



# HEALTH ZONE

## Got Ulcers?

General Health

BY CHRISTA LESTÉ-LASSERRE

Sixty percent of performance horses might have gastric ulcers, according to researchers who've peered inside stomachs to determine incidence. Fifty percent of foals could have them, and among racehorses the figure can be as high as 93%. In one study, more than one-third of leisure-riding horses exhibited at least mild ulcers, and, in another, as many as 75% of Western pleasure horses developed gastric ulcers within eight days of moderate training. And you can't just wish them away: Only 4-10% of equine ulcers heal naturally without treatment.

If these kinds of statistics are causing you to get ulcers of your own, read on. We'll explore the ins and outs of equine gastric ulcers, what researchers know about them, and how to treat them and decrease their likelihood of causing your horse distress.

## The equine stomach's unique design lends itself to gastric ulcer development; here's why and how to manage these painful lesions

### The Equine Stomach

A horse's stomach is roughly the size and shape of an NFL football, but softer (and pinker). The lining of the esophagus, running down into it, is thin and smooth, much like the human esophageal lining. But while this lining stops at the stomach in humans, it extends all the way into the

first third of the equine stomach, explains Dr. Patricia Harris, director of science for Mars Horsecare, based in Milton Keynes, England, as well as in Dalton, Ohio. This is called the "nonglandular" region of the stomach.

Most vertebrate stomachs don't have this unique feature, says Dr. Frank M.

Andrews, Louisiana Veterinary Medical Association equine committee professor and director of the Equine Health Studies Program at Louisiana State University's School of Veterinary Medicine. Humans and just about every other mammal have "glandular" stomachs—meaning they are lined with thick, bumpy glands that produce digestive acids. They also possess a dense layer of mucus and bicarbonate (a pH buffer, also found in baking soda) that protects the wall from stomach acid. The nonglandular part of the horse's stomach lacks these protective qualities, though the other two-thirds of the horse's stomach is glandular.

As trickle-feeders eating small amounts over long periods of time (up to 18 hours per day), horses in a natural environment almost never have full or empty stomachs, says Harris. However, this is a scenario few domestic horses can experience anymore.

We tend to feed our horses—particularly high-performance animals—restricted hay amounts and high-energy, cereal-rich



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The gold standard for diagnosing gastric ulcers is gastroscopy—viewing the horse's stomach through a tube passed through his nostril





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## SALIVA: COATS, SOOTHES, RELIEVES

Saliva is the horse's own natural buffer against stomach acid, says Dr. Patricia Harris, director of science for Mars Horsecare, in Milton Keynes, England, as well as in Dalton, Ohio. But the only way a horse produces saliva is through chewing; the more he chews, the more acid-buffering saliva he produces.

It's important to remember that not all feeds are equal, as far as chewing is concerned. Horses typically consume cereal-based feeds, for example, quickly and without much chewing. And in a 2009 study, Harris and co-authors

found that feeding straw as the major forage source appears to increase a horse's ulcer risk.

"The best way to promote chewing is to base your horse's diet on good-quality roughage and then to use a balancer to ensure an appropriate intake of amino acids, minerals, and vitamins," she said. "If additional energy is still required, owners can consider feeds with restricted starch and sugar contents that utilize highly digestible fiber sources and include oil as an energy source."

By Christa Lesté-Lasserre

rationed meals once or twice a day that they consume rapidly, she says. In other words, we're feeding them like we'd feed a completely glandular-stomached human athlete (well, except for the hay).

Researchers agree: The way we manage our horses, especially with too little forage and too much cereal-based feed, can put these animals at an increased risk for developing gastric ulcers.

So what happens when the horse's stomach runs on empty? Without a mat of chewed forage in the nonglandular region acting as a buffer, the smooth, nonglandular wall is left more vulnerable to the acids the glandular region produces. These can burn unprotected surfaces on contact. As the horse moves about in his stall, the

acid sloshes around in his empty stomach. Now put a saddle on that horse and go for a ride—trotting, loping, galloping, and jumping—and visualize what's going on in that football-sized stomach. If you've ever ridden with a water bottle in your saddle bag or pocket, you get the idea: The liquid splashes everywhere, against all inner surfaces of the bottle. All that splashing in your horse's stomach can cause burning acid to land on the nonglandular region, says Harris.

### The Anatomy of an Ulcer

Ulcers develop like any open wounds would, says Andrews, just on the stomach wall. Researchers report that 60-80% of equine ulcers show up on the nonglandu-

lar region. They are painful, similar to a raw skin wound—and especially so when they come in contact with rough feeds, the facing stomach wall, and, above all, those stomach acids. And like a skin wound, they're also subject to secondary infection with abundant opportunistic bacteria in the equine stomach.

The discomfort an ulcer causes can turn a horse into a "picky eater" or quell his appetite entirely, according to Harris. Affected horses might also show signs of colic, decreased performance, or even behavior problems. Although veterinarians have tried developing several diagnostic tests, one of the most reliable methods to confirm equine gastric ulcer syndrome is gastroscopy—viewing the horse's stomach through a tube passed down through the nostril.

### Glandular Ulcers: A Painful Minority

Even though they represent the minority, ulcers in the glandular region are no less important, says Harris. They can hurt just as much and cause just as many performance and behavior problems as nonglandular ulcers.

Such ulcers often result from stress and/or the use of non-steroidal anti-inflammatory drugs (NSAIDs) such as phenylbutazone (Bute) or flunixin meglumine (Banamine), Andrews says. This is especially true in horses treated long-term for chronic arthritis, chronic laminitis, or other causes of lameness.

They can also develop from disturbances to the stomach's mucosa.

"There are several different causative factors, including decreased mucous secretion and an increased acid secretion from the glands," Harris explained. "In some cases this results in inflammation, which in turn leads to erosion. Once that happens, you get additional acid damage and ulceration."

### Acid-Stopping Omeprazole

The Food and Drug Administration approved omeprazole—sold commercially as GastroGard for horses—for equine use in 1999 as a way to increase the stomach's pH levels, thereby reducing acid production. By limiting this production, existing ulcers can heal and new ulcers can be prevented.

Andrews reports omeprazole's success has been significant, with an efficacy rate of nearly 80% in his studies. It has relieved the discomfort of millions of horses battling gastric ulcers. So with this wonder

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drug available, why are we even considering how to manage ulcers?

Simply put, omeprazole isn't an end-all solution. It's a good cure, Andrews says, but we can't rely on it long-term. Omeprazole's mechanism of action is to modify the horse's natural digestive system as well as the stomach's pH balance—which can affect the entire body's pH levels. Playing with a horse's natural pH balance might raise significant long-term health risks.

While researchers have shown that the standard 28-day omeprazole treatment program is safe for horses, Andrews says little is known about its long-term effects. Long-term use of the human equivalent, Prilosec, in people can lead to significant alterations in the hormone levels the body produces, mainly causing bone reabsorption after a number of years.

Cost is another issue. Depending on the region and veterinarian, omeprazole treatment can cost upward of \$40-50 per day.

Even more important, though, is the drug's reactionary effect. When omeprazole adjusts pH levels, the horse's hormonal system receives a message that the pH is out of balance and tries to create more acid to compensate. Acid production is blocked, and the hormonal system tries harder, sending the horse's body into a spiral of increased acid production messaging—production that never occurs. The day omeprazole administration stops, the stomach releases an

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increased amount of acid, causing an “acid rebound” effect and upsetting the pH balance in the opposite direction—which might make the horse all the more vulnerable to ulcers.

“Now we’re looking at weaning horses off the omeprazole so their pH values can gradually adjust back to normal,” Andrews said.

### “Natural” Ulcer Treatments

The Internet offers unlimited alternative options of “natural” products claiming to “cure” or “prevent” ulcers, but owners should be wary of these claims, Andrews says.

“There are hundreds of supplements out there with no research to suggest that they have anything to do with the treatment or prevention of ulcers,” he noted.

Sometimes product labels do provide scientific data, but these are often extrapolated from experiments performed in other species. And as we’ve learned, horses do not have the same kind of stomach as most other species. If the supplement label doesn’t specify results from a controlled trial on horses, Andrews says, better to avoid it.

### Tried and True Supplements

In the meantime, researchers have been looking into what supplements can be useful for horses. Unfortunately, the results aren’t very exciting yet, but Andrews says they do offer some hope.

In 2012 his team investigated sea buckthorn berries and pulp

in a liquid extract, marketed as SeaBuck SBT Gastro-Plus, for ulcer prevention. They found that the extract had no effect on ulcer development in the nonglandular region. However, they did note a significant reduction in the number and severity of ulcers in the glandular region in treated horses.

Results from his team’s 2012 study of Egusin, a supplement that contains apple pectin and lecithin and a buffering agent, suggested that it might help decrease gastric ulcer severity—but only after five weeks of treatment.

Then they looked at a combination of supplements, mixing sea buckthorn extract with pectin and lecithin in a product called SmartGut Ultra. This supplement appeared to be the best combination: When the researchers started administering it at the same time as omeprazole to treat existing ulcers, they found it was effective in helping prevent ulcers from reoccurring two weeks after omeprazole was stopped.

While supplements could be helpful, Andrews cautions that they should never be considered a replacement for omeprazole.

“You need to use GastroGard for the prescribed period of time and then continue the horse on the supplement if you’re using one,” he said. “We think that GastroGard is the silver bullet for healing gastric ulcers, but we want to improve the overall health of the stomach after the horse is taken off the medication.”

### Management Tactics

Omeprazole works to stop acid production and supplements can sometimes help reduce acid amounts, but Harris says feeding and management practices might be your best bet to help protect against acid damage.

First and foremost, don’t let your horse’s stomach become empty.

“Avoid long periods of time without feed—especially forage,” she said.

Chewing sufficient amounts of forage offers two ulcer-prevention benefits: It not only increases acid-buffering saliva production (see sidebar) but also creates and supports a buffer layer of forage within the stomach, repelling acid splashes. Ideally, horses should consume small amounts of forage for as much time as possible throughout the day. They can do this with constant access to pasture or other forage. If weight gain is a concern, you can use feeders and hay nets (even doubled hay nets) to help slow your horse’s consumption of his forage ration.

Additionally, make sure horses always have access to water, whether they’re stalled or turned out, says Harris.

Minimize high-starch, cereal-rich concentrated feed quantities, because they promote acid production by the bacteria in the stomach, she says. Consider including feed ingredients that might act as good natural acid buffers, such as a bit of alfalfa.

### Take-Home Message

While dealing with gastric ulcers might seem like a rite of passage for horses, we can still be active in curing them and reducing risk for their development. Through careful management and smart feeding habits and by proactively treating affected horses with a proven medication, we can contribute to bettering our horses’ welfare and comfort. **EH**

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