PREBIOTICS and PROBIOTICS

LEARN HOW TO HELP KEEP YOUR HORSE’S DIGESTIVE TRACT HEALTHY BY “FEEDING THE BUGS”

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.¹ 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 Bifidobacterium 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 include 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.²

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.³ ⁴

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.

**ARE DIGESTION SUPPLEMENTS EFFECTIVE?**

Although digestion supplements with pre- and/or probiotics are generally inexpensive, easy to administer, and can potentially have a beneficial impact, only a limited amount of research has been conducted in horses.\(^5\)

In one study, horses experienced a significant decrease in both the severity and duration of disease when administered *Saccharomyces* compared to horses that received only a placebo.\(^6\) In a separate study researchers found that administration of a prebiotic containing short-chain FOS in horses effectively reduced disruptions in the microbial populations that colonize the equine hindgut under stressful situations (e.g., acute starch overloads).\(^6\)

Some scientific evidence also supports using probiotics in horses to help clear fecal sand (to potentially prevent sand impaction and colic)\(^7\) and to facilitate weight gain.\(^8\)

More recently, researchers randomly assigned 21 horses with antibiotic-associated diarrhea to two groups: one group received 25g oral *Saccharomyces boulardii* twice daily and the remaining horses were untreated. The team successfully cultured *S. boulardii* from most of the horses in the treatment group (proving the survival of that probiotic following oral administration), but found no difference in time to return to normal fecal consistency, resolution of diarrhea, etc., between the two groups; however, the authors suggested that further studies in a larger group are warranted.\(^9\)

In addition to general concerns regarding the quality and safety of nutritional supplements, consider nutrients included in your horse’s daily ration to avoid oversupplementation.\(^10\) Prebiotics and probiotics are widely considered safe, but there is evidence in both human and veterinary medicine that probiotics might not be suitable for use in some situations. For example, in one study researchers reported that *Lactobacillus pentosus* WE7 given preventively to neonatal foals caused diarrhea in some foals and necessitated veterinary intervention.\(^11\)

As with any nutritional supplement, you must also consider the quality of the product. The American Veterinary Medical Association, the American Association of Equine Practitioners, and many researchers in this field recommend seeking veterinary guidance when using nutritional supplements.\(^\)