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Digestive health: Market growth backed by science

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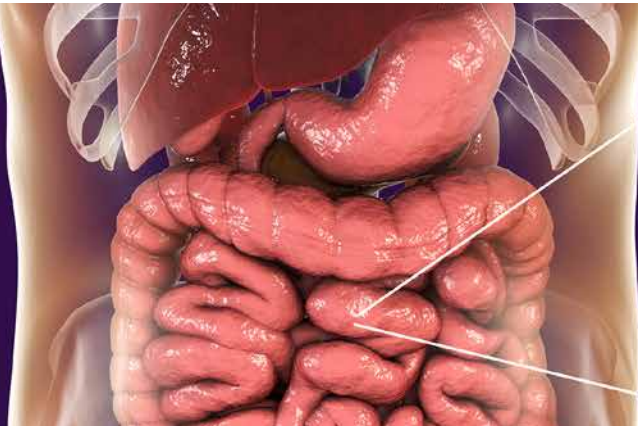
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With a world full of people suffering digestive issues, and evolving science connecting gut bacteria and overall health, **Lisa Schofield** explores innovative ingredients like fiber, prebiotics, probiotics and enzyme enhancement solutions that aim to bring balance to consumers' gut microflora. Also, FMCG Gurus' **Will Cowling** reveals key consumer data driving growth.



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Consistent messaging that sustained consumption of healthy bacteria is key, argues **Maryellen Molyneaux**, of strategic consultant NMI, as consumers get educated on positive gut health and seek out innovative products and brands.



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Science breeds opportunity in the gut category



The future of the digestive health market can be summed up in three words: science, growth and opportunity. In terms of nutritional categories, it is one of the most compelling areas right now.

That's because the gut is home to so much of our health. About three-quarters of the body's inherent immune function is housed in the digestive tract—which is why generic probiotics used in supplements or functional beverages use generic structure/function claims of supporting healthy digestion and immunity.

Emerging research is demonstrating that there is a nexus between gut health and the brain's function.

Called the gut-brain axis, the makeup of bacterial communities throughout the gastrointestinal tract—called the microbiome—can change the status of the central nervous system.

Early studies using prebiotics and milk fat globule membrane (Lacprodan, from Arla Food Ingredients) used in infant formula are resulting in cognitive development and stress response of infants better than traditional infant formula and akin to regular breast milk.¹ This branded ingredient also had beneficial effects on infant immune markers of bloody diarrhea and earaches.^{2,3}

That prebiotics in particular are finding efficacy is telling because fiber ingredients like inulin, fructooligosaccharides, galacto-oligosaccharides and xylooligosaccharides are becoming legitimate gut-health ingredients in their own right, uncoupling from the star power of probiotic bacteria.

But the future lies with the big picture. Digestive health is just the start. The microbiome is the future. Health benefits go beyond mere digestive upset or an enhanced immune function (valuable though that may be, in this day and age).

The gut-brain axis, tantalizing though that sounds, isn't even the half of it. Yes, various probiotic strains have been found to affect sleep cycles and stress response, even obesity, in addition to mood.^{4,5,6,7}

Modulating the microbiome is also seen as a potential target of novel therapy for autism.^{8,9}

And Paul and Barbi Schulick—legendary supplements pioneers who build and sold their New Chapter brand to Procter & Gamble—have a new brand, For the Biome, that seeks to connect the microbiome to skin health.

Permeability in the intestinal walls—i.e., leaky gut syndrome—is still a cutting-edge way of looking at intestinal health. The research is rapidly escalating, to the point where intestinal permeability is now seen as a possible contributing risk factor for chronic heart failure.¹⁰

So, we now see the tentacles of the gastrointestinal tract having influence on a range of health concerns, some far afield from the typical gut upset issues of gas or bloating.

That kind of basic and applied research is paving the way for ingredient suppliers and downstream supplement companies to provide improved health status to an ever-expanding list of consumer tribes.

Todd Runestad
Senior editor

(303)998-9220

trunestad@newhope.com

@ToddRunestad

linkedin.com/in/toddrunestad/



For a list of references, email references@naturalproductsinsider.com

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Gut check: Exploring digestive health ingredients

by Lisa Schofield

INSIDER's take

- ◆ Consumers want to improve their overall health and wellness, and expect digestive health improvements from supplement offerings.
- ◆ Fiber, prebiotics, probiotics and enzymes all positively influence gut microbiota, a must for digestive health.
- ◆ Formulators are creating ways to provide consumer brand products that are guilt-free, good for you, and offer functional benefits.

Food, glorious food. So much to satisfy our appetites and discerning palates. And so much that can irritate a sensitive digestive tract or promote embarrassing gas leaks.

Consumers want their cake and to eat it too—without repercussions. The digestive health category is, without a doubt, abundant with tremendous opportunity for nutrition brands. The market is hot, and the ingredients available are rich in diversity as well as science.

“Digestive health is enjoying something of a renaissance moment,” asserted Justin Green, Ph.D., director of scientific affairs, Embria Health Sciences, Ankeny, Iowa.

A savory market

An FMCG Gurus survey of 25,000 consumers in 25 countries in 2018 and 2019 found that 68% recognize the link between good digestive health and good overall health. Also, 45% of consumers say that they are not satisfied with their digestive health. Regarding symptoms experienced, consumers point to bouts of gas (20%) and bloating (19%) regularly.

“Consumers are being more open about their digestive health than ever before,” commented Mike Hughes, head of research and insight, FMCG Gurus. Slowly but steadily, consumers are taking a more holistic approach to proactive health as they begin to understand that all aspects of well-being are interlinked with digestion.

For instance, Hughes reported, 61% of consumers are adopting a prevention-over-cure approach and are interested in products that aid digestive health, even if they are not experiencing specific problems. Meanwhile, 81% of consumers say that they have taken steps to address their digestive health during the previous 12 months. *(See more FMCG Gurus data on [page 8.](#))*

This mindset may be the key to product success in the market. “The reality is that these eight in 10 consumers will not have made changes to their lifestyles and diets just to improve their digestive health,” Hughes asserted. “Instead, they will have made changes in order to improve their overall health and wellness, looking to improve their digestive health as a result.”



According to data from a [2019 HealthFocus International report](#), 70% of U.S. shoppers say digestive health is “extremely” or “very important” to them. Nearly one in three shoppers (32%) report “always” or “usually” choosing foods and beverages to improve digestion. Clearly, digestive health is a key concern for many shoppers.

“We know consumers are placing increased emphasis on digestive health,” said Pam Stauffer, global marketing programs manager, Cargill. She cited a [2018 HealthFocus International report](#) showing that globally, digestive health is the top-ranked functional health benefit shoppers look for in foods and beverages. “We also know consumers are becoming more familiar with the importance of ingredients like fiber, probiotics and prebiotics,” she added.

In the most recent [International Food and Information Council Foundation Food & Health Survey](#), 45% of U.S. consumers ranked prebiotics as healthy, an increase from the previous year, when just 36% of respondents gave the same response.

Fiber is good for you and stats show that consumers are digesting that message, too.

“According to a 2018 Innova Market Insights consumer survey, 44% of U.S. consumers are increasing their consumption of fiber,” pointed out Diana Marcela Nieto, senior business development manager, Starch Based Texturizers US&CAN, Ingredion Incorporated, Westchester, Illinois. “And in 2018, there was 21% average annual growth in new product launches carrying a fiber claim,” according to Innova data.

In 2015, according to an Academy of Nutrition and Dietetics Position Paper, only about half of North Americans obtained the dietary fiber recommendation. The mean intake of dietary fiber in the U.S. in 2015 was 17 g/day and only 5% of the population met the adequate intake of 25 g/day for women and 38 g/day for men.¹

“As low fiber intake is associated with constipation, it’s estimated that 1 in 5 Americans suffer from chronic constipation and could benefit from effective products to increase fiber intake and improve bowel regularity,” commented Anke Sentko, vice president of regulatory affairs and nutrition communication, BENEIO-Institute.

Julie Imperato, marketing manager, Nexira, France, noted that the digestive health category has nearly tripled in size in the last decade to reach \$2.96 billion in 2018, with sales predicted to reach \$3.9 billion by 2021, according to the *Nutrition Business Journal (NBJ)*.

Among the primary digestive health conditions in the United States, “constipation is near the top of the list with 63 million people suffering from a chronic form of the condition, primarily due to a lack of fiber in the American diet,”² related Samantha Ford, director business development, AIDP, Inc., City of Industry, California. “On average, 6% of American women and only 3% of men currently meet dietary fiber intake

recommendations of 25 to 38 grams per day,” according to the USDA’s Agricultural Research Service.

Prebiotics proliferate

According to Imperato, 10% of Americans are now trying consumer prebiotics, and more than 40% of consumers perceive prebiotics as healthy ingredients, citing the 2016 Food and Health Survey from the International Food Information Council Foundation and 2019 Food Insight data, respectively.

“Our own consumer study on Americans taught us that consumers associate prebiotics with digestive health. However, they need simple explanations to understand the real health benefits,” she suggested.

Ford agreed, adding, “While some of the science is not new, consumers are becoming more aware of the benefits of prebiotics and synbiotics. The concept of prebiotics assisting the growth of the good bacteria has gained traction with consumers in the last five years.”

AIDP’s PreticX is a selective prebiotic described as a nondigestible xylooligosaccharide shown to boost the levels of beneficial Bifidobacteria such as *B. fragilis* (a member of Bacteroidetes) but not increase Lactobacillus (a member of the Firmicutes). “These findings suggest that PreticX supplementation may result in a beneficial Bacteroidetes/Firmicutes ratio that could lead to a better metabolic response and benefits to weight management,” Ford summarized.^{3,4}

XOS95 Prebiotic, from Prenexus Health of Gilbert, Arizona, is produced

How are consumers looking to improve their digestive health?

by Will Cowling, marketing manager at FMCG Gurus

Digestive health is becoming a key area in which consumers are looking to actively improve. This is due to many factors including changing dietary habits and the impact of the modern-day life. As a result, consumers are more proactive when it comes to addressing their digestive system. The details of how they are approaching digestive management can help brands develop desirable products and successfully target these consumers.

FMCG Gurus consumer insights found 55% of global consumers stated they are currently satisfied with their digestive health. However, although the majority say they are happy, 20% are dissatisfied. The growing number of consumers understanding the importance of their digestive health aligns with their embracing the concepts of holistic health and being healthier for longer. People are recognizing the link between their digestive system and their overall health. This is highlighted as 61% of global consumers stated they are interested in digestive health products even when not suffering specific health problems. This proactive approach has created an opportunity for brands and manufacturers to be able to create new innovative products that can target consumers looking to improve their digestive health.

FMCG Gurus consumer research shows that there are two key reasons why consumers want to improve their digestive system. The first reason is that they are worried about their long-term health (36%). Consumers are taking a proactive approach earlier in their lives as they want to stay healthier for longer and be fitter when they are older. Digestive health issues can be very uncomfortable for consumers, and this was verified by 37% of respondents saying they want to improve their digestive health to help them feel more relaxed.

Globally, consumers are looking to improve their diets. Over the past 12 months 27% of consumers have changed their diet as a key step to improving digestive health, according to FMCG Gurus research. This is seen as 47% regularly seek out food and drink products that can improve digestive health and their overall health. Consumers are making changes such as eating more fruits and vegetables (34%) and consuming more food and drink that is high in protein (21%).

Claims around improving digestive health can be very beneficial to brands and manufacturers as they target these consumers. There is also a growing willingness to open wallets a bit wider. FMCG Gurus research shows that 57% of global consumers say they find food and drink products positioned around improving digestive health appealing with 39% saying they would pay a premium price for these products.

The concept of prebiotics assisting the growth of the good bacteria has gained traction with consumers in the last five years.

Samantha Ford, director business development, AIDP Inc.



using unique, non-GMO varieties of high-fiber cane that contain high levels of xylooligosaccharides, which selectively stimulate the growth of Bifidobacterium and Lactobacilli, according to CEO Michael Bush, though no studies have been published about the claim.

Ingredion's NUTRAFLORA short-chain fructooligosaccharides (scFOS) is a prebiotic soluble fiber, which is well-tolerated in healthy subjects and in populations with functional bowel conditions, and selectively stimulates favorable growth and/or activity of Bifidobacteria and Bactobacilli,⁵ according to Vishnupriya Gourineni, Ph.D., scientist, global plant-based proteins R&D, Ingredion Incorporated.

"Daily consumption of scFOS at intakes ranging from 1 to 31 g for periods of just a few days up to one month consistently led to increased numbers of intestinal Bifidobacteria," she reported. At low to moderate intakes of scFOS (1 to 12.5 g/d), intestinal Bifidobacteria increased 0.4 to 1.8 log units, and at higher doses (15 to 31 g/d), greater increases were observed (1.4 to 15 log units).⁶

BENEEO's Orafti P95 oligofructose (from chicory root fiber) was shown in a randomized, controlled, double-blind and parallel-designed study to promote regularity in 97 healthy adults (80% women) who experienced irregularity associated with low dietary fiber consumption, according to Sentko. In the study, daily supplementation of 15 g of Orafti P95 oligofructose significantly increased stool frequency per week. The participants had a gradual increase of Orafti oligofructose (Orafti P95) from 5 g/day up to 15 g/day.⁷

"The individual perception of the digestion process, measured as noise, pressure, pain, bloating and gas, was reported to be very low for all gastrointestinal sensations in the oligofructose and in the placebo group. The participants in the oligofructose group reported significant improvement for the parameters "noise," "pressure" and "pain," particularly at high doses," Sentko reported.⁷

Acacia, Imperato described, is a nondigestible complex and highly branched polysaccharide which is gradually fermented in the transverse colon and in the distal colon.⁸ Two in vitro studies have demonstrated SCFA synthesis is higher with prebiotic acacia compared to control and FOS,^{9,10} and CMC and psyllium. A human study has demonstrated a significant increase of circulating butyrate after 10 weeks' consumption of 25 g of prebiotic acacia.¹¹

"More research conducted by Nexira demonstrates an increase of microbiota diversity, such as B. Longum, Prevotellaceae and Lachnospiraceae (SCFA), F. Prausnitzii. [Nexira's] inavea acacia improves gut barrier by regulating the inflammatory markers," Imperato said.¹²

IFF Health's FenuLife is a deodorized galactomannan fiber derived from fenugreek. According to Laetitia Petrusa, Ph.D., a clinical study suggests that FenuLife may provide for relief of symptoms often associated with stomach acid reflux. In a two-week, single-blind, placebo-controlled and randomized clinical trial, subjects with heartburn on average of three to eight times per week were randomly assigned

to receive either FenuLife, a placebo, or ranitidine for two weeks. After two weeks those in the FenuLife group reported less severe heartburn symptoms and fewer days with symptoms as compared to their symptoms before FenuLife intake began. The results reported with FenuLife were similar to those seen with ranitidine treatment, she said.¹³

Kiwi fruit is a source of prebiotic fibers that may be considered for inclusion in development of digestion-support products. AIDP provides two kiwi ingredients as digestive-support prebiotics.

First, Livaux brand prebiotic is derived from the New Zealand gold kiwi fruit and has been shown to benefit the digestion and laxation process and provide targeted prebiotic support,^{14,15} according to Ford. Livaux can increase the ratio of *F. prau* (*Faecalibacterium prausnitzii*), which has anti-inflammatory and immune enhancing activities. Reduced levels of *F. prau* are associated with inflammatory and immune conditions, allergies and other digestive issues.¹⁶ “Since *F. prau* is highly anaerobic, it cannot be replenished as a probiotic, making Livaux a unique solution to naturally support the growth of *F. prau* with its targeted prebiotic activity,” Ford stated.

Actazin, a branded extract from New Zealand green kiwi, contains phenolic compounds that can affect regularity by influencing colonic microflora.¹⁷ Studies show that Actazin supports the growth of *Bifidobacteria* and *Lactobacillus* genera, while inhibiting the growth of pathogenic bacteria (*Escherichia coli*, *Staphylococcus aureus*, *Salmonella enterica*).¹⁸ Doses as low as 600 mg of Actazin have been shown to increase stool frequency, improve stool form and maintain bowel integrity.¹⁵

PreforPro, from Deerland Probiotics & Enzymes, Kennesaw, Georgia, is a prebiotic bacteriophage blend that modulates the microbiota and begins to work several hours after ingestion, said John Deaton, Ph.D., vice president of science & technology. “PreforPro is a dual-action prebiotic—it destabilizes the cell wall of the undesirable bacteria, which then provides nutrients and space for the good bacteria to grow,” he described.

After 28 days of consuming 15 mg of PreforPro daily (in one capsule) researchers found that it positively influenced the gut microbiota, including increased populations of the genera *Eubacterium*, one of the most abundant in the healthy human gut. Additionally, the researchers saw a reduction in the circulating proinflammatory cytokine IL-4. Compared to the placebo group, results showed an increase in beneficial bacteria, including *Bifidobacterium bifidum* and *Lactobacillus delbrueckii*, increase in butyrate-producing *Eubacteria*, decrease in taxa related to *Clostridium perfringens*, and a significant decrease in the proinflammatory compound interleukin 4 (IL-4) cytokine.¹⁸

Probiotics in power

No discussion today about digestive health is complete without the mention of the role of probiotics, which continue to be explored and validated as gastrointestinally protective.



Science and the microbiome – podcast

Jennifer Cooper, chief scientific officer, Savant Science, reviews how emerging science is revealing the microbiome's impact on cognitive health.

Deerland's *Bacillus subtilis* DE111 is a spore-forming strain that Deaton said has excellent stability and has been shown to help resident beneficial bacteria to flourish and multiply, better prohibiting pathogenic or irrelevant bacteria from nestling in. DE111 is genome sequenced and uploaded to GenBank, and claims are supported by more than 30 studies and three human clinical trials confirming benefits for digestive and immune health, he noted. One study demonstrated significant influence of DE111 on gut microflora,¹⁹ and another was tested in healthy individuals with alternating constipation and diarrhea. In this study, those who took DE111 (1 billion CFU) had an increase in normal stool types 3 and 4 from 54% to 64%.²⁰

Another spore-former, LactoSpore, is East Windsor, New Jersey-based Sabinsa's probiotic containing L(+) lactic acid-producing microbial preparation from *Bacillus coagulans* MTCC 5856. One double-blind placebo-controlled randomized study investigated the efficacy of *Bacillus coagulans* MTCC 5856 for major depressive disorder (MDD) in 40 IBS patients for 90 days.

Shaheen Majeed, co-author of the paper and president worldwide, Sabinsa, explained, "The *B. coagulans* MTCC 5856 showed robust efficacy for the treatment of patients experiencing IBS symptoms with major depressive disorder. The improvement in depression and IBS symptoms was statistically significant and clinically meaningful. These findings support *B. coagulans* MTCC 5856 as an important new treatment option for major depressive disorder in IBS patients. It also supports the hypothesis of the connection between a weak gut microbiome and depression."²¹

Madison, Wisconsin-based DuPont Nutrition & Biosciences' HOWARU Dophilus *Lactobacillus acidophilus* NCFM, a human intestine isolate that was the first *L. acidophilus* strain for which the complete genomic sequence has been obtained, according to Vanessa Bailey, global marketing leader, probiotics. "Its clinical studies began in the 1970s and have since had more than 300 research papers published on it, which have confirmed that this bacterium can help maintain a healthy intestinal environment and reduce gut discomfort," she said.^{22,23}

HOWARU Transit *Bifidobacterium lactis* HN019 has been clinically shown to shorten colonic transit time, support healthy digestion, and ease digestive discomfort including occasional gas and bloating. In Canada, Japan, Switzerland and Brazil it was granted a health claim for supporting digestion by reducing gut transit time, helping maintain regularity and promoting gut comfort.²⁴

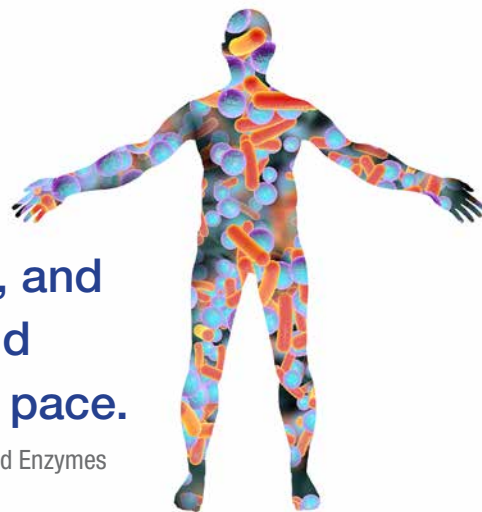
Postbiotics make their mark

If there's a before ("pre") then there must be an after ("post"). So it is in the case of healthy gut microbiota. Postbiotics are bioactive compounds produced by food-grade microorganisms during a fermentation process.



It is an exciting time for innovation in the growing digestive health category, and with new tools we are seeing novel and beneficial products emerge at a rapid pace.

John Deaton, Ph.D., vice president of science & technology, Deerland Probiotics and Enzymes



Postbiotics include microbial cells, cell constituents and metabolites, according to Embria Health Sciences' Green.

Embria's EpiCor, is a postbiotic ingredient clinically shown to beneficially modulate the gut microbiota.²⁵ Green explained that EpiCor, a whole food fermentate, is made through a proprietary process that creates metabolites through the fermentation of *Saccharomyces cerevisiae* (baker's yeast). The live yeast is inactivated after fermentation, or heat killed, and dried. "This keeps all the beneficial metabolites intact and is standardized, consistent and stable from batch to batch as it is not a live organism," Green said. "Emerging science suggests that consuming EpiCor may support gut ecology and can modulate gut microbiota. The latest published human clinical on EpiCor shows it can shift the gut microbiota at a daily dose of 500 mg without side effects common to bulky fibers, like bloating."²⁵

Lallemand Bio-Ingredients' postbiotic Gastro-AD, distributed by Stauber, is a natural vegan food supplement based on non-GMO soy fermented by *Lactobacillus* strain L. delbrueckii R-187 (Rosell-187). "It has an excellent track record of safe and effective use for management of symptoms such as heartburn, gastric pain, vomiting and nausea and has been backed by several published studies, since the 1950s," stated Karen Dhanraj, technical marketing and sales manager, Lallemand Bio-Ingredients, Canada.

A study from 1978 gave 360 individuals with ulcers in their stomach and small intestines 2.5 to 5.0 g Gastro-AD three times/day, for 30 days. Results showed that 85% experienced relief from heartburn pain in 15 minutes or less, and 95% found relief from ulcer symptoms in 15 days or less.²⁶ "The response to ulcer symptoms is significant," Dhanraj commented.

Another study used a high dosage of Gastro-AD (6 g per day) in 12 individuals who had gastritis (inflammation of the stomach lining due to compromised mucosa). Dhanraj reported, "Results showed significant and continued reduction of heartburn, vomiting and gastric discomfort, and regained appetite in these patients after one month of treatment."²⁷

A mechanism of action study of Gastro-AD showed that the heat-inactivated Rosell-187 strain of lactic acid bacteria (used to ferment the soy flour during production of Gastro-AD) had a suppressive effect on proinflammatory cytokine interleukin-8 in intestinal cells. "So, by inhibiting this cytokine, we presume reduction of inflammation of the intestinal cells. Heat-inactivated Rosell-187 comprises a significant proportion of Gastro-AD," she explained.²⁸

Enabling enzymes

Digestion is an action that needs enzymes to adequately disassemble the macronutrients. In stressful times, providing nutraceuticals featuring digestive enzymes will support this all-important action so that the nutrients are more effectively absorbed and utilized.



For example, DigeZyme is Sabinsa Corp.'s proprietary combination of specific digestive enzymes that support digestion of all the key macronutrients: alpha amylase (carbohydrates), neutral protease (proteins), lipase (fats), cellulase (plant fibers) and lactase (dairy). DigeZyme acts in the upper intestinal region, where the most digestive enzymes are secreted, by supplementing enzyme deficit, according to Majeed. A randomized double-blind placebo-controlled study to assess efficacy of this multi-enzyme complex found that supplementation with three 50 mg capsules per day was well-tolerated, and improved digestion efficiency and gastrointestinal health of 40 human subjects.²⁹

Enzymes are also applicable for individuals with food sensitivities. Deerland provides two key enzymes for consumers who experience digestive discomfort from specific food ingredients.

Glutalytic is a proteolytic enzyme blend that can break down both the internal and external peptide bonds of gluten, "effectively reducing the frequency and severity of symptoms associated with gluten sensitivity," Deaton described.³⁰

For others, dairy is an issue. However, many people who experience digestive discomfort from consuming dairy products assume they are lactose intolerant, but aren't, according to Deaton. Instead their gastric discomfort may be attributed to an immune response generated by the protein components of dairy. The combination of lactase and protease enzymes in Dairylytic is targeted to breaking down lactose and facilitating digestion and absorption of the milk proteins. "In vitro research (unpublished) shows Dairylytic breaks down lactose quickly and efficiently over a 90-minute time period under physiological conditions of the body," he reported.

A botanical derivative, Gutgard, available through Stauber, is targeted to those individuals who experience dyspepsia in the upper GI tract. Gutgard is a licorice derivative that is, Ford asserted, "entirely different from deglycyrrhized licorice (DGL) as its extraction process captures more than 50 bioactive flavonoids in the plant, and therefore the effective dose level is much lower than that needed for DGL (150 mg/day vs 1,500 mg/day). Gutgard has been clinically shown to support improved motility and issues related to functional dyspepsia.³¹

Diversity of digestive support products

You can always go for the tried-and-true capsules and tablets, which will never lose appeal due to a quick gulp with water. But consumers love something different especially if it's a guilt-free, good-for-you treat, and especially if that treat has functional benefit.

For example, Deaton noted, Deerland's DE111 for functional foods and beverages can be incorporated into such products as hot tea, coffee, gummies, kombucha, chocolate and protein powders.

EpiCor, Green said, “can be successfully added to both supplements and a wide range of foods and beverages. We’ve created prototypes using EpiCor in everything from snack bars and chocolate to gummies and beverage shots. Unlike probiotics, which must remain alive to produce metabolites in the gut, EpiCor is not a living organism, which may allow for successful use in a variety of applications.”

IFF Health’s FenuLife, Petrusa said, can be incorporated into food products as a food stabilizer and emulsifying agent. Fenugreek gum has textural, thickening, emulsifying, stabilizing, gelling and encapsulating properties. The soluble dietary fiber can be incorporated into dairy products, cereal bars, yogurts and nutritional beverages. For example, she offered, “bakery foods such as bread, pizza, cakes and muffins and extruded snacks have been prepared by using flour fortified with 10 percent fenugreek fiber, improving the nutritional value and lowering the GI index of the meal.”

Cargill’s chicory root Oliggo-Fiber XL Ultra has a low water activity level allowing it to be used as a blending excipient with probiotics, which are sensitive to moisture, Stauffer explained, noting that although chicory root fiber offers digestive health benefits, many formulators are including it for other reasons. “Sugar reduction is a prime example as chicory root fiber is an excellent bulking agent. Because it resists digestion, chicory root fiber adds bulk to a product with fewer calories than digestible carbohydrates and is a low glycemic ingredient,” she explained.

For example, chicory root fiber helps replace some of sugar’s functionality in reduced-sugar baked foods, contributing to browning, crumb development, texture and more. Added into gluten-free foods, chicory root fiber positively impacts the texture, improves mouthfeel and rheology. It adds creaminess and improved mouthfeel in low-fat bakery products. It’s also widely used in reduced-sugar dairy products, such as ice cream and frozen desserts.

XOS95 Prebiotic, Bush stated, “is easy to formulate in a variety of functional foods such as snack bars, granola, sparkling beverages, coffee/tea, confections and supplements—but ultimately the use cases are limited only to the brands’ imaginations.”

“It is an exciting time for innovation in the growing digestive health category, and with new tools we are seeing novel and beneficial products emerge on the market at a rapid pace,” Deaton summarized.

We are most definitely not alone. Ever. We are constantly hosting trillions of entities—bacteria—universes of which exist in various parts of the body, from skin, mouth and mostly the gastrointestinal (GI) tract, as well as other areas.³²

It isn’t news that probiotics are sizzling hot—consumers have accepted that these supplemental bacteria help improve both gut and immune health. There is an excitement in the dizzying array of probiotic-infused products, from skin creams (for the skin microbiome), to probiotic fizzy shots and kombuchas in exotic flavors, to probiotic dried fruits and cereals.

Linkage Research & Consulting Inc. reported this past June that 87% of Americans understand there is a connection between digestion and health, and 7 out of 10 stated they were proactive about their digestive health.

Sales have been zooming. NBJ data noted sales of pre-, pro- and synbiotics sprinted from US\$1.9 billion in 2016 to an estimated excess of \$3 billion for next year.

This is reminiscent of another statistic that seems to illustrate the major takeoff of pre- and probiotics, from the National Health Interview Survey (“Use of Complementary Health Approaches in the U.S.”)—consumption of these products in the five-year stretch from 2007 to 2012 multiplied by four times.

Since then, revelations about the populations of beneficial bacteria residing and working in the human organism have accelerated. The buzz is now all about the microbiome, an intriguing concept as it conjures a wholesome, earth-like entity with bacteria, enzymes and other materials co-habiting, integrating and, hopefully, thriving. ♦



Lisa Schofield is a veteran writer and editor who got her start interviewing rock stars for national music magazines. She now writes and edits content for B2B media and suppliers in the natural health product industry. She has served as editor for Vitamin Retailer and Nutrition Industry Executive, and prior to that as associate editor for Whole Foods.

References

- Dahl WJ, Stewart ML. "Position of the Academy of Nutrition and Dietetics: Health Implications of Dietary Fiber." *J Acad Nutr Diet*. 2015;115:1861-1870.
- Higgins PD, Johanson JF. "Epidemiology of constipation in North America: a systematic review." *Am J Gastroenterol*. 2004;99:750-759.
- Million M et al. "Obesity-associated gut microbiota is enriched in *Lactobacillus reuteri* and depleted in *Bifidobacterium animalis* and *Methanobrevibacter smithii*." *Int. J. Obes*. 2012;36:817-825.
- Ley RE et al. "Microbial ecology: human gut microbes associated with obesity." *Nature*. 2006;444:1022-1023.
- Hidaka K et al. "Effects of fructooligosaccharides on intestinal flora and human health." *Bifidobacteria Microflora*. 1986;5(1):37-50.
- Tokunaga T, Nakada Y, Tashiro Y. "Effects of fructooligosaccharides intake on the intestinal microflora and defecation in healthy volunteers." *Bifidus*. 1993;6:143-150.
- Buddington RK et al. "Oligofructose Provides Laxation for Irregularity Associated with Low Fiber Intake" *Nutrients*. 2017;9(12):1372.
- Terpend K et al. "Arabinogalactan and fructo-oligosaccharides have a different fermentation profile in the Simulator of the Human Intestinal Microbial Ecosystem (SHIME)." *Environ Microbiol Rep*. 2013;5(4):595-603.
- Michel C et al. "In vitro prebiotic effects of Acacia gums onto the human intestinal microbiota depends on both botanical origin and environmental pH." *Anaerobe*. 1998;4:257-266.
- Bliss DZ et al. "In vitro degradation and fermentation of three dietary fiber sources by human colonic bacteria." *J Agric Food Chem*. 2013;15:4614-4621.
- Matsumoto N et al. "Butyrate modulates TGF-beta1 generation and function: potential renal benefit for Acacia gum Arabic." *Kidney Int*. 2006;69(2):257-265.
- Daguet D, Pinheiro I, Verhelst A. "Arabinogalactan and fructooligosaccharides improve the gut barrier function in distinct areas of the colon in the Simulator of the Human Intestinal Microbial Ecosystem." *J Funct Foods*. 2016;20:369-379.
- Disilvestro RA, Verbruggen MA and Offutt EJ. "Anti-heartburn effects of a fenugreek fiber product." *Phytother Res*. 2010;25(1):88-91.
- Blatchford P et al. "Consumption of kiwifruit capsules increase *Faecalibacterium prausnitzii* abundance in functionally constipated individuals: a randomized controlled human trial." *J Nutr Sci*. 2017;6:e52.
- Ansell J et al. "Kiwi-fruit derived supplements increase stool frequency in healthy adults: a randomized double-blind, placebo-controlled study." *Nutr Res*. 2105;35:401-408.
- Heinken A et al. "Functional Metabolic Map of *Faecalibacterium prausnitzii*, a beneficial human gut microbe." *J Bacteriol*. 2014;196:3289-3302.
- Parkar SG et al. "In vitro utilization of gold and green kiwifruit oligosaccharides by human gut microbial populations" *Plant Foods Hum Nutr*. 2012;67:200-7.
- Febvre HP et al. "PHAGE Study: Effects of Supplemental Bacteriophage Intake on Inflammation and Gut Microbiota in Healthy Adults." *Nutrients*. 2019;11(3):666.
- Labellarte G, Maher M. "Tolerance and Effect of a Probiotic Supplement Delivered in Capsule Form." *Food Nutr Sci*. 2019;10:626-634.
- Cuentas AM et al. "The Effect of *Bacillus Subtilis* DE111 on the Daily Bowel Movement Profile for People with Occasional Gastrointestinal Irregularity." *J Probiotics Health*. 2017;5(4):1000189.
- Majeed M et al. "Bacillus coagulans MTCC 5856 for the management of major depression with irritable bowel syndrome: a randomised, double-blind, placebo controlled, multi-centre, pilot clinical study." *Food Nutr Res*. 2018;62(10):29219.
- Lyra A et al. "Irritable bowel syndrome symptom severity improves equally with probiotic and placebo." *World J Gastroenterol*. 2016;22(48):10631-10642.
- Rousseaux C et al. "Lactobacillus acidophilus modulates intestinal pain and induces opioid and cannabinoid receptors." *Nat Med*. 2007;13(1):35-37.
- Ibarra A et al. "Effects of 28-day *Bifidobacterium animalis* subsp. *lactis* HN019 supplementation on colonic transit time and gastrointestinal symptoms in adults with functional constipation: A double-blind, randomized, placebo-controlled, and dose-ranging trial." *Gut Microbes*. 2018;9(3):236-251.
- Pinheiro I et al. "A yeast fermentate improves gastrointestinal discomfort and constipation by modulation of the gut microbiome: results from a randomized double-blind placebo-controlled pilot trial." *BMC Complement Altern Med*. 2017;17(1):441.
- Bogdanov Y. "Treatment of Gastric and Duodenal Ulcers with Gastropharm." *Pharmachim*. 1978;10:27-29.
- Hirata Y, Uchida A. "Clinical Effects of Gastro-AD for Gastritis Patients." *Japanese Journal of Medicine and Pharmaceutical Science*. 2002;49(4):597-601.
- Wallace TD et al. "Interactions of Lactic Acid Bacteria with Human Intestinal Epithelial Cells: Effects on Cytokine Production." *J Food Prot*. 2003;66(3):466-472.
- Majeed M et al. "Evaluation of the Safety and Efficacy of a Multienzyme Complex in Patients with Functional Dyspepsia: A Randomized, Double-Blind, Placebo-Controlled Study." *J Med Food*. 2018;21(11):1120-1128.
- Maher M et al. "A Glutalytic Enzyme Supplement Was Tolerated by Healthy Young Adults" *Food Nutr Sci*. 2018;9(2):99-104.
- Raveendra KR et al. "An Extract of *Glycyrrhiza glabra* (GutGard®) Alleviates Symptoms of Functional Dyspepsia: A Randomized, Double-Blind, Placebo-Controlled Study." *Evid Based Complement Alternat Med*. 2012;16970.
- Sender R, Fuchs S, Milo R. "Revised Estimates for the Number of Human and Bacteria Cells in the Body." *PLoS Biol*. 2016;14(8):e1002533.



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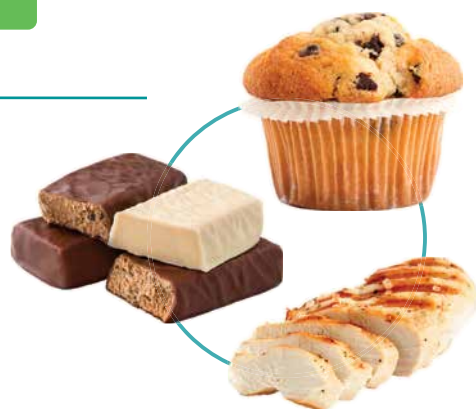
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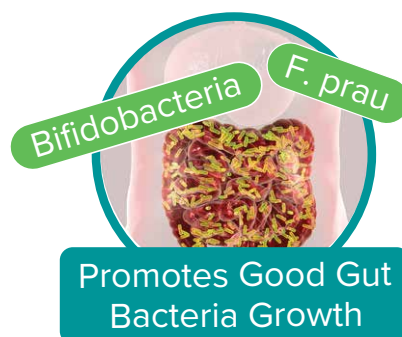
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Food as medicine: The rise of gut health and its potential

by Katharina Bagul

INSIDER's take

- ◆ Consumers are seeking natural approaches to prevent, rather than treat, health ailments, and live cultures are top of market.
- ◆ While healthy living attitudes vary by global region, one-quarter of all people suffer from digestive health issues.
- ◆ As the gut-brain axis becomes more understood, numerous new products to aid digestion are aimed at mood enhancement.

Sales of fermented products, such as kefir and kombucha, have been soaring in the U.S. and U.K., quickly gaining shelf space in retail stores. In the U.K., Tesco claims that kefir is no longer a niche product. The retailer included Biotiful Dairy in its incubator program in 2019, which is today the top-selling kefir brand in the U.K. market. Beyond nutrient absorption and detoxification, consumers are seeking a natural approach of prevention and buying into the benefits of live cultures that support healthy digestion.

Food as medicine is becoming a topic of interest to consumers as they opt for prevention over treatment. How consumers approach healthy living varies significantly across regions. Asia Pacific and Australasia stand out with a preference for artificial measures, while Western Europe and Latin America favor natural solutions. In North America, Canada has a much stronger focus on natural while consumers in the U.S. opt for more artificial remedies, spending twice as much on vitamins and dietary supplements as do their neighbors. Vitamins and dietary supplements are often taken on top of—not instead of—fortified/functional and naturally/healthy food and beverages.

According to Euromonitor International's Health and Nutrition [Survey](#) 2019, one-quarter of consumers globally suffer from digestive health issues. In half of those cases, consumers claim that this has a moderate or even severe impact on their overall health. Gut health goes far beyond digestive health, encompassing immunity support and weight management.^{1,2} Gut health refers to a well-balanced microbiota in the gastrointestinal (GI) tract and is shown to impact physical and mental well-being.^{2,3} Gut health is also related to numerous diseases, such as diabetes, obesity or arthritis,^{1,2} and recent research suggested an impact on mood due to the so-called gut-brain axis.^{4,5,6,7,8}



As a result, new product developments and launches focus on enhancing consumers' moods. Uplift, which has partnered with Mondelez International's innovation hub, is marketed as "good mood food." Mental well-being ranked top of mind for consumers globally when it comes to their perception of health, according to Euromonitor International's Health and Nutrition Survey 2019. This suggests that food positioned with brain/memory health and mental well-being might be an area of relevance and growth for brands to invest in the future.

Thus far, the trend around gut health has been a phenomenon of the Western Hemisphere and has less significance in the Asia Pacific region. However, fears from the recent COVID-19 coronavirus outbreak have already spurred growth in probiotic yogurt in China and Japan as consumers seek products that provide immune support. In China, fortified/functional yogurt has seen double-digit growth at a compound annual rate (CAGR) of 12% between 2014 and 2019, according to Euromonitor International. This strong growth comes from a relatively low base as consumers start to increase their dairy intake through convenient formats. Current five-year forecasts show huge potential in China, with an expected absolute growth of US\$3.3 billion through 2024, according to Euromonitor International. To put this into perspective, China will account for more than half of the expected global growth in fortified/functional yogurt.

In Western markets, gut health is gaining popularity among consumers who pursue a holistic approach to healthy living. Ingredients, such as probiotics and fiber, are key to supporting a healthy gut microbiome. Consumers are incorporating probiotics and fiber into their diets to support a healthy gut microbiome. Considering the recommended fiber intake of 30 g per day, consumers' diets tend to fall short, especially in markets like the U.S. and U.K. With growing awareness, high-fiber products are gaining traction.

New product developments related to gut health mainly emerge in the U.S., the U.K. or Japan, which have historically taken the lead in this space. Probiotics, which are traditionally seen in yogurt, have also moved into new product categories. For example, probiotics are now found in snacks and sprinkled on products like bars, ice cream or savory items. In 2019, Nestlé launched GoodBe, a probiotic granola and yogurt bar, in the U.S. market off the back of an incubator program. The product is also sold in the refrigerated section of stores, appealing to the demand for fresh food as well.

Probiotics have also made their way into plant-based food, which is currently flourishing because of the flexitarian trend. Capitalizing on the popularity of plant-based variants, products like Califia Probiotic Dairy Free Yogurt in the U.S. or Coyo Organic Coconut Milk Kefir in the U.K. have merged gut-friendly probiotic strains with dairy alternatives. In the

future, the trend is expected to move from a focus on probiotics (which add good bacteria to the gut) to prebiotics (which feed the good bacteria in the gut) or synbiotics (a combination of both probiotics and prebiotics).

When it comes to health claims, the regulatory environment differs considerably across the world. In Western Europe, no claims can be shown on the front of packaging for probiotics as regulators claim that there is not enough scientific proof to make a health claim. The only ingredient that allows for a claim is the functional fiber chicory inulin. Manufacturers of new products have become creative with brand names that consumers associate with gut health and the microbiome without explicitly making a claim, like Gut Instinct, My Gutness or Bio&Me from the U.K., as examples.

Gut health is expected to gain further traction in 2020 and beyond. While it has been an emerging trend in 2019, more manufacturers are addressing gut health in their product marketing. However, there still is work to be done to reach a wider audience and improve the understanding of gut health and the microbiome.

In the short term, consumer education will be key to raising awareness and increasing the knowledge of gut health. Manufacturers, retailers and the media will need to make a combined effort to carry the topic beyond the health-oriented consumer base.

In the mid- to long term, gut health has the potential to play a role in personalized nutrition. The microbiome's diversity is unique from one person to another, providing opportunities for tailored recommendations. DNA and microbiome testing are in early stages of development but provide great potential for the future. Unilever Ventures, for example, has partnered up with DNA-driven personalized nutrition firm Thryve, which demonstrates the growing interest of the leading players in food. ♦



Katharina Bagul is food and nutrition industry manager at [Euromonitor International](#). She is an industry expert on food and nutrition, with in-depth knowledge of the global packaged food and fresh food industry.

References

- 1 Valdes AM et al. "Role of the gut microbiota in nutrition and health" *BMJ*. 2018;361:k2179.
- 2 Bischoff SC, "Gut health': a new objective in medicine?" *BMC Med*. 2011;9:24.
- 3 Järbrink-Sehgal E, Andreasson A. "The gut microbiota and mental health in adults." *Curr Opin Neurobiol*. 2020;62:102-114.
- 4 Bear TLK et al. "The role of the gut microbiota in dietary interventions for depression and anxiety." *Adv Nutr*. 2020;00:1-18.
- 5 Yong SJ et al. "Antidepressive mechanisms of probiotics and their therapeutic potential." *Front Neurosci*. 2020;13:1361
- 6 Yılmaz C, Gökmen V. "Neuroactive compounds in foods: Occurrence, mechanism and potential health effects." *Food Res Int*. 2020;128:108744.
- 7 Kim N et al. "Mind-altering with the gut: Modulation of the gut-brain axis with probiotics." *J Microbiol*. 2018;56(3):172-182.
- 8 Kim YK, Shin C. "The microbiota-gut-brain axis in neuropsychiatric disorders: pathophysiological mechanisms and novel treatments." *Curr Neuropsychopharmacol*. 2018;16(5):559-573.

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Opportunities in digestive health

by Maryellen Molyneaux

INSIDER's take

- ♦ The emotional and physiological connections between the gut and brain continue to be discovered.
- ♦ New understanding means new marketing opportunities for products with probiotics.
- ♦ Consumers are looking for products that can balance their digestive system or address stress.

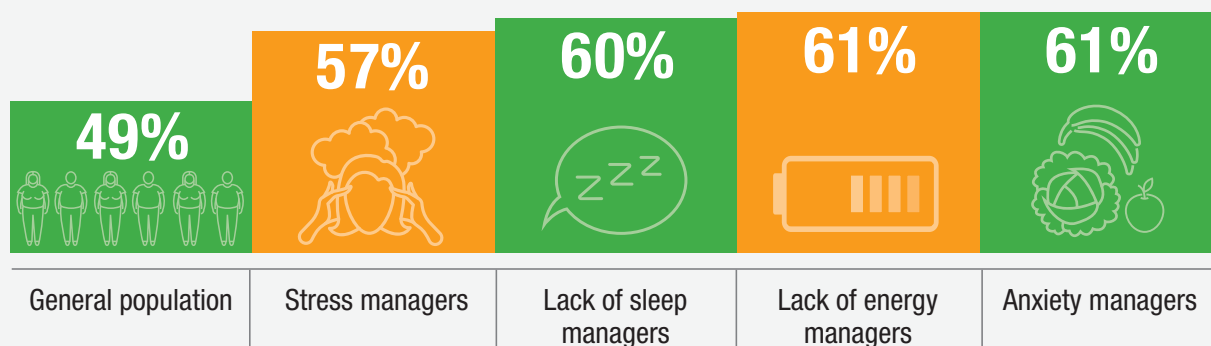
Research shows that those gut feelings everyone gets may have some validity. In fact, those sinking feelings that make our brain reconsider decisions or actions may reveal that our gut or our digestive system is indeed linked to our brain. The gastrointestinal (GI) tract's sensitivity to emotions such as sadness, anger, anxiety, stress and lack of energy can trigger symptoms in the gut and cause digestive issues. (*J Neurosci.* 2014;34[21]:7067-7076)

It can also work the other way around. Just as the emotional issues experienced by the brain can send signals to the gut, a “distressed” gut can send signals to the brain. This is perhaps why a higher than average number of people who experience digestive and bowel problems have higher rates of depression, anxiety and stress, according to Natural Marketing Institute (NMI) data.

In our increasingly stressful world, we are seeing more evidence in the data of the interconnectedness of digestive issues and “emotional” issues. As we examine the need states of those with “emotional” issues, common digestive disorders are apparent. People described as “emotional managers” are more apt to manage their digestive efforts (57%) versus the general population (39%). In addition, NMI research showed consumers managing any type of digestive complaint also index highly against the population for managing or treating lack of energy, inability to sleep, or stress and anxiety.

Consumers managing digestive issues

% consumers indicating they are managing digestive issues



Source: NMI's 2019 Health & Wellness Trends Database

Researchers have explored how gut bacteria affects brain health and the potential beneficial effects of certain probiotics toward stress, anxiety and depression. This spells opportunities for the digestive category. The probiotic market continues to gain momentum and will represent significant opportunities in both dietary supplements and functional food applications as new and emerging encapsulation processes allow probiotics to be added to nonrefrigerated foods such as breads, cereals and bars. In addition, the perception that dairy-free products are healthier, easier on the digestive system, and more animal- and environmentally friendly is further driving the expansion of digestive products and probiotic-rich foods beyond the dairy category. NMI research showed that almost half of the population thinks plant-based dairy is more environmentally friendly (47%) and more humane to animals (54%) compared to animal-based dairy. Prebiotics and fermented foods have made inroads and are growing across a range of food categories, from kombucha beverages and fermented pickles to breakfast and protein bars with prebiotics.

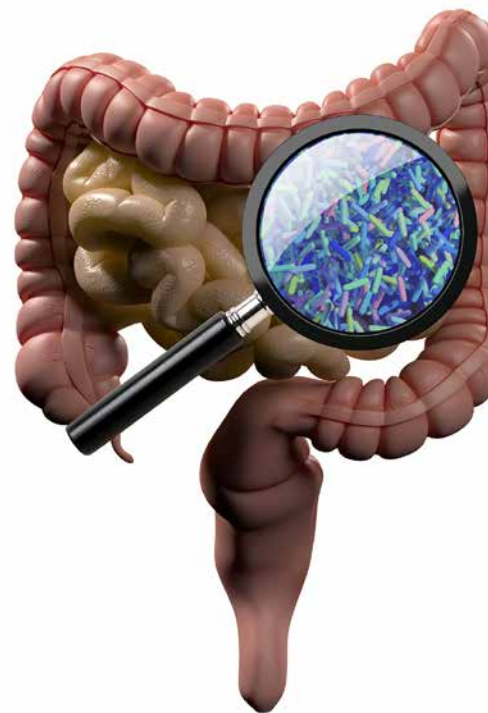
NMI research showed that a third of the population (33%) would be more likely to purchase a food/beverage product if the label indicated it helped balance their digestive system, and 1 out of 4 (23%) would be more likely to buy a food/beverage product if it optimized their gut health. Conversely, 37% of Digestive Managers would be more likely to buy a food/beverage product if it indicated it provided stress relief, and 23% would be more likely to buy if it lessened anxiety.

With the appropriate scientific backing, probiotic/prebiotic and functional food positioning could reach beyond simple “digestive health” and encompass other areas such as stress, anxiety and mood in order to increase the number of consumer targets, usage and compliance of digestive-healthy products. Messaging will need to be clear that sustained consumption of these healthy bacteria is required to continue realizing benefits. Additionally, as the benefits of gut-healthy bacteria continue to emerge and the connection between the gut and emotional health expands, the need for more effective and consumer-friendly delivery formats will increase.

The connection provides an array of opportunities within digestive health and expands into many other areas of condition management. Several of these indications may point to brand line extensions or other product differentiation opportunities. Understanding the interrelationships of these conditions and the connection of mind and body may become the paradigm of future health care and specific product solutions. ♦



Maryellen Molyneaux is president and managing partner of [NMI](#), a strategic consulting, market research and business development firm specializing in the health, wellness and sustainability marketplace. For more information on NMI's consulting services or proprietary research tools, contact her at maryellen.molyneaux@nmisolutions.com.



A third of the population



would be more likely to purchase a food/beverage product if the label indicated it helped balance their digestive system, and

1 out of 4



would be more likely to buy a food/beverage product if it optimized their gut health.

Source: NMI

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Prebiotic science: Stacking up the evidence for health benefits

by Nathan Gray

INSIDER's take

- ◆ Foods and ingredients classified as prebiotics have evolved rapidly as research has shown the prebiotic concept extends beyond fiber.
- ◆ There's been wide expansion in the understanding of prebiotic compounds, linking them to a variety of health effects.
- ◆ Specially designed prebiotics that target specific gut bacteria are not far off and will be involved in addressing certain health conditions.

As consumer and industry interest in prebiotics continues to explode, so does the supportive research. But where does the evidence sit, and what opportunities might present from where it is heading?

Growing public and industry interest in gut health—and how the microbiome can be modified in beneficial ways—has resulted in a rise in demand for prebiotics and an ever-increasing rate of research to validate their benefits to human health.

The Global Prebiotic Association (GPA) forecasts that as shoppers become more aware of the term prebiotic, there will be significant growth in both understanding of and demand for ingredients that feed and stabilize our gut bacteria. Based on figures from Future Market Insights and *Nutrition Business Journal*, internal GPA estimates peg the global market for prebiotics specifically related to human nutrition at more than US\$2 billion in 2019, with a predicted growth of more than 20% year over year.

With emerging research continuing to demonstrate the powerful potential of prebiotic interventions and the industry continually looking for “the next big thing,” the future is bright for prebiotics, said Len Monheit, executive director of the GPA.

What is a prebiotic?

Prebiotics are food components that are not directly digested by our bodies, but instead interact with the bacteria that live inside of us.

The category of foods and ingredients that may be classed as prebiotics is diverse and has evolved rapidly in recent years as research has shown the prebiotic concept extends beyond fiber. Foods and compounds that may be classified as a prebiotic include certain carbohydrates, resistant starches, pectins and other beneficial ingredients like polyphenols.

Just like probiotics, the term “prebiotic” comes from the effect that they have on us. According to the latest technical definition from the International Scientific Association for Probiotics and Prebiotics (ISAPP), a prebiotic can be defined as “a substrate that is selectively utilized by host microorganisms conferring a health benefit.”



As part of its ongoing effort to aid industry and consumer understanding of the prebiotic category, the GPA said it aims to make the definition more relatable to consumers—with a definition that a prebiotic is “a nutritional product and/or ingredient selectively utilized in the microbiome producing health benefits.”

In essence, both the GPA and ISAPP definitions indicate a prebiotic can be any compound or ingredient that is selectively used by the bacteria that make up our microbiome, and results in a health benefit.

Stacking up the evidence

The science backing prebiotics has grown rapidly since the concept and term was first coined by Glenn Gibson and Mercel Roberfroid in 1995.¹ Since then, there has been an explosion in the science behind prebiotic compounds, linking them to a multitude of health effects. The advent of “-omics” technologies, including metabolimics and proteomics, and advanced genetic sequencing has enabled researchers to look at our microbiome and the impact of potential prebiotics on our resident bacteria and health in more detail than ever before.

Well-established health benefits of prebiotics include regulating blood sugar, improving calcium absorption and reducing gut transit time by boosting bacterial fermentation.²

Such improvements in bowel function have often been attributed to fecal bulking from the consumption of dietary fiber, however animal research has shown that short-chain fatty acids (SCFAs) produced by fermentation of prebiotics can regulate gut hormones that in turn modulate the local motor responses of the gut.³

Emerging research has also linked prebiotics to a role in the management of digestive disorders like inflammatory bowel diseases (IBD) and irritable bowel syndrome (IBS), and a host of metabolic conditions and immune disorders including diabetes, obesity and allergies.⁴ There is strong evidence that prebiotics drive many of these metabolic effects through the impact of SCFA production—which is known to improve barrier functions in the gut.

Immune modulation

Multiple studies have also suggested a role for the microbiome—and in particular for prebiotic compounds—in our defense against infections.⁵

Prebiotics are known to stimulate our gut bacteria to produce organic acids that can lower the pH of our intestines and make it more difficult for pathogens to grow, and have also been shown to boost immune functions.⁶ Other studies have suggested that prebiotics can modify our immune responses and impact our risk of allergy, however most of the data to support this comes from research in infants and children.⁴



Digestive health: Prebiotics market development – podcast

Len Monheit, executive director of the Global Prebiotic Association, shares key takeaways from the prebiotics session offered at SupplySide West 2019.



A 2006 clinical trial in 259 infants reported a 50% reduction in incidence of atopic dermatitis,⁷ while a 2013 trial showed infants fed a prebiotic formula had significantly less allergic reactions to foods than those not given the prebiotic.⁸ Furthermore, a Cochrane review published in 2013 concluded that a prebiotic added to infant formula was linked to the prevention of eczema and asthma in infants.⁹

Meanwhile, a study published in the *Journal of Nutrition* last year showed that a combination of human milk oligosaccharides (HMOs), prebiotic short-chain galactooligosaccharides (scGOS) and long-chain fructooligosaccharides (lcFOS) may boost immune responses to flu vaccine.¹⁰ The mouse study showed that female mice fed a diet supplemented with the prebiotics had a better immune response to a flu vaccine than mice not receiving a supplement.

Furthermore, a 2019 study reported that daily consumption of chicory root fiber in children could help keep levels of Bifidobacteria in the gut higher and more stable, even during antibiotic treatment.¹¹ The study, commissioned by Beneo, found regular consumption of the prebiotic kept levels of Bifidobacteria higher and more stable, reducing the antibiotic-induced disturbances of the microbiota composition. A 2014 meta-analysis also reported a decrease in the number of infectious episodes requiring antibiotic therapy in the prebiotics group vs. placebo control.¹²

Metabolic effects

Alongside the effects of immune responses, the metabolic effects of prebiotic compounds have been investigated in several meta-analyses in recent years.

According to a recent review published in *Nature Reviews Gastroenterology & Hepatology*,¹³ there is a general consensus that prebiotic interventions have a positive effect on glucose homeostasis,¹⁴ inflammation and blood lipid profile¹⁵ in humans—although the results among these meta-analyses vary.

Consumption of prebiotics and candidate prebiotics has also been linked with improvements in metabolic health that have included lower body weight and fat mass, improved glucose control, a reduction in inflammation, and an increase in health-promoting bacteria.¹³

A 2014 trial reported that daily supplementation of 10 g of oligofructose-enriched inulin contributed to the reduction of body weight and BMI of women with type 2 diabetes mellitus over eight weeks of supplementation.¹⁶

Short-chain fatty acids produced by prebiotic fermentation in the gut have also been suggested to have a direct effect on our appetite, by interacting with specific free fatty acid receptors (FFARs) such as FFAR2 and FFAR3, and regulate lipolysis and release of the incretin glucagon-like peptide-1. [According to a 2019 review](#), these receptors are found on many tissues and could be a key mechanistic link between prebiotic fermentation and systemic health benefits.¹⁷

Sleep, stress and mood

Emerging research has even linked prebiotics to improved sleep,¹⁸ stress resilience, and our emotional responses.¹⁹

A recent study published in *Scientific Reports* points to emerging evidence that bacterial dependent metabolites, such as SCFAs and secondary bile acids, can have impacts signaling the brain.¹⁸

The study found that rats fed a prebiotic-rich diet spent more time in restorative non-rapid-eye-movement (NREM) sleep. After stress, they also spent more time in rapid-eye-movement (REM) sleep, which is believed to be critical for recovery from stress.

The findings back up those of a 2017 study, which also reported that regular intake of prebiotics may promote beneficial gut bacteria and recovery of normal sleep patterns after a stressful episode.²⁰

Meanwhile, the branded prebiotic compound Bimuno GOS (B-GOS, from Clasado Biosciences Ltd) was shown to result in “selective modulation of attention to emotional stimuli” including decreased waking salivary cortisol reactivity and altered attentional bias compared to placebo in a 2015 study.⁶

Future opportunities

It seems likely that in the not-too-distant future we will be able to specially design prebiotics that target specific gut bacteria that are known to be involved in certain health conditions. There is already strong demand for such “designer prebiotics,” which will be sure to provide the industry with sizable opportunities moving forward.

However, it is important to remember that although certain commonalities allow us to group ingredients under the “prebiotic” umbrella, specific health benefits are tied to specific compounds and not the categories en masse. ✨



Nathan Gray is an industry analyst and consultant with more than a decade of experience in the food and nutrition space, and more than 15 years in media and science communication. An experienced communicator and strategic connector, he is an expert in food technology, nutrition science and wellness trends. Alongside his work with [Trust Transparency Center](#) and the [Global Prebiotic Association \(GPA\)](#), Gray runs European consultancy Nutraceutic.

References

- 1 Gibson GR, Roberfroid MB. “Dietary Modulation of the Human Colonic Microbiota: Introducing the Concept of Prebiotics.” *The Journal of Nutrition*. 1995;125(6):1401-1412.
- 2 Nath A et al. “Biological Activities of Lactose-Based Prebiotics and Symbiosis with Probiotics on Controlling Osteoporosis, Blood-Lipid and Glucose Levels.” *Medicina (Kaunas)*. 2018;54(6):98.
- 3 Hurst NR et al. “The short chain fatty acids, butyrate and propionate, have differential effects on the motility of the guinea pig colon.” *Neurogastroenterol Motil*. 2014;26(11):1586-1596.
- 4 De Paulo Farias D et al. “Prebiotics: Trends in food, health and technological applications.” *Trends Food Sci Technol*. 2019;93:23-35.
- 5 Azagra-Boronat I et al. “Chapter 14 - Prebiotics for Gastrointestinal Infections and Acute Diarrhea.” *Dietary Interventions in Gastrointestinal Diseases*. 2019;1:79-191.
- 6 Vulevic J et al. “Influence of galacto-oligosaccharide mixture (B-GOS) on gut microbiota, immune parameters and metabonomics in elderly persons.” *Br J Nutr*. 2015;114(4):586-595.
- 7 Moro G et al. “A mixture of prebiotic oligosaccharides reduces the incidence of atopic dermatitis during the first six months of age.” *Arch Dis Child*. 2006;91:814-819.
- 8 Ivakhnenko OS, Nyankovskyy SL. “Effect of the specific infant formula mixture of oligosaccharides on local immunity and development of allergic and infectious disease in young children: randomized study.” *Pediatr Pol*. 2013;88(5):398-404.
- 9 Osborn DA, Sinn JKH. “Prebiotics in infants for prevention of allergic disease and food allergy.” *Cochrane Database Syst Rev*. 2013;3:1465-1858.
- 10 Xiao L et al. “The Combination of 2'-Fucosyllactose with Short-Chain Galacto-Oligosaccharides and Long-Chain Fructo-Oligosaccharides that Enhance Influenza Vaccine Responses Is Associated with Mucosal Immune Regulation in Mice.” *The Journal of Nutrition*. 2019;149(5):856-869.
- 11 Soldi S et al. “Prebiotic supplementation over a cold season and during antibiotic treatment specifically modulates the gut microbiota composition of 3-6 year-old children.” *Benef Microbes*. 2019;10(3):253-263.
- 12 Lohner S et al. “Prebiotics in healthy infants and children for prevention of acute infectious diseases: a systematic review and meta-analysis.” *Nutr Rev*. 2014;78(8):523-531.
- 13 Gibson GR et al. “Expert consensus document: The International Scientific Association for Probiotics and Prebiotics (ISAPP) consensus statement on the definition and scope of prebiotics.” *Nat Rev Gastroenterol Hepatol*. 2017;14:491-502.
- 14 Kellow NJ et al. “Metabolic benefits of dietary prebiotics in human subjects: a systematic review of randomised controlled trials.” *Br J Nutr*. 2014;111(7):1147-1161.
- 15 Beserra BTS et al. “A systematic review and meta-analysis of the prebiotics and synbiotics effects on glycaemia, insulin concentrations and lipid parameters in adult patients with overweight or obesity.” *Clin Nutr*. 2015;34(5):845-858.
- 16 Dehghan P et al. “Oligofructose-enriched inulin improves some inflammatory markers and metabolic endotoxemia in women with type 2 diabetes mellitus: A randomized controlled clinical trial.” *Nutrition*. 2014;30(4):418-423.
- 17 Sanders ME et al. “Probiotics and prebiotics in intestinal health and disease: from biology to the clinic.” *Nat Rev Gastroenterol Hepatol*. 2019;16:605-616.
- 18 Thompson RS et al. “Dietary Prebiotics and Bioactive Milk Fractions Improve NREM Sleep, Enhance REM Sleep Rebound and Attenuate the Stress-Induced Decrease in Diurnal Temperature and Gut Microbial Alpha Diversity.” *Front Behav Neurosci*. 2017;10:240.
- 19 Schmidt K et al. “Prebiotic intake reduces the waking cortisol response and alters emotional bias in healthy volunteers.” *Psychopharmacol*. 2015;232:1793-1801.
- 20 Thompson RS et al. “Dietary Prebiotics and Bioactive Milk Fractions Improve NREM Sleep, Enhance REM Sleep Rebound and Attenuate the Stress-Induced Decrease in Diurnal Temperature and Gut Microbial Alpha Diversity.” *Front Behav Neurosci*. 2017;10:240.

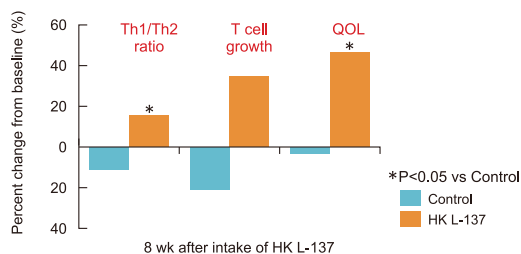
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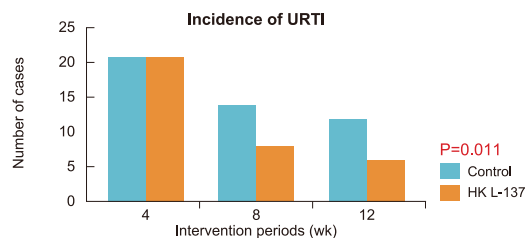
Immune function and QOL



Daily intake of HK L-137 augments Th1-related immune function in healthy subjects, thereby improving the health-related QOL.

J Nutr 136: 3069-3073, 2006

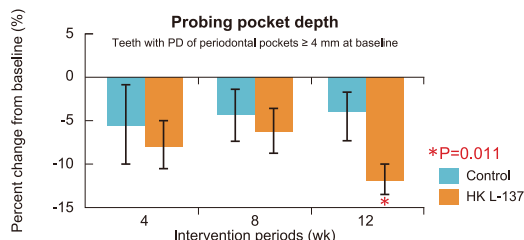
Upper respiratory tract infection (URTI)



The incidence of URTI in the HK L-137 group was significantly lower than that in the control group.

J Nutr Sci 2: e39, 2013

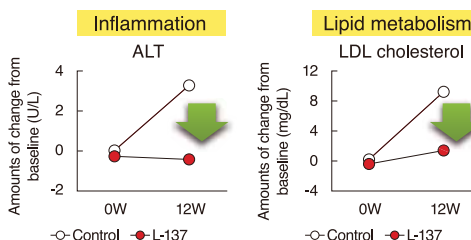
Periodontal disease



Improvement of the probing depth (PD) of periodontal pockets that were greater than 4 mm at baseline was significantly higher in the HK L-137 group compared to the control group at 12 wk.

OHPD 14(3):207-214, 2016

Anti-Inflammation



Daily intake of HK L-137 not only augmented immune function but also suppressed the elevated serum biomarkers of inflammation and lipid metabolism in healthy subjects with a moderately high BMI (23–29.9kg/m²). (Eur J Nutr (2019 Oct 16).)

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House Wellness Foods Corporation

How to add value to digestive health products beyond the ‘tried and true’

by Alison Pomaville

INSIDER's take

- ◆ Probiotics quickly rose from obscurity to mainstream staple, finding a home in foods, beverages and supplements.
- ◆ Regarded as a beneficial nutrient for gut health, fiber offers formulation benefits and label claim options.
- ◆ Many consumers are familiar with apple cider vinegar and ginger, lending credibility to their use in formulations.

Probiotics—or “good bacteria”—started the last decade relatively unknown to the everyday consumer, but ended with it front, center and in the spotlight. Probiotic supplements and fermented foods that inherently contain probiotics, such as yogurt, are the largest categories in the digestive health segment.

According to [Grand View Research](#), this segment is expected to surpass US\$57 billion globally by 2025, providing ample room for other segments beyond probiotics to find future success. The International Food Information Council (IFIC) Foundation’s 2019 [Food and Health Survey](#) designated digestive health as one of the top three sought-after health benefits consumers seek from food. The accompanying demand for innovation in products supporting the gut has soared. To meet this demand, while growing sales, developers and manufacturers of all application types—food, beverage and supplement—can incorporate ingredients consumers associate with healthy digestion.

Similar to popular live active cultures, fiber continues to be perceived as a healthy ingredient. The IFIC survey revealed an average of 60% of consumers try to consume fiber, compared to 30% trying probiotics and 20% trying prebiotics.

When used in products, fiber sources can address consumer interest in maintaining and supporting healthy digestion, while also providing quantifiable nutrition that can be relayed to consumers with front-of-pack label claims. Simple nutrient-content claims can specify the exact amount per serving and inform consumers of the fiber content without having to peruse the nutrition facts panel. More general nutrient content claims are also useful in informing consumers quickly and easily that a product is a “good source of fiber.” This, of course, is dependent on the level of total dietary fiber per serving, with “good source” claims requiring at least 10% of the Daily Recommended Value (DRV) and an “excellent source” or “high in” claims requiring 20% of the DRV.

Along with the nutritional and product development benefits, the marketing benefit of incorporating high-fiber ingredients should not be overlooked. Fibers are not only useful in providing mouthfeel—or helping give products a satisfying structure—but can also be considered consumer-friendly, clean label ingredients. Fiber is intrinsic in many ingredients, and from a wealth of different sources, provides brands countless options when deciding upon formulation. Some of the most consumer-friendly sources are ingredients naturally high in fiber, such as whole grains, fruits, vegetables and plants.



Each ingredient offers its own benefits and challenges. For example, whole grains can change the color and texture of a baked good; fruits and vegetables can add color and flavor; and naturally high-fiber sources like psyllium and chicory root fiber often offer a high fiber level with less sugar compared to fruits, and less carbohydrates compared to whole grain flours. All of these can be a benefit or a challenge depending on the application, use level and other components on the ingredient list.

One category where both marketing appeal and nutrition are paramount is in products geared toward children. Fruit and vegetable pouches marketed toward young children and toddlers have exploded in popularity, and they often include fibers from recognizable sources. Ingredients such as apple fiber, carrot fiber and sweet potato fiber not only improve the overall nutritional profile of a product, but also provide parents with peace of mind because of their familiarity.

Beyond fiber, apple cider vinegar is another ingredient consumers associate with digestive health, as well as other benefits. Across the food, beverage and supplement segments, new products are incorporating apple cider vinegar with mass appeal. As a kitchen staple, it fits the sweet spot of familiar and comfortable, with the capability to be used in novel and trendy ways. Consumers do not need an explanation when it comes to apple cider vinegar, even if they are not familiar with its healthy halo, since they are at least familiar with it as a culinary ingredient. [ResearchandMarkets.com](https://www.researchandmarkets.com) data indicated apple cider vinegar is poised to continue to grow in popularity globally.

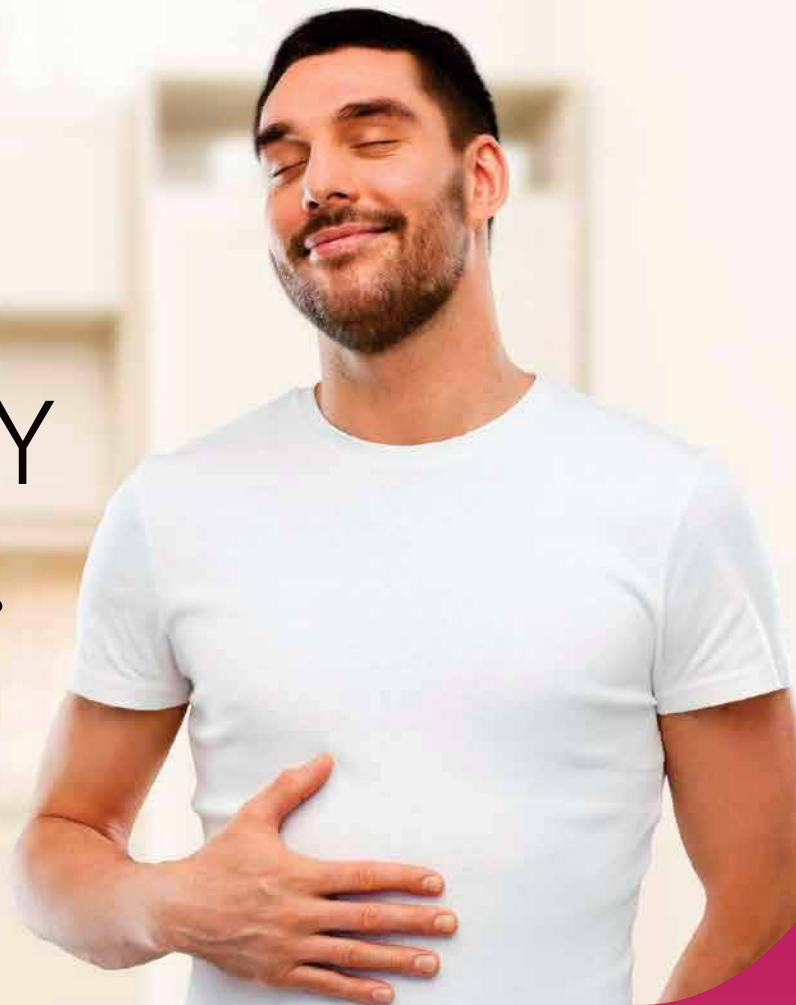
Similar to apple cider vinegar, ginger is a kitchen staple that has long been championed as a folk remedy for nausea and other digestive challenges. Ginger root's availability in formats such as powder, fresh and juice gives formulators flexibility when incorporating the ingredient's invigorating flavor. With widespread application across the food, beverage and supplement spaces, ginger is especially finding favor in ready-to-drink (RTD) beverages such as kombucha, premium brewed tea and fresh pressed juices. Consumers are also familiar with it from baking, and it can be paired with fruits and vegetables, making it a versatile and approachable ingredient.

Gut health and digestion will stay a top trend among consumers in the foreseeable future. Products geared to address these areas can come in many different forms and include various functional ingredients outside of the “tried and true” probiotics and fermented dairy. Manufacturers can create value for brands while upholding consumer demand for clean label ingredients by incorporating fiber and other plant-based botanical ingredients. ♦



Alison Pomaville has expertise in food and beverage product development, and an understanding of the most recent science and technological advancements in food science. She works to help create custom solutions for [Martin Bauer Group](https://www.martinbauer.com)'s food and beverage clients, and was a member of the inaugural class to receive Certified Food Scientist designation from the Institute of Food Technologists (IFT).

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Gut products rise and diversify

by Todd Runestad

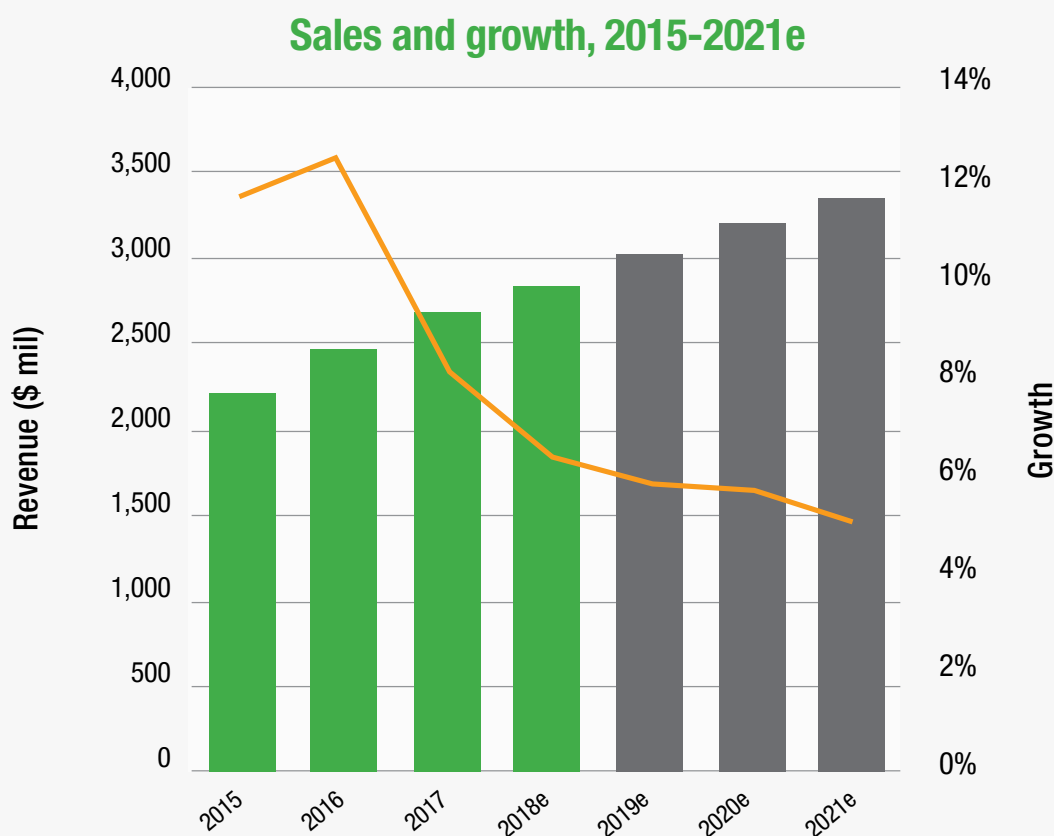
INSIDER's take

- ◆ New product formats are driving continued growth of the digestive health category.
- ◆ While supplements and beverages have been primary product categories, consumers are looking at functional foods for gut health.
- ◆ Product innovation aimed at a healthy biome is happening, and it's mostly in the dairy segment.

The digestive health category has nearly tripled in size in the last decade to reach US\$2.96 billion in 2018, with sales predicted to reach well past \$3 billion by 2021, according to the [Nutrition Business Journal \(NBJ\)](#).

Yet even as the category's fortunes are growing, there remains additional opportunities, particularly regarding product formats, which savvy product developers and marketers are capitalizing on to reach consumers.

"Gut health sales growth has been slowing as the market matures, and as probiotic growth drops off," said Claire Morton Reynolds, senior industry analyst for NBJ. "Consumers are turning to functional food and beverages for probiotics, rather than supplements, despite questions of efficacy."



Source: Nutrition Business Journal

A bright spot in gut health right now is prebiotics, with strong growth both in single prebiotic supplements and synbiotic formulas combining pre- and probiotics.



Claire Morton Reynolds, senior industry analyst, Nutrition Business Journal

One way of measuring what's happening in any given category is the [NEXT Data & Insights](#) team at New Hope Network, producers of Natural Products Expo West. The NEXT team assays every single product at every booth of the show—roughly 3,500 different booths, and many more products. The team compiles trends based on this “pre-shelf” data, so named because it represents what brands are trying to get on retail shelves, rather than what most other market watchers use to base their trends, sales at the store register. That makes the NEXT data both unique and telling because it shows what entrepreneurial brands are cooking up, rather than downstream consumer purchases.

The NEXT team found that of all product formats, dietary supplements were responsible for about half of all digestive health claims. At Expo West 2017, there were 403 total supplements with digestive claims, representing 53 percent of all products with such claims. By 2019, the number of supplement products with digestive health claims rose to 437, but that represented 49 percent of products. More total number of products but a smaller share of overall products means there was an overall increase in the number of total products with such claims. And indeed, in 2017 there were 765 products overall with digestive health claims, which rose by 2019 to 886 total products.

Beverages were the second-most popular product format with digestive health claims. At Expo West 2017, there were 111 drinks that represented just over 14 percent of total digestive product claims. By Expo West 2019, there were 114 drinks, which represented just under 13 percent.

Innovations continue apace

Both of these product formats—supplements and beverages—represent the two largest product categories, and yet their numbers have remained fairly static. The question, then, is whether there is any innovation happening in the digestive health category?

The answer is yes.

And it's happening in the dairy category.

At Expo West 2017, there were 29 total dairy products with digestive health claims. But by Expo West 2019 that number rose to 102 products.

That makes a certain amount of sense since probiotics got their start in fermented dairy products like kefir and yogurt.

Also, within supplements the innovative streak continues. That's happening in one way through the use of prebiotic fibers. Brands and consumers are picking up on the value of these fibers that beneficially feed the friendly probiotic bacteria.

“A bright spot in gut health right now is prebiotics,” said Morton Reynolds, “with strong growth both in single prebiotic supplements and synbiotic formulas combining pre- and probiotics.” ✨

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What products that address gut health are you interested in?

A. I am currently taking Seed, a daily synbiotic with both probiotics and prebiotics. It helps with gastrointestinal function, gut barrier integrity, inflammation and immune function, and many other things beyond digestive health.



Susan Ginn
Sales support coordinator

A. A fan of holistic health, I'm excited by the growing connection between gut health and other bodily systems. Trace mineral supplement Ion Gut Health is particularly interesting with links to firm gut lining and mental and immune functions.



Bill Giebler
Content and insights director

Natural Products Insider®

leads CPG brands from ideation through manufacturing, supporting the development of innovative, healthy and compliant products in the dietary supplement, functional food and beverage, and sports nutrition industries. As an official content provider for SupplySide, Natural Products Insider connects ingredient buyers and suppliers with executives across the health and nutrition marketplace.

Content

Content Director

Sandy Almendarez sandy.almendarez@informa.com

Senior Editors

Judie Bizzozero judie.bizzozero@informa.com

Karen Butler karen.butler@informa.com

Steve Myers steve.myers@informa.com

Todd Runestad todd.runestad@informa.com

Legal and Regulatory Editor

Josh Long josh.long@informa.com

Assistant Editors

Duffy Hayes duffy.hayes@informa.com

Alex Smolokoff alex.smolokoff@informa.com

Contributing Writers

Katharina Bagul, Will Cowling, Nathan Gray, Maryellen Molyneux, Alison Pomaville, Lisa Schofield

Content Producer

Madison Dorn madison.dorn@informa.com

Content Marketing Manager

Corrin Salamatian corrin.salamatian@informa.com

Sales

Senior Account Director

Ioana Neacsu ioana.neacsu@informa.com

Account Managers

Anthony Arteca anthony.arteca@informa.com

Todd Berger todd.berger@informa.com

Lauren Hand lauren.hand@informa.com

Laurel Rivers laurel.rivers@informa.com

Todd Willis todd.willis.us@informa.com

Business Development Specialist – Asia

Jiani Lai jiani.lai@informa.com

Sales Support Coordinators

Susan Ginn susan.ginn@informa.com

Claire Webb claire.webb@informa.com

Marketing services

Program Manager

Kristin LaBarbera kristin.labarbera@informa.com

Art Director, Health & Nutrition

Andrew Rosseau andrew.rosseau@informa.com

Program Marketing Coordinator

Leez May leez.may@informa.com



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President

Vice President & Market Leader, H&N SupplySide Portfolio

Vice President, Content, Health & Nutrition

Brand Director and Vice President of Sales, H&N SupplySide Portfolio

Vice President, Marketing Services

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Heather Granato

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Danielle Dunlap

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2020 N. Central Ave, Suite 400, Phoenix, AZ 85004

Tel. (480)990-1101 • Fax (480)990-0819

Website: naturalproductsinsider.com