

# Hind Gut Acidosis and the Lameness Link By Doug Campbell

**POOR HIND GUT FUNCTION IS AN OVERLOOKED SOURCE OF SOME UNSOUNDNESS AND HOOF QUALITY ISSUES IN EQUINES.**

**M**aintaining adequate levels of gut microbes and enzymes in the horse's foregut (stomach, small intestine) and the hind gut (cecum, large and small colons) goes well beyond just supporting good digestion. A horse's hind gut health, and its ability to effectively ferment fibre, can also play a significant role in keeping the horse sound. Effective hind gut function is important for hydration, synthesis of vitamins and amino acids, and the production of volatile fatty acids (VFAs), which provide 80% of a horse's metabolic energy - horses don't run on carbohydrates like humans do! However, we tend to forget that maintaining high quality fibre fermentation in the hind gut is also important for what it does not produce, such as endotoxins and gas.

Optimum hind gut function is dependent upon maintaining a narrow pH window of 6.5 - 6.7. When events happen that cause the pH to fall below 6.5, the hind gut becomes acidic and a condition called hind gut acidosis occurs. The acidic condition causes the beneficial bacteria that ferment fibre and produce the VFAs to die off. This leaves the ideal environment in the hind gut for the rapid growth of harmful microorganisms and endotoxins.

By-products of these harmful microorganisms can have serious implications - gas colic and laminitis are common ones.

There are many factors that can alter the pH level of the hind gut, causing it to become acidic. Starch overflow into the cecum due to large grain meals continues to be a primary cause; however, lack of adequate forage, withholding feed for prolonged periods, antibiotic or anti-inflammatory drugs, worming, trailering, mycotoxin and aflatoxin molds ingested from hay/grains/processed feeds, increases in body temperatures from physical exertion or fever, mental stress (releases hormones that cause the pH to drop), stall confinement, severe/inconsistent/inadequate exercise, can all be contributing factors. The chronically acidic hind gut becomes a prime environment for pathogenic (harmful) microorganisms to propagate in. The result is an ongoing "leak" of endotoxins into the blood stream, resulting in a continual compromise of soundness and hoof quality.

Some indicators that point to hind gut acidosis are: flatulence, loose or smelly stools, diarrhea, colic or colic symptoms, picky eater/off feed, appearing "herring-gutted" and a loss of top line muscle. Horses may present with continuous or intermittent non-structural lameness, have very soft or thin soles, frequent sole abscesses, a tendency to founder easily and exhibit poor hoof integrity (cracks), despite proper hoof care.

Behavioural observations associated with stomach (gastric) ulcers can also point to hind gut ulcers - a result of hind gut acidosis. A horse may be sensitive on its sides, belly and flanks, be irritable/fidgety under saddle, act cinchy (girth squeezes the dorsal colon and is painful), stride unevenly or move short behind (especially on the right hind), have difficulty with bending/collection/lead changes, stand camped out behind (or under), even appear run down behind, all in an effort to

protect the sore hind gut area.

Frequently, unsoundness issues are treated with anti-inflammatory drugs, in an effort to alleviate the symptoms. Unfortunately, many of these drugs further compromise gut microbes resulting in an even more acidic hind gut.

Removing, reducing or managing the contributing factors is a start in addressing the hind gut issue. Most importantly, ensure that the horse has continual access to high quality fibre, water 24/7 and minimal carbohydrates. Optimize the feeding program with high quality roughage and adequate protein, vitamin and mineral levels. Minimize periods that horses go without roughage (a horse's stomach is

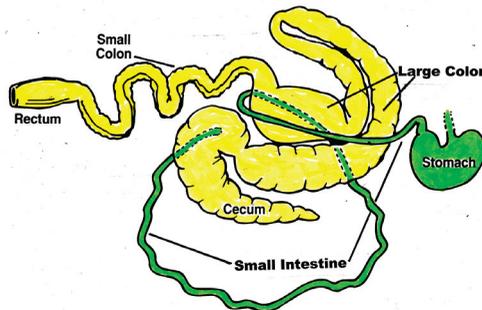
effectively empty in 20 minutes); take hay to the warm up ring, provide hay in the trailer, let them eat while grooming and tacking up. Protect their stomachs from acid splash when riding or hauling by using a temporary stomach acid buffer. Supplemented probiotics for horses that cannot ingest sufficient amounts of probiotics and prebiotics from natural sources might be considered. This is a way to continually provide high levels of live beneficial gut bacteria, enzymes, yeasts and MOS prebiotics, all of which contribute to a

healthy hind gut and decrease the toxic effects of hind gut acidosis.

Having an awareness of hind gut acidosis, and the implications it can have on movement and hoof quality, gives equine caregivers another perspective to consider when dealing with unsoundness and hoof issues.

*Doug Campbell from Equine Choice will be presenting at the 2013 Mane Event Expo in Chilliwack, October 25-27, about hind gut acidosis and the lameness link, and how probiotics and prebiotics can play a crucial role for returning normal hind gut function. Doug has worked extensively in the areas of ration, vitamin and mineral formulation for 35 years in Canada and the US. For the past ten years, he has worked developing and testing Equine Choice Probiotics and Prebiotics and Acid FX in the Ontario equine industry with input from veterinarians, farriers and top trainers.*

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