Gastric and Colonic Ulcers: A Pain in the Gut!

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Gastric ulcers are common in horses and can lead to decreased performance, vague clinical signs and may go undiagnosed for months. Gastric ulcers are caused by stomach acids. However, the anatomy of the stomach, diet, restricted feed intake, exercise, stress (stall or transport), and the use of non-steroidal anti-inflammatory agents (NSAIDs; i.e. Bute and Banamine) are risk factors for development of gastric ulcers. Because many factors are involved in the cause of gastric ulcers, the term Equine Gastric Ulcer Syndrome (EGUS) was coined in 1999 to describe the condition of erosions and ulcerations occurring in the esophagus, stomach, and proximal duodenum of horses. All ages and breeds of horses are susceptible to gastric ulcers and current treatment focuses on blocking stomach acid secretion and raising stomach pH. Drugs are needed to treat these conditions, however, a comprehensive approach including correcting the underlying cause, environmental management, and dietary manipulation is needed for successful prevention.

Horses continuously make stomach acid and acid exposure is the primary cause of NG gastric ulcers in horses. Also, performance horses are typically fed diets high in grain which can cause or exacerbate stomach ulcers. Stomach bacteria will ferment sugars and produce by-products, such as short-chain fatty acids (acetic, propionic and butyric acids), alcohol, and lactic acid which damages the stomach lining. Several
species of bacteria (*Lactobacillus, Streptococcus, E. coli*) live in the stomach and contribute to ulcer formation. Stomach ulcers in horses are similar to the condition in people called gastroesophageal reflux disease (GERD), which is caused by stomach acid splashing up and damaging the tender esophageal tissue leading to heartburn and ulcers.

Several risk factors for gastric ulcers in horses have been identified. These include exercise (especially high speeds), feeding, diet, stall confinement, and the use of non-steroidal anti-inflammatory drugs (NSAIDs).

Horses in training are at high risk of developing stomach ulcers. Compression of the stomach during running allowed acids from the lower part of the stomach splash up onto the tender esophageal region of the stomach, a term called "acid splash", and this leads to ulcers.

Horses grazing at pasture have fewer stomach ulcers. During grazing, there is a continuous flow of saliva and ingesta that buffers stomach acid and maintain stomach pH > 4 for a large portion of the day. Conversely, when feed is withheld from horses before events stomach acid decreases rapidly and ulcers occur. Studies have shown that stomach pH drops 6 h after feeding, thus horses should be fed hay continuously or every 5 to 6 h to buffer stomach acids.

Diets that are high in grain can lead to ulcers and a diet high in alfalfa hay can buffer stomach contents and prevent ulcers. This also goes along with stall confinement, as horses that are confined to a stall usually get high grain diets and have limited access to pasture.
CLINICAL SIGNS (Symptoms)

Clinical signs associated with stomach ulcers are often vague and include partial loss of appetite, mild colic, dull and/or rough hair coat, weight loss, poor performance, change in behavior, and halitosis.

DIAGNOSIS

Gastroscopy is the only definitive diagnosis for gastric ulcers (Figures 1).

Standing gastroscopy procedures require an endoscope of least a 2 meter endoscope to visualize the stomach in most adult horses.

Figure 1a. Severe gastric ulcers of a horse with partial loss of appetite.
When gastroscopy is not available and ulcers are strongly suspected, it may be worthwhile to start empirical treatment and observe for resolution of clinical signs. If the horse does not respond to treatment, further evaluation is indicated.

**MANAGEMENT**

**Omeprazole**

Omeprazole paste (Gastrogard®, Merial Limited, Duluth, GA) is FDA-Approve to treat stomach ulcers in horses. There is also a preventative dose of omeprazole paste (UlcerGard®, Merial Limited, Duluth, GA). Consult your veterinarian on which product is best for your horse.

*DURATION OF TREATMENT*

It is difficult to predict how long NG or glandular gastric ulcer will take to heal, but the initial recommended treatment time for most antiulcer medications is at least 28 days. However management changes in addition to pharmacologic therapy can affect
healing ulcers. For example, in horses with stomach ulcers should be turned out to pasture and this will, in some cases, result in rapid healing. Treatment with omeprazole paste, in most cases, results if complete healing (Figure 1a and 1b).

**Environmental, Nutritional and Dietary Management**

Once treatment is ulcers may return within several days if management changes are not instituted. Environmental, nutritional, and dietary management can be initiated during therapy to help facilitate ulcer healing and prevent ulcer recurrence.

Adding alfalfa hay to the diet will buffer gastric acid can be helpful.

Also, pasture turn-out to facilitate continuous eating will help saliva production.

In addition, several supplements have been used with success to help maintain stomach health once ulcers are healed. These products are sea buckthorn berry, pectin and lecithin (Figure 2).

**Seabuckthorn berries and Pulp**

![Seabuckthorn berries](image)

*Figure 2. Sea buckthorn berries (*Hippophae rhamnoides*) growing in Tibet.*
There is an increasing interest in the use of herbs and berries that have therapeutic application in man and animals. Berries and pulp from the seabuckthorn plant are high in vitamins, trace minerals, amino acids, antioxidants and other bioactive substances (Figure 2). Adding 4 ounces of sea buckthorn berries (SeaBuck™ Complete, Seabuck LLC, Midvale, UT) will help with stomach health and has been shown to prevent an increase in number and severity of stomach ulcers.

There are many supplements on the market containing pectin, lecithin and antacid (calcium carbonate, sodium bicarbonate). The author recently evaluated a supplement containing pectin, lecithin and antacids (Egusin® SLH and 250; Centaur Corporation, Oakland Park, KS). These products, when mixed with sweet feed (4 ounces, twice daily) and fed to horses led to fewer ulcers 5 week after feeding.

In addition, recently a supplement (SmartGut® Ultra) made by SmartPak Equine, Inc., a proprietary mixture of sea buckthorn berries, pectin and lecithin, aloe vera and glutamine reduced the number of ulcers after omeprazole treatment and is ideal to use in addition and after omeprazole treatment to maintain stomach health. This product should not be used to treat ulcers but as an adjunct to maintain stomach health.

In summary, stomach ulcers are common in horses and leads to subtle clinical signs. Keeping your horse eating and feeding less grain (always weigh your grain before feeding to make sure you are feeding the right amount) are the best method of prevention. However, if that is not possible and your horse is showing signs consistent with ulcers consult your veterinarian for the best treatment options.
Conclusions: Recommendations

• Roughage should be provided throughout day and night
  – Alfalfa hay/mixed alfalfa hay may help buffer stomach contents
• Frequent turnouts to pasture if possible

• Concentrates should be fed in small amounts, distributed in at least 3 feedings throughout day
• Concentrates should not exceed 0.5 kg/100 kg body weight (1 lb grain/200 lb body weight)
  – Always weigh grain before feeding!

Andrews et al. AJVR 2006