

Prebiotics, probiotics, and the combination of the two (called synbiotics) are nutritional supplements marketed to support and protect the gastrointestinal (GI) system in a variety of mammals, including horses.

Although the widespread use of pre- and probiotics in the equine industry has not yet reached the level of popularity in humans, digestive supplements are still the second most commonly administered class of supplement. In fact, U.S. digestive supplement sales in 2012 reached approximately \$97.5 million.

The popularity of digestive supplements for horses isn't particularly surprising considering the equine digestive system's sensitivity and that a horse's overall health relies upon optimal gastrointestinal tract functioning.

What Exactly Are Pre-, Pro-, And Synbiotics?

Prebiotics and probiotics are some of the most common ingredients included in digestive health products. Despite the similarity in their names, prebiotics and probiotics are not the same.

Probiotics are live "good" microorganisms, such as bacteria and yeast. Classic examples of probiotics are the yeast *Saccharomyces boulardii* and bacteria in the *Lactobacillus* and *Bifobacterium* families (e.g., *Lactobacillus acidophilus*, which is found in some yogurts).



In horse supplements, common probiotics include *Enterococcus faecium*, *Lactobacillus acidophilus*, *Lactobacillus casei*, and *Lactobacillus plantarum*. Millions to billions of colony-forming units (CFUs) are included per serving. In contrast, prebiotics are the foods that feed the probiotics. Examples of prebiotics included in equine supplements include fructooligosaccharides (FOS), xylooligosaccharides (XOS), polydextrose, mannoooligosaccharides (MOS), galactooligosaccharides (GOS), pectin, and psyllium.

Your horse does not digest these food ingredients. Instead, prebiotics are digested by the "good" microorganisms and probiotics in the horse's digestive system to increase their numbers or activity.

When prebiotics and probiotics are supplemented together, the products are referred to as synbiotics, because they work synergistically.

How Are Pre-, Pro-, And Synbiotics Beneficial?

Like many nutritional supplements, much more research has been conducted in human medicine than veterinary. In humans, researchers have studied pre- and probiotics in a variety of disease conditions, including:

- Infectious diarrhea;
- Inflammatory bowel disease (e.g., ulcerative colitis);
- Gastric ulceration;
- Tooth decay/periodontal disease;
- Vaginal infections;
- Skin infections and atopic dermatitis (chronic itchy, scaly skin);
- Weight loss;
- Dysphagia (difficulty swallowing); and
- The treatment of certain cancers

In horses, veterinarians primarily recommend prebiotics and probiotics for GI-related concerns, such as diarrhea, to encourage the growth of the good microbes and to minimize the invasion and growth of disease-causing bacteria. For example, antibiotic administration, stress, transport, abrupt dietary changes, and Clostridium or Salmonella infections can potentially alter the normal microbe population in a horse's large intestine.

Study results have shown that pre- and probiotics aid in digestion and gut health. Specifically, probiotics help the horse's GI tract break down and ferment grass and hay. This fermentation process results in the production of volatile fatty acids that provide a significant energy source to the horse.

Probiotics also produce B vitamins (such as biotin, which is needed for maintaining healthy hooves) and other nutrients essential to the horse's overall health.

Finally, the "good" intestinal microbes—yeasts, bacteria, protozoa, and fungi—keep the "bad" microbes (such as Salmonella and Clostridium difficile) from overpopulating the intestines and causing diarrhea and illness.