any destruction of the local forest and/or biodiversity,” says Emilie Danckaert, global marketing manager. “We encourage our farmers to maintain the variety of animals and plant species that keep a natural ecological balance.” For example, coffee growing near adapted shade trees—silver oak, black pepper, or guava trees—keeps in the humidity and creates a bird-and-bat-friendly environment.

Polyculture, the practice of raising multiple crops in the same field, is also encouraged to promote a richer ecosystem. “Our farmers, for example, alternate between turmeric and potato crops to renew the soil by regulating nitrogen and avoiding soil depletion,” Danckaert says.

**Upcycling**
Vidya Herbs also practices botanical upcycling. When a plant is harvested, every part of the harvested plant is transformed into high-added-value ingredients, following a zero-waste approach.

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**“Pick one plant in your supply chain that is important to you and follow it to the source,” advises Ann Armbrecht, PhD, of the Sustainable Herbs Program.**
Upcycling also happens in the food industry. Every year, roughly one-third of the food produced in the world for human consumption—approximately 1.3 billion tons—is wasted or lost, according to the Food and Agriculture Organization of the United Nations. Finding ways to reuse by-products that are rich in nutrients creates positive impacts on the environment and economics.

“Most byproducts from food production are now composted, used for energy production, or as animal feed,” says Thierry Lenice, global environmental manager at Diana Food (France), a part of Symrise. “We are now trying to identify the valuable components, consider how we can extract and stabilize them during the manufacturing process, and transform them into products for humans, pets, or aquaculture. For example, in fruit and vegetable production, one-third of the harvest is lost because it does not meet aesthetic retail criteria, which set strict specifications regarding shape, weight, and size. We can use these raw materials, as well as residual material such as skins, peels, seeds, or flesh, for new products.”

Denis Guyonnet, the innovation scientific director of Diana Nova, Symrise’s incubator for innovation in health and nutrition, says there is great value in the residual products and byproducts from food production.

He says: “The production of our banana purees, flakes, and powder—which are used in baby food and other products—generates around 22,000 tons of banana peels a year, which still contain a lot of dietary fiber and health-promoting substances. If we extract and recycle these and many other natural ingredients, it will have a positive impact on the environment. In this way, we contribute to the conservation of natural resources while also creating new markets and economic advantages for our company.”

A Promising Future
Many ingredient companies have established sustainability practices that help protect the land, farms, crops, wildlife, the oceanic ecosystem, plants, farmers, and communities they work with. Each year, companies are realizing the value of not only replenishing and protecting the land, but they understand the value in bringing workers, communities, and industry together to bring about good for the land and the people.

As the need for resource management, sustainable harvesting, regenerative agriculture, and circular systems becomes more imminent, technology, innovation, data, partnerships, and accountability will play large roles in these efforts. [4]

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<td>The Wright Group</td>
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Opportunities in tea, from cup to bottle

BY SEBASTIAN KRAWIEC, ASSOCIATE EDITOR

Tea makers have a lot to offer consumers in terms of flavor and format, with a broad array of options to meet consumers’ unique preferences. And those preferences are indeed unique. Consumers who choose loose leaf tea or tea bags are likely to be seeking a different experience than those who choose a ready-to-drink (RTD) or powder mix option, for instance.

While the tea space is diverse and vast, what is consistent across the board is that consumers are becoming more savvy and adventurous, putting a premium on quality, and seeking better-for-you, functional options to supplement their health.

Consumer Preferences
Earlier this year, flavors firm Comax Flavors (Melville, NY) released primary research on consumer behavior, usage, and attitudes toward tea products, including tea bags, RTDs, and tea powder mixes. The company’s poll of 1,000 U.S. respondents aged 18 to 70 years showed that a consumer’s preference for a specific tea format often also correlated with a preference for a certain flavor profile.

For example, those consumers who preferred tea bags also preferred more traditional tea flavors. Green tea was ranked the number one flavor, cited by 44% of respondents. The next popular flavor was plain/original black tea, cited by 27%, followed by sweet tea, earl gray, and English breakfast, cited by 21%, 20%, and 19% of respondents, respectively.

On the other hand, consumers of RTD tea tended to prefer sweeter flavors, as well as citrus and fruit flavors. Among flavors favored by RTD drinkers, lemon ranked number one, cited by 48% of respondents; sweet tea and green tea were tied for second place, each cited by 39% of respondents; followed by peach, cited by 38% of respondents. Those who drink tea powder mix showed similar preferences, with lemon once again ranking at number one, cited by 61% of respondents, followed by sweet tea, peach, and raspberry, cited by 41%, 38%, and 36% of respondents, respectively.

Better-for-You Potential
Perhaps the most important trend driving sales in the tea space is health and wellness, which National Tea Day says was cited by 80% of surveyed tea brands. Herbal teas have long been associated with health benefits, but tea brands are also actively positioning teas for specific health boons such as sleep support, stress relief, and detox.

Functional tea is a particularly good opportunity for RTD tea because offering health benefits on the go is a major selling point for today’s consumers, and consumers like the convenience of RTD tea. For example, according to projections from Beverage Marketing Corp., RTD tea was the only tea category to increase in both volume and value in 2018, reaching an estimated $10.75 billion. Despite the stiff competition in the overall RTD space, RTD tea was able to hold its own, increasing in volume by 1.1% compared to other RTDs, including soft drinks, sports drinks, and fruit beverages, which declined in volume in 2018. Because of tea’s healthy halo, it is attractive to consumers seeking an RTD with less sugar, for example.

Leveraging the intrinsic health benefits of certain teas and incorporating other functional ingredients can attract even more consumers, considering that the functional beverage category is experiencing double-digit growth. According to SPINS, shelf-stable energy and functional beverages increased in sales by 11.7% to $3.3 billion in the 52 weeks ending April 21, 2019. Success in the RTD space can translate into success in the functional tea space because tea as an avenue for specific health benefits feels familiar to consumers.

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