

SPECIAL EDITION

# WholeFoods MAGAZINE

Informing and Educating the Natural Products Industry

## MASTERING THE MICROBIOME

### TRACKING 'BIOTICS

Opportunities for growth in the immunity market & more. *p.4*

### PROBIOTICS FOR PERFORMANCE

Exploring the potential in the active nutrition space *p.12*



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Welcome to this Special Edition of **WholeFoods Magazine**, brought to you by **Naturally Informed** and leading industry companies: **FutureCeuticals**, **Kyowa Hakko**, **Verb Biotics**, **NB Pure**, and **EpiCor**. This special digital publication offers the latest market trends, expert insights, and emerging ingredient science on the microbiome market.

You can take a deeper dive into these topics and more in our companion Naturally Informed virtual conference, **Microbiome: Mastering the Market**, which took place in June. Visit [NaturallyInformed.net](http://NaturallyInformed.net) to learn more about the event and register to view the educational sessions on demand at no cost.

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# Microbiome Delivery Options Are Good For Everyone

By Anthony Balderrama,  
Senior Content Manager, SPINS

Until recently, “microbiome” was not a word most shoppers were thinking about. Gut health was a concern for consumers with health issues or for early adopters in specialty stores. Today, “microbiome” and “gut health” are part of the general vernacular, and they’re on the minds of shoppers as they head to the store. Fortunately for them, brands are responding to the demand with a variety of choices and ways to incorporate microbiome products into daily routines. This is a win for shoppers and for the market.

## Strength of the Prebiotics and Probiotics Category

In both natural and MULO [multi-outlet] brick-and-mortar stores, the prebiotics and probiotics category is a \$955 million business. Looking at SPINS data for the 52 weeks ending April 23, 2024, in the SPINS SNE, and MULO channels (powered by Circana), dollar sales were down 4.9% and units were down 7.7%, but ARP [average retail price] was up 3.0%.

However, the story on Amazon is a bit rosier. For that same time period, SPINS ClearCut Amazon US Channel Data shows the prebiotics and probiotics category was a \$904 million business for the online retailer. That came from a 28.2% increase in dollars and a 25.2% increase in units—all on a 2.4% increase in ARP.

Microbiome products are big business, and as with other categories, shoppers are exploring different avenues to find what they need.

## Shoppers Are Choosing Forms That Suit Their Needs

As microbiome products continue to permeate the mainstream market, the options grow. Shoppers can now choose from a variety of delivery forms that used to be afforded only to the most common alphabet vitamins. There are four primary delivery forms:

- **Gummies**, which have growing sales in both brick-and-mortar shops and on Amazon. Gummies are popular because they often have several flavor options and feel less medicinal

than other forms. Plus, many shoppers find gummies to be easiest on their digestive system, especially compared to tablets. Brands like Olly offer combination probiotic and prebiotic gummies.

- **Capsules and tablets** typically have higher concentrations of microbiome content than gummies. For example, a capsule might have 60 billion CFUs per serving versus 500 million for a gummy serving. Capsules and tablets are attractive options because, in addition to their high concentrations, they often have a lower price point, which is always attractive.
- **Powders** offer a versatility that some shoppers find attractive, and others might find annoying. Gummies, capsules, and tablets are obviously premeasured amounts, so there's no guesswork when taking one. Powders require measurement each time and are less portable. However, powders such as Sunfiber might be easier on the digestive system for many people and nutrients can be absorbed more quickly. Powders are also easy to mix into juices or smoothies, which can be easier to enjoy than popping a pill.

## Don't Overlook Functional Ingredients

Although gummies, capsules, tablets, and powders are the most prominent delivery methods for microbiome content, functional ingredients are creating new avenues for forms. Some shoppers want to incorporate better gut health practices into their lives but either don't want to feel like they're taking medicine or aren't looking for a daily regimen. Instead, products that easily fit into their life are the most reliable ways to boost their microbiome intake.

That is perhaps why functional beverages are so popular. According to SPINS data, digestive health focused sodas that contain prebiotic or probiotics are enjoying a 175% increase in year-over-year sales and 164% increase in units year-over-year. These sodas quench shoppers' thirst, satisfy the craving for a

non-water beverage, let them achieve a health goal, and are convenient. Brands wading into this functional beverage space for digestive health are meeting shoppers where they are. Whether or not these sodas are delivering the highest concentration of microbiome content is less important to some than whether or not these are the products that people enjoy and consistently use.

## A Growing Audience Needs Plenty of Choices

Thanks to the prevalence of social media, we now have influential forces like TikTok educating shoppers both on the benefits of gut health and highlighting the many options they can find online and in store. The audience for microbiome products will continue to expand and the range of needs and preferences will diversify, which is good news for everyone in the microbiome space. Whether there are more flavorful gummies, more CFUs in each capsule, or a new line of functional sodas, a wide range of shoppers will be there to find the choice that works best for their lifestyle and for their health.



As **SPINS'** Senior Content Manager, Anthony Balderrama writes about the trends, insights, and CPG innovation affecting the health and wellness industry. He combines his history of editorial experience and industry expertise with his personal commitment to better-for-you products.





# Tracking 'Biotics: Opportunities for Growth

By Len Monheit, CEO,  
Industry Transparency Center

Industry Transparency Center (ITC) is a U.S.-based global data, insights and strategy organization that conducts unique consumer research including consumer perceptions and use of health ingredients in foods, beverages and supplements. The research and results are unique in that they focus on key ingredient categories and measure familiarity and consumption of these very specific ingredient categories. ITC can track and index any supplement user set against the ingredients they are familiar with and use, as well as all health concerns they wish to address. ITC has been collecting and compiling this research for seven years, and in certain areas, such as the microbiome, gathering insights and behaviors for consumers of probiotics, prebiotics and most recently postbiotics.

## Immunity and Beyond

The past five years have seen an explosion in the number of products targeting the microbiome. This has been accelerated by the focus on immune support, especially during COVID. While immunity is not the driver of sales it was a few years ago, it has generated an awareness that the gut microbiome is hugely important, for immunity, digestion and more, including today's top health concerns for supplement users—anything related to mental wellness, including anxiety, sleep, energy, and mood. The ITC data clearly shows these concerns are increasing, especially among younger female demographics. At the same time, willingness to address these concerns with supplements is increasing.

Immunity itself as a concern is still prevalent, but it has also morphed into a concern that can be described as "resilience." This includes an ability to cope with stressors, manage inflammation, maintain brain and other forms of energy, and yes, maintain a healthy microbiome—even if consumers don't exactly know what a microbiome is or how it works. In fact, the term "to have a healthy microbiome" has emerged as a key reason consumers are taking more probiotics and prebiotics. This connection between the microbiome, its health, functionality, and overall wellness has led consumers to grasp that maintaining the microbiome has a positive impact on inflammation, blood sugar management, stress management, energy generation and even cardiovascular health.

## Consumers and 'Biotics'

In all three cases—probiotics, prebiotics as well as postbiotics—in addition to just looking for the word on the label, consumers are seeking combination products: synbiotics, where probiotics are typically combined with prebiotics or vice versa, and even what we'll call "tribiotics," where formulators are using probiotics, prebiotics, and postbiotics.

Consumers are also becoming more discerning, especially younger ones (ITC separates its consumer age ranges into 18-34, 35-54 and 55+). This is reflected by them increasingly looking for specific prebiotics like inulin, FOS (fructo-oligosaccharides) or GOS (galacto-oligosaccharides). In the realm of probiotics, they are looking for specific species and strains.

## The Data Shows...

ITC supplement user data shows probiotics have joined the big five or six established ingredients when it comes to usage and perceived effectiveness. Prebiotics are trailing, but about to move into the top 10. Postbiotics are much less known, but have a loyal following (primarily younger males). For all three of these ingredient types, sustainability over-indexes compared to many other ingredient categories and the values driving purchase lean toward quality and values-based seals and certifications.

On the healthy food and beverage side, consumers also recognize the biotics, value a transparent and sustainable supply chain, and in many cases seek a total microbiome solution with both probiotics and prebiotics.

## ITC Data & Insights

ITC data & insights fuel the Global Prebiotic Association and other organizations, help ingredient suppliers work with brands to produce winning products, and ensure those products match consumers' interests, needs and values. Go to [itcstrategy.com](http://itcstrategy.com) or contact [len@itcstrategy.com](mailto:len@itcstrategy.com) for information.



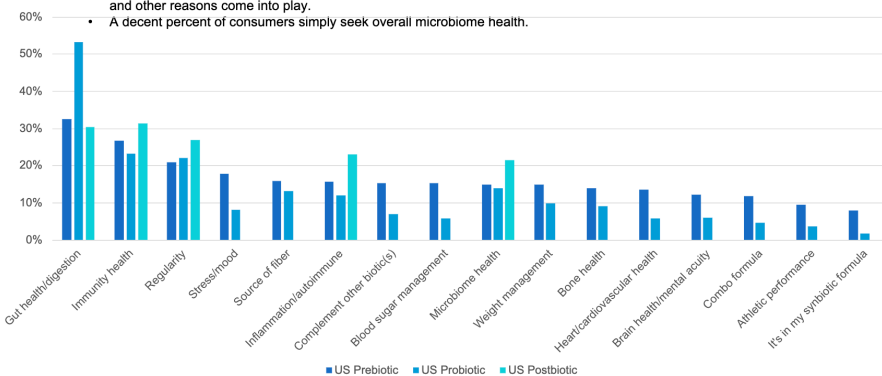
Len Monheit, a chemist and biochemist, boasts over 24 years in the healthy lifestyle industry. He co-founded NPLcenter in 1999, a digital media platform acquired by New Hope Natural Media. At New Hope, he oversaw the ingredient portfolio and held global strategic roles including with Nutrition Business Journal. Next, Len managed William Reed properties including NutraIngredients-USA and Probiota. Moving to [Industry Transparency Center](http://Industry Transparency Center) (ITC), originally Trust Transparency Center, in 2017, Len serves as ITC CEO and Executive Director of the Global Prebiotic Association.

### WHY DO US CONSUMERS TAKE 'BIOTICS'?



#### Key Insights:

- Probiotic users overwhelmingly do so for gut health and digestion, but for prebiotics and postbiotics, immunity, regularity and other reasons come into play.
- A decent percent of consumers simply seek overall microbiome health.





# The Benefits of Prebiotics: Enhancing Mental Health

By Morgan Johnston,  
Global Prebiotic Association (GPA)

Prebiotics, non-digestible fibers found in foods like garlic, onions, bananas, and whole grains, are garnering significant attention for their extensive health benefits. While often overshadowed by their live counterparts, probiotics, prebiotics play a crucial role in maintaining a healthy gut microbiota. One of the most compelling benefits of prebiotics is their positive impact on mental health. By fostering a healthy gut environment, prebiotics can influence mood, reduce anxiety, and support overall mental wellbeing. In this article, we explore how prebiotics enhance mental health and the broader implications for overall wellness.

## The Gut-Brain Axis: A Key Connection

The gut-brain axis is a complex communication network linking the gut and the brain. This bidirectional pathway involves neural, hormonal, and immune signals that allow the gut and brain to influence each other. The gut microbiota, consisting of trillions of microorganisms, plays a pivotal role in this communication system. An imbalance in the gut microbiota, known as dysbiosis, can disrupt the gut-brain axis, leading to mental health issues such as anxiety and stress (NCCIH) (NCCIH).

Prebiotics support a healthy gut microbiota by selectively nourishing beneficial bacteria. These beneficial bacteria produce metabolites, such as short-chain fatty acids (SCFAs) and neurotransmitters, which can influence brain function and behavior. Through these interactions, prebiotics have a profound impact on mental health.

## Enhancing Neurotransmitter Production

One of the primary ways prebiotics influence mental health is through the production of neurotransmitters and other metabolites. The gut microbiota produces several neurotransmitters, including serotonin, dopamine, and gamma-aminobutyric acid (GABA), which are crucial for regulating mood and behavior. Approximately 90% of the body's serotonin, a neurotransmitter associated

with feelings of wellbeing and happiness, is produced in the gut (NCCIH).

Prebiotics enhance the growth of beneficial bacteria that produce these neurotransmitters. For instance, Bifidobacteria and Lactobacilli are known to produce GABA, a neurotransmitter that helps reduce anxiety and promote relaxation. By supporting the growth of these bacteria, prebiotics can help increase the production of GABA and other mood-regulating neurotransmitters, contributing to improved mental health.

## Reducing Stress & Anxiety

Prebiotics also play a significant role in reducing stress and anxiety levels. Studies have shown that prebiotics can help lower levels of cortisol, the body's primary stress hormone. High levels of cortisol are associated with chronic stress and anxiety. By promoting a healthy gut microbiota, prebiotics can help modulate the body's stress response.

Research indicates that individuals who consume prebiotics experience lower levels of stress and anxiety. This effect is believed to be mediated by the production of SCFAs, such as butyrate, which have anti-inflammatory properties and can influence brain function (NCCIH). Inflammation is linked to various mental health disorders, and by reducing inflammation, prebiotics can help alleviate symptoms of stress and anxiety (NCCIH).

## Boosting Cognitive Function

Emerging evidence suggests that prebiotics can also enhance cognitive function. The gut microbiota produces SCFAs that have neuroprotective properties, helping to protect the brain against inflammation and oxidative stress (NCCIH). These SCFAs can cross the blood-brain barrier and influence brain function directly.

For example, butyrate has been shown to support the integrity of the blood-brain barrier and promote the production of brain-derived neurotrophic factor (BDNF), a protein that supports the growth and survival of neurons (NCCIH). Higher levels of BDNF are associated with improved cognitive function, learning, and memory. By enhancing the production of butyrate, prebiotics can help improve cognitive performance and protect against neurodegenerative diseases.

## Improving Emotional Well-being

Prebiotics have been found to positively influence emotional wellbeing. Studies have demonstrated that individuals who consume prebiotics report improved mood and overall happiness. This effect is partly due to the modulation of the gut-brain axis and the increased production of mood-regulating neurotransmitters (NCCIH).

## Conclusion

The benefits of prebiotics for mental health are profound and multifaceted. By promoting a healthy gut microbiota, prebiotics enhance the production of neurotransmitters, reduce stress and anxiety, boost cognitive function, and improve overall emotional well-being. Incorporating prebiotic-rich foods into the diet is a simple yet effective way to support mental health and overall well-being. As research continues to uncover the intricate connections between the gut and the brain, the importance of prebiotics in maintaining mental health becomes increasingly clear.

To learn more about the different types of prebiotics, their benefits, and more, refer to the GPA's HCP 101 Guide: <https://prebioticassociation.org/hcp-101-guide/>.



Morgan Johnston serves as the Marketing Coordinator of [Industry Transparency Center](#) (ITC) and Communications Director of the [Global Prebiotic Association](#) (GPA). After spending over 5 years working on the agency side of marketing, she transitioned into the health ingredients and dietary supplements industry driven by a desire to leverage her skills to make a meaningful impact. Her career shift is marked by integrated marketing and communications initiatives that aim to drive transparency within the industry.



# Exploring Probiotics for Athlete Health, Recovery, and Performance

By Clare Fleishman, MS, RDN, for the International Probiotics Association

In addition to extensive training, athletes may seek optimum physical and mental wellness through diet, meditation, sleep aids, and numerous supplements. In the past few decades, the microbiome has become another area of intense interest in this regard. This article looks at the role of the microbiota as well as the potential for probiotics to enhance health, recovery, and performance in athletes.

## Gut microbiota in athletes

Athletes possess [distinct microbiota](#) influenced by exercise and diet. Based on animal and/or human studies, research shows that exercise may play a crucial role in [enriching microbiota diversity](#), altering the [Bacteroidetes-Firmicutes ratio](#), and enhancing [mucosal immunity](#) and [gut barrier functions](#). Elite athletes show other microbiota differences from their sedentary counterparts. In one example, an increase in [Veillonella atypica abundance](#) linked to improvement in endurance performance (due to lactate conversion to propionate).

Nevertheless, extended, intense exercise can [harm intestinal function](#) by redirecting blood flow ([splanchnic hypoperfusion](#)) from the intestines to active muscles, potentially causing mucosal damage, enterocyte injury, and increased gut permeability, particularly in endurance sports.

Researching the human gut microbiota in athletes poses challenges in isolating the impacts of exercise and diet due to their connections, including changes in [dietary habits associated with physical activity](#) (e.g., heightened protein intake in resistance-trained athletes or increased carbohydrate consumption in endurance athletes, alongside overall increased energy and nutrient intake). For example, in athletes, [protein intake](#) is a robust modulator of the microbiota while [high complex carbohydrate intake](#) is associated with richer microbial diversity with an increased abundance of *Prevotella*.

Nonetheless, many [studies](#) have focused on the effect of altering the gut microbiota with probiotic supplementation in athletes. Probiotics as functional modulators of the microbiome may possibly promote health, exercise adaptation, and performance in athletes.

Intense physical exercise can negatively impact various systems in the body that are linked to gut microbiota. Many of these common adverse effects may potentially be alleviated with modification via probiotics. Let's take a look at the evidence regarding:

### Intestinal permeability

Extreme physical exertion strains the gastrointestinal system, heightening the risk of various symptoms such as

abdominal discomfort, heartburn, nausea, vomiting, diarrhea, and [increased gut permeability](#) potentially leading to systemic toxemia.

Probiotic supplementation may support the gut epithelial barrier, which is crucial for maintaining epithelial integrity and protecting the host from environmental threats; potential mechanisms include [enhancing tight junction signaling](#), promoting [mucus secretion](#), and preventing [endotoxemia](#), although further research is needed to fully understand these processes and their implications for gastrointestinal health in athletes undergoing strenuous exercise.

Certain [multi-strain probiotics](#) (lactobacilli and bifidobacteria) combined with prebiotics have demonstrated value in enhancing gut-barrier function among athletes.

### Immune response

The mucosal lining of the GI tract serves as the primary barrier against pathogens and interacts closely with the host immune system. While [low to moderate exercise](#) can improve immune function, [high-intensity exercise](#) can lead to immunosuppression for as long as several days. These effects include reduced counts and functionality of immune cells like natural killer (NK) cells

and T lymphocytes, with alterations in cytokine levels and gene expression.

As a result, a compromised immune system increases [susceptibility to illness](#) in the athlete, which can impact training and performance. Indeed, an athlete is more prone to [upper respiratory tract infections \(URTIs\)](#) during periods of intense training and competition.

[Probiotics](#) may regulate immune response, enhance macrophage activity, modulate gene expression, interact with Toll-like receptors, and influence various aspects of immune function. According to an [International Society of Sports Nutrition Position Paper](#), one well-known mechanism that probiotic bacteria enlist is by adhering to the intestinal mucosa resulting in competitive exclusion “involving [competition for receptor sites](#), secretion of [antimicrobial substances](#), and [induction of mucin alterations](#), which collectively [modulate the immune system](#), [antagonize pathogens](#), and [inhibit the attachment](#) of pathogenic bacteria.”

[Many studies](#) have explored the effect of probiotic supplementation on outcomes related to the immune system in athletes.

The previously mentioned [position paper](#) reported that of the 22 studies reviewed to assess the “effect of probiotics on outcomes related to the immune system, 14 reported significant improvements, whereas 8 reported no effects.”

Moreover, a recent [systematic review](#) reported the beneficial effects of both single-strain and multi-species probiotics consumption on the incidence, duration, and/or severity of URTIs in athletes. Alteration of the inflammatory cytokine profile is suggested as a [primary mechanism](#) driving the immune-modulating effects of probiotics in athletes.

### Inflammation

Probiotics may also serve to reduce inflammation in sore muscles after exercise. This effect may be partially mediated by [antioxidant effects](#) manifested by probiotics because certain strains may increase antioxidant levels and neutralize the effects of reactive oxygen species.

In addition, probiotics may [reduce hyperglycemia, a condition](#) linked to oxidative stress. Probiotics can also be a source of [postbiotics](#), which may contribute to antioxidant and immunomodulatory effects.

Moreover, probiotics produce vitamins ([mostly B vitamins](#)), some of which can reduce oxidative stress, though

their use in athletes for this outcome is controversial.

A [study](#) evaluated the effect of 14 weeks multi-species probiotic supplementation on markers of oxidative stress and inflammation and results showed that supplementation decreased protein oxidation and the chronic inflammatory marker TNF- $\alpha$ .

### Bioavailability of nutrients

Probiotics may improve [dietary protein absorption and utilization](#), which is important in strength recovery. The amounts of [glycogen](#) (stored energy for muscles) in the liver and muscles may also be increased by probiotics. In addition, probiotics can enhance the absorption of other nutrients such as [iron](#), which when deficient can [harm performance](#).

### Probiotics and sports performance

When intense exercise leads to a “leaky gut,” inflammation, and a compromised immune system, training is interrupted—performance can suffer. Supplementing with probiotics may ameliorate some of the physiological effects. Altering the microbiome may influence various indices of [exercise performance](#) and [recovery](#).

A recent [systematic review of interventions](#) conducted from 2014 to 2021 looked at the effects of probiotics on different performance aspects (skill, strength, endurance, and recovery) in different sports. Endurance sports with male athletes were most represented. Various metrics were used in the diverse studies including body composition, anaerobic and aerobic capacities, muscle damage, and muscle fatigue tests. Of the 13 studies, 11 reported positive effects (not all significant) of probiotic supplementation on different measurements of sports performance. The authors noted that the heterogeneity of the studies (probiotic benefits are strain-specific) precluded definitive conclusions.

Another [meta-analysis and systematic review](#) found that supplementing with probiotics positively impacts performance, particularly in a trained population where aerobic metabolism is predominant. Results indicated that consuming single-strain probiotics for  $\leq 4$  weeks yielded greater benefits than a placebo.

For a comprehensive list of probiotic studies in an athletic population, refer to [Table 3](#) in the aforementioned [position paper](#). The same paper includes Table 5 entailing [approved Canadian probiotics claims for sports performance](#).

## Takeaway

The athlete’s microbiome, particularly its modulation through probiotics, has emerged as a significant area of interest in overall health, recovery, and performance. Athletes exhibit distinct microbiota influenced by their exercise routines and dietary habits, impacting diverse aspects such as gut barrier function, immune response, and inflammation.

While intense exercise can strain the gastrointestinal system, leading to symptoms like heightened gut permeability and compromised immunity, probiotic supplementation shows promise in supporting gut health and bolstering immune function. Moreover, probiotics may aid in reducing inflammation, improving nutrient absorption, and enhancing sports performance and recovery. However, further research is needed to fully understand the strain-specific benefits of probiotics and their optimal usage in an athletic context.

*\*A list of key references is available in the web version of this article, at [WholeFoodsMagazine.com](#).*

[The International Probiotics Association \(IPA\)](#) is a global non-profit organization bringing together, through its membership, the probiotic sector’s stakeholders, including but not limited to academia, scientists, healthcare professionals, consumers, industry, and regulators. The IPA’s mission is to promote the safe and efficacious use of probiotics worldwide. Holding NGO status before Codex Alimentarius, the IPA is also recognized as the unified “Global Voice of Probiotics” around the world.

Clare Fleishman, MS RDN, bridges the gap between science and health across most platforms: major newspapers, magazines, books ([Globesity](#)), workshops, social media, and websites. In 2010, she launched [www.ProbioticsNow.com](#) to share the cascade of new discoveries in the microbiome. Always amazed at this “forgotten organ,” Fleishman has also created white papers, blogs, videos, and social media for the [International Probiotics Association](#). She recently published [Fertility: Why Microbes, Weight & Nutrition Matter](#).

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# Immune Health and the Microbiome: Postbiotics for Year-Round Support

By Danielle Citrolo,  
VP of Scientific & Regulatory Affairs, Kyowa Hakko

As we all continue to navigate the post-pandemic world, it's crucial to understand the shifting desires of consumers. And for today's supplement consumer, immune health and digestive health go hand-in-hand. A recent survey from Kyowa Hakko shows that in 2023, 81% of U.S. supplement consumers said they looked for ways to boost their digestive health with diet, activity, and supplements. In terms of postbiotics, nearly half (49%) believe postbiotics are effective for supporting immune health, and 70% agree that their microbiome is important to their overall health.

But the connection between digestive health and immune health isn't just mere perception among consumer groups—it's rooted in science, too. The gut microbiome is a vast and complex ecosystem. Integral not only for proper digestive function, the microbiome is also in continuous dialogue with our immune cells, working together to defend our body's health. Remarkably, 70% of our immune system is embedded within our gut (1).

The vast majority of our immune cells collect in organized lymphoid tissues within the gastrointestinal tract known as the GALT (gut-associated lymphoid tissues). Made up of several types of lymphoid tissues, including Peyer's patches in the small intestine, the GALT contains the largest reservoir of immune cells in the entire body (2). The bacteria in our gut then signals to the immune cells collected in the nearby GALT indicating that they are indeed friendly, while also helping them recognize unfriendly microbes that need to be eliminated. In return, the immune system helps maintain a stable community of microbiota, keeping the microbiome in balance (3).

## Where do postbiotics come into play?

As discussed earlier, the microbiome is incredibly complex, and it contains a collection of trillions of microscopic organisms: bacteria. And while we often think of bacteria and other microorganisms as bad or harmful, the good bacteria in our gut has a crucial role for the immune system. This good bacteria exists in three forms: pro-, pre- and postbiotics.

Found in fermented foods, such as yogurt, kefir, and kombucha, as well as in dietary supplements, **probiotics** are live microorganisms that impart health benefits to the body when consumed. Probiotics help maintain a healthy population of microbiota living in the gut, which positively affects digestion and overall wellbeing.

**Prebiotics** are nutrients, such as dietary fibers and minerals, that feed and promote the growth of the healthy bacteria living in the gut. In other words, prebiotics are the food probiotics need to thrive.

Unlike probiotics, **postbiotics** are not living microorganisms, but nonviable microbial cells that provide health-promoting properties when consumed. According to the International Scientific Association for Probiotics and Prebiotics (ISAPP), postbiotics are defined as preparation of inanimate microorganisms that confers a health benefit to the host. Postbiotics are also nonviable, making them more stable, convenient and flexible than live bacteria and yeasts. They also don't require refrigeration or special handling, which leads to an easier shipping and storage process and ease of integration into product formulations.

## A cutting-edge postbiotic ingredient

Fortunately, there is one postbiotic ingredient that addresses many of consumers' need-states and desires surrounding the connection between immune and digestive health. IMMUSE™ is a clinically researched lactic acid bacteria developed by Kirin Holdings Co., Ltd.

IMMUSE™ is a cutting edge ingredient—it's the first of its kind to activate pDCs (plasmacytoid dendritic cells). pDCs are a rare subset of immune cell types that act as leaders of the immune system. The acronym can be easily remembered as the cells that Protect, Defend, and Communicate—or pDC. Once they are activated, they recruit, stimulate, and organize other key immune cell types across both the innate and adaptive immune systems. Importantly, this activity activates interferon (IFN- $\alpha$ ) production, which is critical to immune health. IMMUSE™ also has demonstrated the ability to directly

stimulate key immune cells situated in the GALT's Peyer's patches, which is another avenue of a more comprehensive immune support than traditional immune health supplements.

As an award-winning postbiotic, IMMUSE™ has won many relevant accolades. In 2023, it was named the inaugural recipient of the "Ingredient of the Year: Microbiome Modulation" category in the esteemed annual awards by popular publication, NutraIngredients-USA—also finishing as a finalist in the same category for 2024. And in 2021, IMMUSE™ received the Frost & Sullivan 2021 North American New Product Innovator Award for its clinical studies and exceedingly high manufacturing standards.

## References

1. Wiertsema S, et al., [The Interplay between the Gut Microbiome and the Immune System in the Context of Infectious Diseases throughout Life and the Role of Nutrition in Optimizing Treatment Strategies](#). *Nutrients*. 2021 Mar 9;13(3):886.
2. Donaldson DS, et al., [The Gut-Associated Lymphoid Tissues in the Small Intestine, Not the Large Intestine, Play a Major Role in Oral Prion Disease Pathogenesis](#). *J Virol*. 2015 Sep;89(18):9532-47.
3. Zheng d, et al., [Interaction between microbiota and immunity in health and disease](#). *Cell Research*. 2020 May 20; 30, pages 492–506.



Dr. Citrolo is a registered pharmacist, and she provides scientific and regulatory support to [Kyowa's](#) customers in the U.S., Canada, and Latin America. She holds degrees in biochemistry and chemistry from North Carolina State University and a Doctor of Pharmacy from Albany College of Pharmacy, NY.



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Photo courtesy of Van Drunen Farms and FutureCeuticals

# Formulating for the Gut Microbiome

## What you need to know to create innovative gut health products.

By **Brendan Kesler**,  
R&D Innovation Director, Van Drunen Farms and FutureCeuticals

The gut—the unseen superhero of the body—is finally getting the attention it deserves.

Good gut health is moving up the priority list for consumers as they continue to learn more about the gut microbiome—the diverse ecosystem of microorganisms vital to health. In fact, when asked what health claims appeal to them when looking for food and drink products, 50% of respondents reported “supports good gut health” as their answer (1).

Put simply, consumers want good gut health, and they want it now. That means they are searching for products to help them easily maintain a healthy gut, specifically the gut microbiome. But the gut microbiome is complicated, sometimes making product formulation and development complicated as well.

The good news is that product developers can overcome development challenges by understanding what consumers are looking for in gut health products and what it takes to help them achieve their gut health goals.

### What consumers are looking for in gut-health products.

It's no secret that people do not eat the recommended amount of fruits and vegetables important for gut health support. Factors like the amount of time it can take to shop for and prepare these foods can be a barrier to consuming the nutrition our bodies need. Consumers want and need convenient products to help them meet their gut-health goals.

#### Convenience

Innova Market Insights reports that a desire to eat more fruits and vegetables is driving consumers to look for more convenient healthy food choices. For example, when asked if they have bought any convenience products in the last 12 months, 8% of respondents reported purchasing more prepared vegetables and, 9% reported purchasing more prepared fruits (2).

This indicates that the desire for convenient products with multiple benefits will continue to grow as consumers look

to address their gut health concerns. Dehydrated fruits and vegetables are another way to answer this call for convenient choices.

#### Gentler Forms of Fiber

Consumers are also looking for gentle forms of fiber that won't negatively impact their everyday routines. Isolated fibers that are not typically part of our diet can create negative side effects, such as GI distress, and often have very selective health benefits. Whereas, real food fibers, as found in fruits and vegetables, naturally offer multi-faceted health benefits while being gentle on our GI tract. As a bonus, food fibers often carry a unique form of antioxidants known as fiber-bound polyphenols, which can reach and positively impact the gut microbiome alongside dietary fiber.

#### Clear Communication

Last, consumers are looking for clear communication about gut health benefits. According to Innova, 67% of survey respondents stated that it's important to them to be informed regarding healthy foods and nutrition (3).

You can keep consumers informed by communicating clearly about the benefits of dietary fiber from fruits, vegetables, and whole grains. For example, share key points about how food fibers contribute to daily fiber intake goals, act as prebiotics in the gut, and even carry fiber-bound polyphenols to the microbiome.

### How you can develop products that help consumers achieve their gut-health goals.

Using familiar ingredients from real, nutrient-dense foods will appeal to your customers who don't want to sacrifice authentic, wholesome ingredients for convenience. For example, FutureCeuticals has developed a fruit and vegetable fiber blend called NatureKnit. NatureKnit delivers intact, plant-based dietary fiber and polyphenols, naturally bound together, to the gut.

Solutions like NatureKnit also help you satisfy consumer desire for convenience.

Finding ways to incorporate the benefits of dietary fiber into on-the-go products like bars and smoothies is a great way to appeal to gut-health-conscious consumers.

Last but certainly not least, teach. Dietary fiber and food sources of prebiotics can significantly impact health, giving product developers and marketers the opportunity to educate and communicate on packaging and in marketing content.

Seize the opportunity to spread the word to your customers that maintaining good gut health isn't as challenging as it sounds. Just a bit of effort can have a big gut health impact.

With some ingenuity, great ingredients, and a strong communication plan, you can be a leader in the gut health market.

### References

1. FMCG Gurus. [Top Trends for 2024](#).
2. Innova Market Insights. [Consumer Trends: Global Convenience Eating](#). April 2024.
3. Innova Market Insights. [Now and Next for Fiber and Prebiotic – Global](#). 2024.



Brendan Kesler is the R&D Innovation Director for Van Drunen Farms and [FutureCeuticals](#), and has over 15 years of experience in the consumer health and nutrition industry. Additionally, Brendan is a Ph.D. Candidate in Human Nutrition at The Rowett Institute at University of Aberdeen. Prior to joining The Rowett, Brendan earned a Bachelors in Exercise Science (B.S.), a Master's in Health Administration (MHA), and Master of Science in Nutrition Science (M.S.). Brendan's primary research focus is exploring the relationships between dietary fiber, fiber-bound polyphenols, and human health and obesity. Brendan is passionate about bringing evidence-based nutrition into food products where it can play a pivotal role promoting human health.





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# GutTok is Trending for a Reason:

## 69% of U.S. consumers report gut health symptoms

Enhancing gut microbiome health: The role of Postbiotics in shelf-stable food and beverages.

By Arpita Aditya, Ph.D,  
Senior Scientist, Verb Biotics

### Postbiotics are the latest innovation in the “biotics” space

Like probiotics, postbiotics help restore microbial balance in the gut microbiome, yet this type of biotic is “inactivated,” meaning the beneficial bacteria are not live organisms like a probiotic. This distinction enables postbiotics to easily incorporate into shelf-stable food and beverage products, enabling greater accessibility for consumers to improve their gut health.

Postbiotics provide beneficial metabolites produced from the probiotic fermentation of prebiotics. This means you don't have to wait for a probiotic to colonize the gut and ferment the available fibers, as the metabolites from postbiotics are readily available to support your gut microbiome. Since the gut environment varies uniquely from person to person; not everyone may derive the same benefit from fibers and probiotic supplements.

### Prebiotic & probiotic synergy

Utilizing the concept of prebiotic and probiotic synergy, Verb Biotics developed Keystone Postbiotic™, a fusion of selected probiotic strains fermented alongside oats. Oats are naturally gluten-free and have prebiotic and bioactive components, such as β-glucan, protein, vitamin E, lysin, flavonoids, and phenolics. The two *Lactobacillus* strains in Keystone Postbiotic™, are well known for their ability to modulate human health through various metabolites. The combination of the strains and grains in Keystone Postbiotic™ delivers specific inflammation-reducing short chain fatty acids (SCFAs) in the GI tract, and supports the growth of good gut bacteria, promoting their diversity, and improving overall digestive health.

For food and beverage products, Keystone Postbiotic™ offers the health benefits associated with probiotics and prebiotics but with greater stability and ease of use. For #GutTok consumers, Keystone Postbiotic™ offers an easy to access gut health solution for their #wellnessjourney towards #totalhealth.

Learn more about [Verb Biotics microbiome health innovations and shelf-stable Keystone Postbiotic™](#).



Why the Gut Microbiome is a Forgotten Organ

Verb biotics

Download the [“Why the Gut Microbiome is a Forgotten Organ”](#) **whitepaper**

### References

1. [2023 Consumer Gut Health Survey Highlights Need to Educate Consumers on the Gut Microbiome](#). Verb Biotics. (accessed 2024-04-03).
2. RD, E. Q. [8 Gut Health Statistics and Facts \[2023 Update\]](#). Health Reporter. (accessed 2024-05-01).
3. [Digestive Diseases Statistics for the United States - NIDDK](#). National Institute of Diabetes and Digestive and Kidney Diseases. (accessed 2024-05-01).
4. [NIH Launches Human Microbiome Project](#). National Institutes of Health (NIH). (accessed 2024-05-02).
5. Bajinka, O.; Darboe, A.; Tan, Y.; Abdelhalim, K. A.; Cham, L. B. [Gut Microbiota and the Human Gut Physiological Changes](#). *Annals of Microbiology* 2020, 70 (1), 65 .
6. de Vos, W. M., Tilg, H., Van Hul, M. & Cani, P. D. [Gut microbiome and health: mechanistic insights](#). *Gut* 71, 1020–1032 (2022).



Arpita Aditya, Ph.D., has been studying and researching microbiology for over 14 years. She has expertise in gut microbial modulation utilizing natural components to provide host health benefits. Her research interests include investigating the mode of action of probiotics against human health complications. Currently, she works as a Senior Scientist at [Verb Biotics](#).

A consumer gut health survey conducted in 2023 by Verb Biotics found that 69% of U.S. consumers experience gut issues and 40% of this population have symptoms affecting their daily life (1).

While not everybody consults with a physician for gut issues, the annual total number of hospitalizations (4.5 million), mortality (236,000), and the resulting medical bills (almost \$100 billion) is quite shocking (2,3)! Amidst the COVID-19 pandemic, the focus on digestive health, gut microbiome, probiotics, and healthy eating surged. This trend catapulted the social media hashtag #GutTok to over one billion views, highlighting consumer interest in maintaining and improving their gut health.

Decades of research have consistently shown that maintaining a healthy gut is essential for our overall well-being. In the early 2000s, NIH's human microbiome project (HMP) added new vigor to gut microbiome research. The outcomes of their research have significantly reformed our understanding of the role of the gut microbiome on overall human health (4). This latest science shows us that a balanced and diverse gut microbial population is not only important for digestive health, but also for our cardiac, hormonal, mental, autoimmune health, and more.

The microbial population and its diversity in our gut are heavily influenced by food, age, genetics, immune systems, environmental factors, geographic location, personal habits (e.g., smoking and drinking), medications, etc. (5). These factors collectively create an environment to host thousands of species of bacteria, viruses, fungi, and parasites. Typically, an individual has about one trillion microbes in their gut, and the abundance of specific microbial groups constantly fluctuates due to the above-mentioned factors' interaction (6). If one factor has a drastic change, it disrupts the microbial balance and causes what many scientists call “dysbiosis.” A microbial imbalance in the gut microbiome can cause intestinal lining inflammation, which contributes to the various adverse gut issues affecting consumers in the U.S.



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# 5 Strategies for a Happier, Healthier Gut

By Valerie Latona

Gas, bloating, and abdominal pain are common digestive complaints for [two-thirds of Americans](#) (1). And almost 4 million people suffer from [frequent constipation](#) (2).

Gut problems, however, don't stay in the gut or microbiome. Research has linked gut problems—indicative of gut imbalance or dysbiosis—to [inflammation](#) (3), [mood disorders](#) (4), and more.

## What is the microbiome?

The microbiome is the name given to all the microorganisms living in the gut—both good and bad. All are living in a happy balance until something is thrown out of balance. When this happens, symptoms develop.

"Any imbalance in the microbiome ... is the root of almost all chronic inflammation and the beginning of almost all chronic ailments," says Kristine Gedroic, M.D., in *A Nation of Unwell: What's Gone Wrong?* (LCR Publishing, 2019).

A healthy, balanced microbiome can help regulate the body's inflammatory response and support [healthy immunity](#) (5). In fact, 70% of immune cells are found in the gut.

## How to balance the gut

**1 Relieve constipation.** Constipation (having three or fewer stools per week or having hard pebble poops) indicates a gut that's out of balance. Drinking plenty of water daily can help regularity, as can eating a balanced diet. But if constipation continues, you may want to consider a gut cleanse like [Mag07 with ozonated magnesium oxide](#) to get things moving.

**2 Manage stress levels.** Finding ways to de-stress (e.g., walking outdoors, having gratitude, and getting enough sleep) can not only help your overall health, it can help your gut too. That's because stress changes the healthy makeup of the microbiome, triggering [dysbiosis](#) (6).

**3 Add fermented foods to your diet.** Fermented foods like yogurt and kefir are good sources of beneficial bacteria or probiotics.

[Probiotics](#) can help fend off harmful gut bacteria (7). One good source of probiotics: [Lifeway's Organic Whole Milk Plain Kefir](#).

**4 Get enough fiber every day.** [Ninety percent of Americans](#) (8) don't get enough fiber, defined as 25 to 38 grams daily. But it's critical for a healthy [balanced gut](#) (9). You need both soluble and insoluble fiber. Soluble fiber offers food for healthy bacteria. Insoluble fiber gives the gut the roughage it needs to stay regular.

The best way to get fiber: whole grains, fruits, vegetables, beans/legumes, and nuts and seeds. When you can't get enough fiber, taking a fiber supplement can offer a convenient



solution. [NBPure's Daily Multi-Fiber](#) offers soluble and insoluble fiber, plus probiotics and prebiotics (food for healthy bacteria).

**5 Eat plenty of fresh fruit and vegetables.** Fruits and vegetables are a rich source of antioxidants called [polyphenols](#) (10) that have been shown to support a healthy gut. Fresh produce (at least 5 servings a day) also provides essential fiber and can enrich gut microbial diversity.

By implementing better health strategies every day, gut symptoms like gas, bloating, abdominal pain, and constipation can improve. Your overall health may improve too.

## References:

1. "Two-Thirds of Americans are Living With Gut Issues, Unaware of the Health Consequences." MDVIP. May 24, 2023. [www.prnewswire.com/news-releases/two-thirds-of-americans-are-living-with-gut-issues-unaware-of-the-health-consequences-301833342.html](http://www.prnewswire.com/news-releases/two-thirds-of-americans-are-living-with-gut-issues-unaware-of-the-health-consequences-301833342.html)
2. "Constipation." Johns Hopkins Medicine. <https://www.hopkinsmedicine.org/health/conditions-and-diseases/constipation>.
3. "Intestinal Microbiota as a Contributor to Chronic Inflammation and Its Potential Modifications." *Nutrients* 13, no. 11.

4. "Gut Microbiota's Effect on Mental Health: The Gut-Brain Axis." *Clinics and Practice* 7, no. 4. (September 15, 2017): 987. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5641835/>
5. "If You Want to Boost Immunity, Look to the Gut." UCLA Health: News & Insights. March 19, 2021. <https://www.uclahealth.org/news/article/want-to-boost-immunity-look-to-the-gut>
6. "Stress, Depression, Diet, and the Gut Microbiota." *Current Opinions in Behavioral Science* 28 (August 2019): 1055-110. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7213601/>
7. "Probiotics." Cleveland Clinic. Reviewed October 30, 2023. <https://my.clevelandclinic.org/health/treatments/14598-probiotics>
8. "USDA: Dietary Guidelines for Americans: 2020-2025." December 2020. [https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary\\_Guidelines\\_for\\_Americans\\_2020-2025.pdf](https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary_Guidelines_for_Americans_2020-2025.pdf)
9. "Intestinal Microbiota as a Contributor to Chronic Inflammation and Its Potential Modifications." *Nutrients* 13, no. 11. (November 2021): 3839. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8618457/>
10. "Dietary Polyphenol, Gut Microbiota, and Health Benefits." *Antioxidants* 11, no. 6. (June 2022): 1212. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9220293/>



Valerie Latona is a health and wellness writer and editor. She is a former editor in chief of Shape and former advisor to the Office of Research on Women's Health at the National Institutes of Health. Her work has appeared in *Prevention*, *Women's Health*, *Allure*, *Harper's Bazaar*, and other publications.



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# Postbiotics for Epic Immune & Gut Support

By EpiCor, a Cargill brand



**Each postbiotic is unique based on the microorganisms, fermentation medium and method used, and post-fermentation process.**

Justin Green,  
Director of Scientific Affairs, EpiCor

Postbiotics are currently enjoying a surge in popularity among consumers and formulators alike, thanks to their significant benefits for gut and immune support, as well as for their ability to withstand various manufacturing challenges associated with live microorganisms. That said, not all postbiotics are equal.

"Each postbiotic is unique based on the microorganisms, fermentation medium and method used, and post-fermentation process," explained Justin Green, Director of Scientific Affairs at EpiCor, a Cargill brand.

## An Innovative Ingredient

What distinguishes EpiCor® postbiotic, a whole-food fermented postbiotic, from category competitors is its strong commitment to science, with more than

15 published studies and significant manufacturing experience, with over 75 years of fermentation expertise.

EpiCor® postbiotic is an innovative, science-backed postbiotic ingredient clinically shown to support immune health. Derived from the fermentation of *Saccharomyces cerevisiae* (baker's yeast), EpiCor contains a beneficial mix of metabolites and numerous other health-enhancing bioactive compounds. Not only that, but EpiCor boasts a low efficacious dose of 500-mg per day, is highly heat stable, can handle varying pH levels, and has a three-year shelf life from its manufacture date.

"EpiCor contains a beneficial mix of metabolites and numerous other health-enhancing bioactive compounds," Green added. "It's also the No. 1 selling postbiotic on the market and has been integrated into more dietary supplement products than any other postbiotic."

## Supported by Science

Since 2006, more than 15 published studies (including eight human clinical trials) have confirmed the safety and efficacy of EpiCor. Some of the earliest studies on EpiCor focused on the ingredient's immune system response, with one study finding statistically significant increases in immune markers within just two hours of ingesting one 500-mg dose (1). Subsequent research found that EpiCor may help support the immune system and alleviate seasonal nasal symptoms (2).

Building on this foundation, additional scientific studies have focused on EpiCor's potential to directly support gut health. These studies suggest EpiCor supports positive changes in the gut's microbial community (3), but it has also shown promise for reducing bloating, feelings of fullness, and overall digestive discomfort in subjects with occasional stomach upset and constipation (4).

## Healthier for Life

"While there is still much to learn about the gut-immune connection, research findings like these highlight what I see



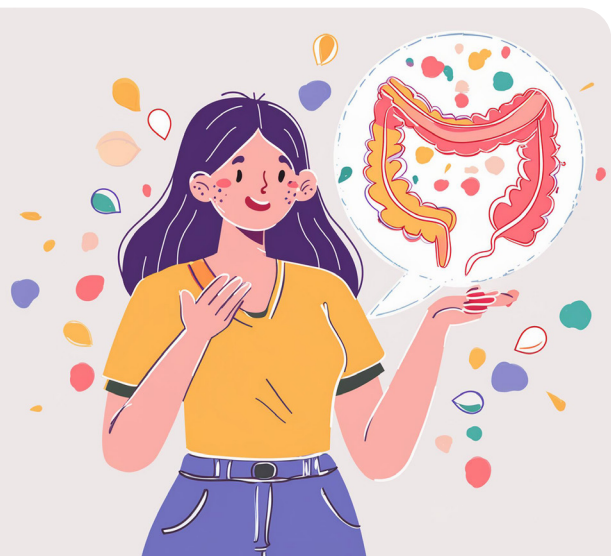
**Scientific studies have focused on EpiCor's potential to directly support gut health. These studies suggest EpiCor supports positive changes in the gut's microbial community, but it has also shown promise for reducing bloating, feelings of fullness, and overall digestive discomfort in subjects with occasional stomach upset and constipation.**

as EpiCor's overarching benefit—helping people live more healthy days," said Green.

Beyond its health benefits, [EpiCor](#) boasts versatility across different formulations, from capsules, to gummies, to ready-to-drink functional beverages. Unlike probiotics (which must be "alive" to benefit the body), postbiotics are inanimate, and are able to deliver a health benefit even after pasteurization. As a result, EpiCor is appropriate for a range of products where probiotics aren't particularly suitable—for example, environments with moisture or in products requiring extended shelf life.

## References:

1. Jensen GS et al. "[An anti-inflammatory immunogen from yeast culture induces activation and alters chemokine receptor expression on human natural killer cells and B lymphocytes in vitro.](#)" Nutrition Research 2007; 27, 327-335.
2. Moyad MA, et al. "[Immunogenic yeast-based fermentation product reduces allergic rhinitis-induced nasal congestion: A randomized, double-blind placebo-controlled trial.](#)" Adv Ther. 2009; 26(8):795-804.
3. Possemiers S et al. "[A dried yeast fermentate selectively modulates both the luminal and mucosal gut microbiota and protects against inflammation, as studied in an integrated in vitro approach.](#)" J Agric Food Chem. 2013; 61 (39): 9380-9392.
4. 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.



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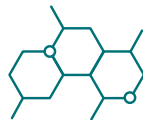
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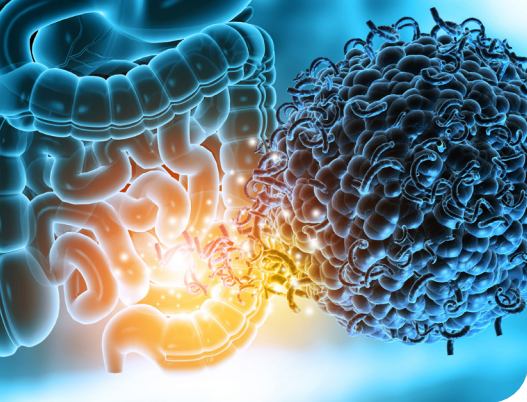


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# Unraveling the Connection: Mold, Mast Cells, and Gut Health

By Jill Carnahan, M.D.

In medical school, we learned about the body by breaking it down into each system. Everything is neatly categorized into distinct compartments. While this makes sense from an academic standpoint, the truth is, the body is much more complex than that. The body's systems are intricately and inextricably interconnected—it's impossible to truly disentangle any one system from another. But this complex web doesn't end there. There are other crucial threads—like our environment, the microbes that inhabit our bodies, and our emotional state—that all come together to create the delicate, intricately woven web that makes up our wellbeing.

Just as a disturbance in one thread can reverberate through the entire web, disruptions in one body system can impact others. Nowhere is this complicated entanglement more evident than in the complex relationship between mold, mast cell activation syndrome (MCAS), and gut health. Let's dive into this fascinating connection by first defining mold toxicity.

## Mold Toxicity Defined

Exposure to mold and its toxic metabolites (known as *mycotoxins*) can cause a condition known as *mold toxicity* or *mold illness*. Mold toxicity occurs when the microscopic poisons found within mold sneak into the body via airborne spores or through contaminated food sources. These microscopic toxins can ignite widespread inflammation, damage cellular structures, confuse the immune system, impair cellular communication, and much more. But mycotoxins can have a particularly potent impact on gut health.

## Impact of Mold on Gut Health

Mycotoxins can wreak havoc on the gut by:

- ▶ Changing the structure & morphology of the intestinal epithelium, damaging tight junction proteins and causing increased intestinal permeability.
- ▶ Altering the abundance and diversity of intestinal microflora, leading to gut dysbiosis.
- ▶ Significantly reducing the production

and secretion of mucin (the protective mucus barrier lining the gut epithelium), compromising this crucial barrier and increasing susceptibility to pathogens and toxins.

- ▶ Activating the immune response, stimulating immune cells in the gut mucosa and triggering the inflammatory cascade.
- ▶ Inducing the production of reactive oxygen species (ROS) in intestinal cells and contributing to oxidative stress and inflammation in the gut.
- ▶ Interfering with nutrient absorption in the intestines.
- ▶ Exerting cytotoxic effects, leading to cell death or damage—thus disrupting the normal turnover of intestinal epithelial cells and impairing tissue repair mechanisms.

Mold's ability to stir up trouble doesn't end there. It is also notorious for sparking another imbalance that can wreak havoc on gut health: *mast cell activation syndrome*.

## Mold's Role in MCAS

As toxic mold spores make their way into the body, the immune system becomes activated—triggering massive mast cell degranulation. Now, exposure to the small amounts of mold spores naturally found in the outdoor environment is not typically a problem. But because mold can be unknowingly lurking in homes and buildings or be found in high concentrations in contaminated food, many people end up being repeatedly exposed to elevated levels of damaging mycotoxins.

With repeated exposure, mast cell degranulation triggered by toxic fungi can lead to an increase in levels of a pro-inflammatory mediator known as *Prostaglandin D2* (PGD2). An increase in PGD2 levels can create a vicious cycle—triggering mast cell hypersensitivity which leads to increased degranulation, which further ups PGD2 levels, and so on.

This cascade of inflammation and mast cell degranulation triggered by mold can send mast cells into a tailspin, causing them to be chronically stuck in overproduction mode known as mast cell activation syndrome. And this excessive release of mast cell mediators can throw gut health even further out of equilibrium.

## MCAS and Gut Health

Excessive mast cell degranulation disrupts gut homeostasis at the cellular level, leading to:

- ▶ Intestinal barrier dysfunction
- ▶ Immune activation
- ▶ Inflammation
- ▶ Visceral hypersensitivity
- ▶ Dysregulated gut motility
- ▶ Mucosal damage
- ▶ Dysbiosis
- ▶ Systemic effects

This domino effect can ravage the gut, causing a variety of symptoms. How can we address this complex web of dysregulation and imbalance?

## Healing the Microbiome

Mold exposure, MCAS, and gut health are interconnected in a complex web of dysregulation—each factor influencing and exacerbating the others. Breaking this cycle of dysfunction and supporting patients in healing requires addressing all factors simultaneously. Let's dive into some of the key steps required to begin healing the gut and rebalancing the microbiome.

### Addressing Mold Toxicity:

If mold toxicity is suspected, it's important to take a two-pronged approach that includes minimizing exposure and enhancing detox. Let's zoom in on each of these.

**Minimize Exposure:** The first, most important step to address before anything else, is minimizing exposure to these toxic metabolites, which typically requires a comprehensive plan that will likely include:

- ▶ Identifying sources of exposure and completing mold remediation.
- ▶ Disposing of contaminated items that can't be salvaged through mold remediation.
- ▶ Cleaning up of the home environment and taking steps to prevent future mold growth.
- ▶ Utilizing air filtration systems proven to trap and remove mold spores.
- ▶ Following a low-mold diet.

Once exposure has been addressed, you can move on to the second phase.

*Enhancing Detoxification:* After treating countless patients for mold exposure, I've developed a specific mold detox protocol to aid the body in eliminating mold and begin healing underlying damages. It includes:

- ▶ Reduced glutathione to supercharge detoxification.
- ▶ A suite of B-complex vitamins to support cellular and hepatic function.
- ▶ Nanoparticle milk thistle to support the liver during a time of high activity.
- ▶ A formulation of Nicotinamide Mononucleotide (NMN) and Trimethylglycine (TMG) to support recovery, energy production, and maximum detoxification.
- ▶ Essential minerals and trace elements to support electrolyte balance and remineralization during detoxification.
- ▶ A blend of bitter herbs, R-Lipoic Acid, DIM, milk thistle, quercetin, and luteolin to support all phases of detox, boost bile flow, and encourage a healthy inflammatory response.
- ▶ Detox binders to trap toxins.

You can read more about the detox process in my article on [Toxic Mold](#) and all of the [Mold Archives](#).

*More ways to amplify natural detox:*

- ▶ Infrared sauna therapy
- ▶ Dry brushing
- ▶ Pulsed electromagnetic field therapy
- ▶ Proper hydration
- ▶ A healthy diet with plenty of fiber to encourage regular bowel movements

Once mold has been addressed, the next phase is stabilizing mast cells.

## Stabilizing Mast Cells

Many of the ways that we can support and soothe overactive, malfunctioning mast cells go hand in hand with supporting a healthy, balanced gut. Some key strategies that can help stabilize mast cells include:

*Avoid triggers:* This will look different for each individual but triggers may include exposure to allergens (like dust mites, pollen, or dander), chemicals (like synthetic fragrances), friction or pressure (like tight clothing), or extreme temperature changes.

*Address hidden infections:* Sometimes a severe, chronic, or underlying infection can essentially force the immune system to stay in the "on" position, triggering mast cells to become overly aggressive. It's important to identify and treat underlying

infections (like Lyme disease, EBV, or Long COVID).

*Support a healthy circadian rhythm:* Disruptions in the sleep-wake cycle can lead to dysregulation of immune function and increased mast cell activation. Maintaining consistent sleep patterns and exposure to natural light during the day can help regulate circadian rhythms, optimize immune function, and reduce mast cell hyperactivity.

*Prioritize a nutrient-dense, low-histamine diet:* This can reduce the burden on the immune system, minimize histamine intake from food sources, and provide essential nutrients that support immune function and mast cell stabilization.

## Supporting Gut Health

Toxic mold can sometimes be like the first domino to fall, causing a chain reaction that disrupts your immune system, impairs gut health, throws the microbiome out of whack, and more. So once mold exposure is addressed and steps to stabilize mast cells have begun, it's imperative to support the gut in healing. Additional (and often overlooked) ways to do this include:

*Focus On Mental Health and Limbic System Retraining:* Mold exposure is notorious for triggering neurological and emotional changes. Pair that with the fact that MCAS and gut dysbiosis can dramatically impact the gut-brain axis, and it's easy to see why this trio of effects can cause nervous system dysregulation.

This can essentially reset the nervous system, shifting the balance of this delicate network and causing the nervous system to get stuck in a sort of "fight or flight" mode. So it's crucial to essentially reset the limbic system and support a more regulated nervous system by rewiring the brain to return to a more balanced, restful state.

This may include biofeedback, tapping, breathwork, and a variety of other modalities. Nervous system regulation is a piece of the puzzle that is often overlooked but so necessary for true healing.

*Minimize Exposure To Other Environmental Toxins:* While mold is one of the worst offenders when it comes to environmental toxins, it's far from the only one that can wreak havoc on gut health. Minimizing exposure to other inflammation-stoking, gut-dysregulating, and endocrine-disrupting chemicals can drastically reduce the burden on your immune system—allowing the gut to begin healing. This can be accomplished by utilizing air filtration systems indoors, removing contaminants

from drinking water with purification systems, and using clean, non-toxic home and personal care products.

## Next Steps

Our understanding of mold, mast cells, and gut health has evolved rapidly over the past decade. While we still have much to learn, there's one thing we can know for sure: Our well-being depends on so much more than our physical body. Our external environment, the microbes that reside within us, the thoughts we think, the emotions we experience, and many other factors all come together to create the picture of our health and well-being.

As our world continues to change, I have no doubt that there will be an even more dire need for practitioners, professionals, and products that help us better serve and heal patients struggling with complex conditions and imbalances like mold toxicity, MCAS, and impaired gut health. And as a Functional Medicine Doctor, I am honored to be a part of the community working together to understand and unravel the complexities of this intricate, interconnected web that defines our health. For more info, visit [jillcarnahan.com](http://jillcarnahan.com).

View Dr. Jill's keynote talk at Naturally Informed's virtual education conference [Microbiome: Mastering the Market](#) on demand.



Dr. Jill is Your Functional Medicine Expert®. She is dually board certified and is the founder and Medical Director of Flatiron Functional Medicine. As a survivor of breast cancer, Crohn's disease, and toxic mold illness she brings a unique perspective to treating patients. She specializes in searching for the underlying causes of illness through cutting-edge lab testing and personalized medicine protocols. Released in 2023, Dr. Jill's Best Selling book, [Unexpected: Finding Resilience Through Functional Medicine, Science, and Faith](#) is a powerful prescriptive memoir that will have you laughing and crying with her on the journey, leaving you with the key resources you need to achieve optimal health and wellness. She is also executive producer, film writer, and featured in [Doctor/Patient](#), a documentary about her journey overcoming illness.





# My Microbiome & My Skin: Harnessing the Gut-Skin Axis

By Karin Hermoni, Ph.D.



**The concept of the gut-skin axis suggests a profound and bidirectional connection between the gastrointestinal tract and the skin. These microorganisms are not mere passengers; they actively engage in a complex dialogue with our bodies.**

[Dr. Karin Hermoni](#)

As we advance in science, we also return to appreciate ancient wisdom, but we now view it with more scientific tools and mindset. We learn to appreciate a more holistic approach to wellness and beauty and understand that how we nourish our body, mind, and soul literally shows up on our skin.

It's not about an isolated biomarker; it's about the whole person—and today, we can even be more accurate; the whole person *and* that person's bacteria residents. With this view of holistic wellness and beauty, the age-old saying that "beauty comes from within" has taken on a new, literal dimension with the emerging science surrounding the human microbiome.

This exploration offers a fascinating glimpse into how our internal ecosystems can influence and even enhance our external appearance. Interestingly, in the case of the microbiome, it's not only our internal gut bacteria, but also our external ecosystem—what we call skin microbiome—that influences our skin.

Everything and everyone we touch shows on our skin microbiome. Once we touch something or someone, we are literally "not the same;" they leave their "mark" on that aura of bacteria that surrounds us, and something of them quite literally stays with us. How beautiful is that?

That also means that leveraging the microbiome for skin health has truly transformative potential if utilized intentionally. The concept of the gut-skin axis suggests a profound and bidirectional connection between the gastrointestinal

tract and the skin. These microorganisms are not mere passengers; they actively engage in a complex dialogue with our bodies, influencing everything from immune responses to the production of metabolites that affect the skin.

**Scientific advances have shown that the state of our gut microbiome can directly impact skin health—for better or for worse.** In fact, dysbiosis is linked to the pathology of skin disorders while positively influencing the diversity and assisting a healthy balance of the microbiome, holds the potential for healthier-looking skin (which is also a reflection of an overall more balanced body).

The mechanisms behind the effect of the gut and the microbiome on the skin are diverse. First, our gut flora influences basic processes like oxidative stress and inflammation in the body and skin. This directly affects the skin. For example, collagen is a sensitive molecule and an increase in oxidation or inflammation directly causes collagen degradation, which is critical to the youthful firm and healthy appearance of our skin. Moreover, systemic inflammation and oxidation that influence body balance are reflected in the skin. Simply put: When our microbiome is out of balance, we are out of balance and this shows on our skin.

Additionally, our gut flora plays a critical role in our immune system, which is affecting our skin in many ways. Naturally, this is critical when it comes to inflammatory skin conditions. But on the other side, restoring and supporting the flora in our gut and aiding proper functioning of immune cells holds the potential to also support the balance and proper function of our skin.

The integrity of the gut barrier is also a critical component for overall health and comfort, as well as to the leakage of harmful molecules from the gut and their ability to reach the skin and trigger a harmful inflammatory response.

Another factor: Probiotics aid in the production of metabolites such as short-chain fatty acids (SCFAs). SCFAs have anti-inflammatory effects that benefit the skin and support the skin barrier function so the skin is better able to retain moisture inside and to prevent harmful molecules or bacteria from entering. When the skin barrier function is compromised, that's

when we see redness, and may experience itchiness, etc.

Our gut flora also actively influences how our body interacts with and absorbs nutrients. Healthy gut flora creates a positive cycle, allowing us to better absorb and utilize the nutrients we get from our food (and nutritional supplements). As an example, some bacteria are vitamin B producers and help the synthesis of biotin (which is a vitamin that is known for its role in maintaining healthy hair skin and nails, while other bacteria are vitamin B consumers. Thus, it's clear that the type of bacteria in our gut directly influences the level of some vitamins and nutrients

Lastly, the gut directly affects our brain, and this gut-brain-skin connection is at the heart of the mind-body connection, giving a very tangible and scientifically backed meaning to holistic Well-Beauty. **So to support how you look and feel, start by listening to your gut!**



Karin Hermoni, Ph.D., is a globally recognized nutrition and wellness expert who blends cutting-edge scientific expertise with extensive industry experience. A respected scientist, industry leader, and public speaker passionate about holistic wellness, beauty from within, and women's health, Dr. Hermoni specializes in science commercialization. She excels in building scientific strategies tailored to industry and market needs. Her consulting company, Imagine Health, was "imagined" to help companies create, refine, and deliver transformative solutions that promote the well-being of people and the planet. She also co-chairs the Women in Science committee at Women in Nutraceuticals (WIN), where she promotes Women in the nutraceutical industry and research done on women.



# Super-Powered Immunity Starts in the Gut



Simple changes made on a daily basis can have a transformative effect on your microbiome, which in turn can have a profound impact on your immunity and overall health.

Michelle Schoffro Cook, Ph.D., DNM

In her latest book, [\*Super-Powered Immunity Starts in the Gut\*](#) (Healing Arts Press, 2024), [Michelle Schoffro Cook, Ph.D., DNM](#), provides natural strategies to heal the gut, restore microbial balance, and fortify the immune system. Dr. Schoffro Cook also offers her Seven-Step Plan for a Great Gut and Super-Powered Immunity. The following is one of Dr. Schoffro Cook's steps, excerpted from the book with permission.

## Eat a Gut-Supportive Diet

All gut bacteria and yeasts, good or bad, fight for space and nutrients in your intestines. In your bowels, that means they battle each other for attachment to your intestinal walls and for the nutrients you provide them with through the foods you eat. Eat a lousy diet and you'll feed the harmful bacteria, but if you eat a diet full of fiber and natural prebiotics and a small amount of healthy sugars from fruit, you'll feed the beneficial ones. We've all heard the old adage, "you are what you eat," and when it comes to gut and immune health, the sentiment could not be truer.

Research shows that the health of your gut is significantly influenced by what you eat. A study published in *American Society for Microbiology (ASM) Journal* evaluated 15,096 fecal samples provided by 11,336 people and found some interesting facts about gut health and the microbiome, including:

1. Plant-based diets produce the most diverse microbiomes. Diverse microbiomes seem to confer health benefits.
2. Eating more than 30 types of plant foods weekly yields the most diverse

microbiome.

3. There is a lower incidence of bacterial resistance in those who eat the greatest variety of plant foods weekly.
4. People who ate more than 30 types of plant foods weekly had less resistance to antibiotics.
5. A connection between gut health and mental health.

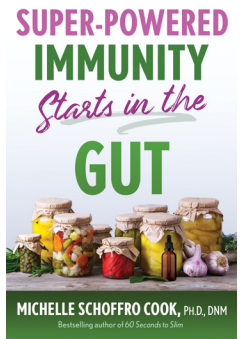
Does that mean you need to swear off all poultry, eggs, fish, or meat? No, of course not. If you prefer a vegan or vegetarian diet, that's your choice. Plant-based does not mean plant-exclusive; it means that the bulk of a person's diet is plant foods like vegetables, fruits, nuts, grains, seeds, and legumes.

There are many ways to boost the variety of plant-based foods you consume and to move your diet to a more plant-based choice.

Here are some suggestions to help you get started, but keep in mind that your choices should be whole foods, not heavily processed ones:

1. One day a week or more eat only plant foods. Start with Meatless Mondays but also be sure to make plant foods the focal part of your meals every day.
2. The next time you pass by that odd-looking fruit or vegetable in the produce section of your grocery store, add it to your cart. It's easy enough to find recipes for lesser-known foods using a quick internet search. And, most importantly, add the food to your diet.
3. Instead of just snacking on almonds or another nut, branch out to try Brazil nuts, cashews, hazelnuts, pecans, pistachios, and of course, walnuts. Choose raw, unsalted varieties.
4. Rather than just adding a can of kidney beans to your soup, stew, or chili, opt for bean varieties you are less familiar with. That could include chickpeas, lentils, pinto beans, Romano beans, black beans, navy beans, and others.
5. The next time a snack attack strikes, choose a piece of fruit or a bowl of mixed berries, or some fermented pickles instead of chips or chemical-laden "buttery" popcorn.

While this study didn't specifically explore the effects of fiber, we already know that some fiber is used as food for beneficial microbes while other fiber assists in removing destroyed harmful microbes from the gut. Either way, a high-fiber diet helps boost great gut health.



## Give Your Gut a Microbial Boost

It's easy to give the gut a microbial boost, promises Dr. Schoffro Cook. Here are a few of her preferred ways, as outlined in *Super-Powered Immunity Starts in the Gut*:

- ▶ Eat probiotic-rich fermented foods like sauerkraut (from the refrigerator section of your grocery or health food store), kimchi, vegan yogurt, or other foods with live cultures.
- ▶ Eat more plant-based foods since the natural fiber in these foods acts as food for beneficial bacteria and gives them a boost in your gut.
- ▶ Eat less sugar. Harmful bacteria and yeasts feed on sugar and cause the balance of good to harmful bacteria to shift in favor of the latter.
- ▶ Eat more fiber-rich foods like legumes, seeds, nuts, and whole grains. The fiber feeds beneficial microbes.



Michelle Schoffro Cook is an award-winning and 25-time published book author, blogger, natural health expert, and homesteader.



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