Effect of Using a Nutritive Supplement on Equine Gastric Ulcer Incidence and Severity, and on Digestive Tract Bleeding

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Overview: Studies over the past decade have documented that over 90% of race horses and 60% of show horses have gastric ulcers. Further, recent research has revealed a 63% incidence of colonic ulcers among performance horses (Pellegrini 2005). Both of these conditions can be a major contributor to colic, the number one killer of horses.

Modern feeding, training, and housing practices may contribute to the high incidence of digestive tract ulcers. The unique digestive system of the horse is designed to efficiently extract nutrients from, and subsequently ferment, forage sources such as hay. However, high athletic demands placed on performance horses dictate that diets must be supplemented with high energy carbohydrates, most often fed in 2 meals per day. This feeding practice, in conjunction with modern stabling and training practices, may lead to digestive tract upset and subsequent ulceration.

Many commonly used treatments are available to treat gastric ulcers. These products generally work by buffering the acid in the stomach (e.g., bismol, calcium antacids, sucralfate), or inhibiting the secretion of the acid (e.g., omeprazole, cimetidine, ranitidine). These products are designed to protect the stomach lining from gastric acid, thus allowing ulcers to heal. However, the long term effects of this are unknown and treatments for colonic ulcers have not been considered.

In an effort to support a healthy and functioning digestive tract in performance horses prone to ulcers, colic and other GI health issues, a feed supplement to target each aspect of the digestive tract was developed. The intention was to create a digestive conditioning program that would normalize conditions in the GI tract while horses continue to be rigorously trained and live under the stressful conditions of modern performance horse care.

This experiment was conducted to evaluate the efficacy of this feed supplement on supporting overall digestive tract health by focusing on incidence and severity of gastric ulcers and on the incidence of digestive tract blood loss as measured by fecal occult blood.

Methods: Sixty active racing standardbred horses at a single stable in Ohio were used for this experiment. Twenty horses were randomly assigned to each of 3 test groups (Control, Half Dose, Full Dose) and monitored for a period of 90 days. Control group received no feed supplement, Half Dose received 14 grams of the supplement once per day for 90 days, and the Full Dose group received 28 grams of the supplement once per day for 90 days. At times 0, 30, 60 and 90 days, all horses in the study were scoped for gastric ulcers using a standard 3-meter endoscope. Ulcers were noted, along with their severity using the standard 0-4 grading system (MacAllister, et al 1997). Additionally, manure samples from all horses in the study were collected at 0, 30, 60, and 90 days and tested for occult blood using a standard guaiac-based fecal occult blood test.

Results: Full Dose and Half Dose treatments exhibited a dosage-dependent improvement in gastric ulcers, reducing the average severity to less than 0.5 by the end of the study (Figure 1). This same dosage-dependent reduction in fecal occult blood was also seen (Figure 2). The control group exhibited no improvement in either factor.

Figure 1. Average gastric ulcer severity showed a dosage-dependent decrease among horses fed the nutritional supplement, with virtually no improvement among horses in the control group.
ulcers. This information, together with endoscopy findings regarding gastric ulceration, may provide a more complete picture of the horse’s digestive health.

A natural diet supplies substances that support the integrity of the GI tract. However, in emphasizing performance, many manufactured feedstuffs end up being deficient in naturally occurring nutricines that are needed to maintain the health of a horse. Further, these substances may not be in sufficient supply to meet the needs of a horse under the stresses and rigorous demands of performance training.

Vitamins and minerals are typically added to equine diets in an attempt to correct these shortcomings. When various nutricines are compounded to address a specific function – such as immune response or tendon healing – it is called functional feeding, and the formulation is called a nutraceutical. But before any functional feeds can have an effect, the gut itself must be in good shape. Therefore, a nutraceutical that addresses the proper functioning of the gut provides a necessary foundation for all other functional feeds.

Such a gut-oriented functional feed would include specific prebiotics, amino acids, nucleotides, polar lipids and antioxidants. With such a nutraceutical, the health of the GI tract can be actively managed, protecting the gut wall from attack by acids, pathogens and toxins and promoting the regeneration of intestinal tissue cells. The nutritional supplement tested in this study contains beta glucan, a soluble fiber derived from the bran of oats, polar lipids, fatty acids derived from the oil of oats, the amino acids threonine and glutamine, and yeast sugars called mannan oligosaccharides (MOS).

Pasturing a horse can improve its digestion by eliminating stress and providing a more natural feeding method, but it doesn’t provide the energy density needed for a performance horse. In the absence of the ideal natural feeding environment, a functional feed is essential. Results of this study demonstrate that modifying the animal’s feed ration can have a significant effect on the presence and severity of both gastric ulcers and digestive tract bleeding.

In today’s high performance horse world, ulcers are ubiquitous and colic is the number one killer. But with the proper functional feeding program, the equine GI tract can quickly recover from insults even during strenuous training, allowing the horse to operate at the absolute peak of its abilities.

References:

