Hill's ActivBiome+ Technology

Unlocking greater pet health through targeted microbiome support

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Dr. Badri's research focuses on host-microbiome interactions and harnessing the microbiome through nutrition to improve pet health. He is an author of more than 100 peer-reviewed journal articles, patents, and scientific abstracts, and serves as an editor for various microbiome journals.

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Dr. Jackson's research interests include macronutrient and energy metabolism, and the interaction of the gut microbiome with host physiology. He is an inventor on multiple patents, has authored dozens of publications, and presented to lay and scientific audiences.

THE PROBLEM

The gastrointestinal microbiome, a diverse ecosystem of microorganisms that reside in the gut, plays a critical role in maintaining overall pet health by supporting digestion, nutrient absorption, immune function, energy balance, and the intestinal barrier.

When this diversity is disrupted through internal or external forces, such as medications, disease, diet change, or environmental factors, it can trigger effects across multiple systems. Dysbiosis, a state of microbial imbalance that can negatively impact the host, can lead to changes that also impact the kidneys, brain, and heart. In severe cases, such as in pets with chronic gastrointestinal (GI) disease, an imbalanced microbiome and its associated signs can compromise the human-animal bond.

Previous strategies for addressing gut dysbiosis in pets involved the addition of fiber and probiotics to the diet. Results from probiotics were often transient and limited,[1] ending after supplementation was discontinued. Additionally, fiber sources can vary in solubility, viscosity, and fermentability, and not every fiber or fiber blend offers the same benefits.[2]

HILL'S ACTIVBIOME+

THE SOLUTION

Over the past decade, our research team has not only mapped the bacterial populations of the canine and feline microbiomes but also analyzed their functional byproducts and their impact on the body.

Supporting a healthy microbiome goes beyond simply replenishing microbial populations. It requires optimizing their function with nutrients that selectively feed beneficial bacteria and support the production of health-promoting metabolic byproducts.

Prebiotics play a central role in this process. These specialized dietary components nourish targeted microbes and encourage beneficial fermentation activity in the gut. When formulated with a balanced blend of fermentable and non-fermentable fiber sources, prebiotics help promote the

production of postbiotics—beneficial compounds that contribute to long-term gut health.

Key postbiotics include:

- **Polyphenols** — When broken down, polyphenols have anti-inflammatory and antioxidant properties that support the microbiome and systemic health.
- **Short-chain fatty acids (SCFAs)** — These compounds serve as an energy source for colonocytes, support intestinal barrier integrity, and provide systemic benefits such as immunomodulatory effects and regulatory effects on GI motility.[3]

By focusing on how to support the pet's own intestinal microbes for optimal function, rather than adding additional ones, our team devised breakthrough ingredient blends that impact overall pet health by transforming the microbiome's metabolic function: ActivBiome+ Kidney Defense and ActivBiome+ Digestion blends.

THE INNOVATION

We identified a powerful opportunity to support whole-body health through the pet's microbiome in an unexpected source: cranberry fiber.

Naturally rich in fiber-bound polyphenols, cranberry fiber delivers targeted postbiotic activity. Unlike free polyphenols, which are often absorbed earlier in the digestive tract, fiber-bound polyphenols remain inaccessible until they reach the colon.

There, microbial fermentation unlocks their potential, producing postbiotics with anti-inflammatory and antioxidant effects for local absorption and systemic benefit. This delayed release and site-specific activation allow fiber-bound polyphenols to enhance gut microbe activity and host health.

Our team built on this discovery by developing the proprietary prebiotic blends for ActivBiome+ Kidney Defense and ActivBiome+ Digestion Blend that include fiber-bound polyphenols.

ActivBiome+ Digestion Blend has been shown to:

- Support the growth of beneficial gut bacteria
- Suppress the production of harmful microbes
- Enhance fiber fermentation to produce postbiotics that support gut health
- Boost the production of SCFAs to promote colon integrity

ActivBiome+ Kidney Defense has been shown to:

- Reduce circulating uremic toxins that are harmful to kidney health
- Increase production of beneficial postbiotics
- Support cell hydration with betaine, a nutrient with antioxidant and anti-inflammatory properties

Research shows a link between microbiome health and chronic kidney disease.[4] ActivBiome+ Kidney Defense helps shield the kidneys from toxins produced by gut microbes with nutrients such as betaine and its blend of prebiotics.

Results from a series of studies at the Hill's Pet Nutrition Center featuring dogs and cats showed that, when added to a pet's food, ActivBiome+ Digestion Blend:

- Increased abundance of beneficial bacterial species
- Improved biomarkers of GI microbiome health
- Enhanced stool quality in pets with chronic enteritis or gastroenteritis
- Elevated fecal levels of beneficial postbiotics, contributing to reduced fecal pH and a more favorable microbial environment

THE DIFFERENCE MAKER

ActivBiome + Kidney Defense and ActivBiome+ Digestion Blend are prebiotic blends shown to activate the gut microbiome and release helpful postbiotics.

This targeted approach to microbiome support is available in several products in the Hill's Pet Nutrition portfolio.

References

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