



## Treats & Supplements

# BALANCE IS EVERYTHING: MAINTAINING A HEALTHY GUT MICROBIOME



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### Q. The role of the microbiome in influencing both health and disease is a key area of study today. Why is gut health so important?

A. It's not surprising that the gut affects other systems in the mammalian body. It helps protect the body and meet nutritional needs through many functions such as digestion, nutrient absorption and immune activity. The microbiome — defined as gut microorganisms, their genes and metabolites, and the environment in which they reside — also directly and indirectly affects many physiologic functions, including metabolism, protection against pathogens and immune activity.<sup>1,2</sup> Here's how:

- The first line of defense for the gut is the mucosal lining, which forms a barrier between what's inside and outside the body. Both peristalsis and the gut immune system within the mucosa limit exposure to pathogens by keeping things moving<sup>3</sup> and by attacking pathogens while ignoring harmless microbes.<sup>4</sup>
- The second line of defense is the interaction between the gut and the microbiome. Although many aspects of this relationship are not understood, we do know that there is complex communication between the host and the microbiota. This interactive cross-talk affects other body systems.<sup>5</sup>

### Q. How do you explain the difference between a balanced microbiome and dysbiosis?

A. It's really a matter of answering the question, "What is there?" When the microbiome is balanced, the diversity of the bacterial species helps maintain homeostasis. When dysbiosis occurs, potentially pathogenic microbes take over at the expense of beneficial bacteria and there may be a loss of microbial diversity in terms of taxonomy and metabolic function.<sup>5</sup> Many areas of health can be compromised when the microbiome is altered, leading to diseases such as inflammatory bowel disease, obesity, cardiovascular disease and immune-mediated conditions.<sup>4,6</sup>

There are several factors that can alter the microbiome and lead to dysbiosis. Antibiotic use, NSAID use, stress and diet can change the gut environment and lead to overgrowth of nonbeneficial microbiota.<sup>7,8</sup>

### Q. How can a synbiotic (a combination of a prebiotic and a probiotic) work together to affect gut bacteria?

A. Feeding a synbiotic can take advantage of the individual benefits of the prebiotic and probiotic and provide complementary and/or synergistic effects. The **probiotic** adds beneficial bacteria in a sufficient dose to provide a health benefit,<sup>9</sup> while the **prebiotic** serves as a nondigestible food source for the probiotic.<sup>8</sup> A synbiotic can promote the presence of a healthy gut microbiome with a high capacity to ferment prebiotic fiber, resulting in higher short-chain fatty acid production and greater microbial diversity, which benefits pets' overall health.<sup>10</sup>

*(continued on next page)*

## Gut Glossary

**Dysbiosis:** Changes in the composition of the microbiome associated with diseases or conditions that alter microbe-host homeostasis.<sup>4</sup>

**Microbiome:** The microorganisms in the gut, along with their genes and metabolites, and the environment in which they reside.<sup>2</sup>

**Prebiotics:** Substrates that are selectively utilized by host microorganisms, conferring a health benefit.<sup>11</sup>

**Probiotics:** Live microorganisms that, when administered in adequate amounts, confer a health benefit on the host.<sup>2</sup>

**Synbiotic:** A combination of a probiotic and a prebiotic that shows a complementary and/or synergistic effect; helps improve the survival and activity of beneficial microorganisms in the gut.<sup>12</sup>

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