

## Feeding Horses to Help Prevent and/or Treat Ulcers

BY HEATHER SMITH THOMAS

**MANY RACEHORSES DEVELOP ULCERS** in the digestive tract, partly due to the stresses of an unnatural environment, increased exercise and athletic competition, unnatural diet, etc. Stress in horses can lead to gastric ulcers just as it does in humans. Strategic feeding management can help minimize the incidence and severity of ulcers.

Dr. Stephen Duren of Performance Horse Nutrition says that in the past we generally thought only in terms of gastric (stomach) ulcers, but we now realize there can be colonic ulcers as well.

Studies at the University of Tennessee and at the University of Kentucky, using ponies with cannulae (openings into the digestive tract), enabled the researchers to sample material in the stomach and colon and readily measure some of the changes that can occur.

“The initial thrust of early ulcer research was to find drug therapies and acid blockers that would help with the medical side of treatment,” Duren said. “But along with the medical side, we also have to be aware of what we should do from a feeding standpoint, to reduce or help heal the condition, or prevent ulcers in the first place.

“Many ulcers occur in high-level athletes, such as racehorses, for two reasons. First, we change their diet. As the horse goes from a pasture or relatively sedentary animal to an active athletic career, training for peak performance, his diet has to change in order to provide the needed energy. He can’t get enough calories for the increased work he’s doing just by eating forages. So we feed different ingredients that provide those calories,” he explained.

“The reason this change in diet may cause ulceration is because the main buffer for acid in the stomach is saliva,” Duren said. “The horse produces about twice as much saliva when eating hay (which takes longer and also requires more mixing with saliva) than when eating grain. The very nature of that new diet takes away some of the protection in the stomach.”

Horses in a pasture environment are least prone to ulcers because they graze almost continuously. Thus they are producing saliva almost continuously.

“The acid in the stomach is produced on a continuous basis. It doesn’t stop. So the constant eating is a help,” he said.

Thoroughbred racehorses are fed large grain meals, and are allowed to pick a little at hay in between. They are not engaged in steady feeding behavior like a horse at pasture.

“Even though they have hay in front of them they may be resting, or not interested in eating the hay,” Duren said. “Thoroughbred trainers don’t withhold hay, but the horse may not be eating much of it.

“There is actually more feed withheld in other types of performance horses that are not working quite as hard—because the trainer is trying to control their weight. There is significant incidence of ulcers in non-racing performance horses because those horses are also in stalls and have no pasture turnout. Access to pasture may not fit into the management or schedule of those performance horses,” Duren said.

Ulcer incidence might not be as high in racehorses as in some other types of equine athletes, but ulcers are still a common problem because of stall confinement and the high concentrate diet.



Normal stomach greater curvature of horse (left) vs. nonglandular ulcers at greater curvature in a racehorse

CAROL CLARK PHOTOS



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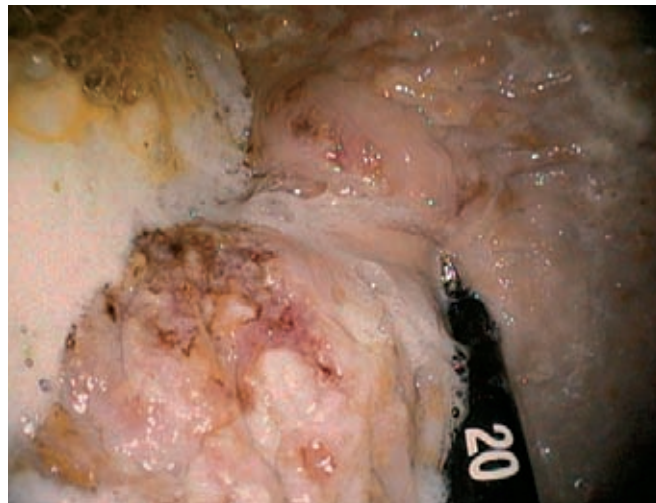
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CAROL CLARK PHOTOS

Normal stomach lesser curvature of horse (left) vs. nonglandular ulcers at lesser curvature in a racehorse

Horses' digestive systems don't work the same as those in humans.

"We salivate when we eat, and enzymes are produced when food enters the stomach," Duren said. "Horses' stomachs are producing digestive acids all the time. So if the horse has an empty stomach, he is at risk for ulcers.

Feeding a lot of grain is detrimental, however.

"Large grain meals may actually be fermented in the stomach. There are some bacteria in the stomach that produce acids that further drive the acidity. Diet is defi-

nately involved in ulcers," he said.

Some other issues also may predispose a horse to ulcers, such as use of non-steroidal anti-inflammatory drugs. Any additional stresses, such as transportation—hauling to races, may be contributing factors as well.

The other major cause of ulcers is intensive exercise. The horse's stomach lining contains glandular tissue (mucus-producing glands) that help protect against the effects of stomach acid, but the top part of the stomach is not as well protected. Fewer glands line the upper

portion of the stomach.

"When a horse begins to exercise, the diaphragm and movement of the internal organs actually compress the stomach, and this pushes acid from the buffered area up into the non-buffered area," Duren said.

"This is what causes some of the ulceration in the top portion of the stomach," he said. "The compression of the stomach during exercise moves more of the stomach contents—and acid—into that unprotected region. So both diet and exercise can precipitate ulcers. It's no wonder that athletic horses have ulcers.

Tom Trotter, general manager of Progressive Nutrition in Harlan, Iowa, says that if you do training or exercise workouts in the early morning, the horse's stomach is relatively empty and creating acid. When you exercise the horse—especially at a gallop—the stomach is compressed by the abdominal muscles and other organs, and the acid gets moved up into the top portion.

"One of the management tools we talk about is not to exercise the horse until he has had something to eat," Trotter said.

## DIET STRATEGY TO MINIMIZE ULCERS

"The first strategy trainers used for diet management was to try to mimic pasture and feed grass hay," Duren said. "We thought that if horses had access to



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Horses in training may not be eating enough hay



grass hay, they would chew it more than they have to chew grain and thus be able to buffer ulcers with the additional saliva. But researchers at the University of Tennessee and the University of Kentucky and at Texas A&M discovered that alfalfa hay was more efficient in buffering against stomach ulcers than grass hay. This is because of the higher level of calcium in alfalfa. The protein and the calcium can both act as potential buffers for the stomach acid.

“So now it’s widely practiced, with Thoroughbred race trainers, to feed some alfalfa, but feed a small amount very early and have it already in the stomach when the horses go out in the morning and work,” he said. “Even though trainers always preferred to have their horses exercise on a relatively empty stomach (no big meals before a race or workout), most trainers are adding some alfalfa to the diets, feeding it in the morning before the horses are exercised.”

Grain has been the mainstay of racehorse diets, but too much grain might not be a healthy situation. Many trainers are now feeding more non-grain energy sources, such as fat.

“Fat slows the rate at which the stomach empties, and this keeps more material in the stomach longer,” he said. “Fat is also a great energy source. Another grain substitute is beet pulp, which is a fibrous feed. The horse doesn’t particularly have to chew it more, but it’s not fermented in the stomach. This energy source gets fermented in the hind gut and produces additional calories for the horse.”

Hard-working horses need as much forage as they can eat (especially the hyper, finicky, racehorse that might only pick at his feed).

“Horses need a minimum of 1.5% of their body weight daily,” Trotter said. “A thousand-pound horse would thus need 15 pounds of hay. This would be a bare minimum. If a horse is only given a couple of flakes at morning and at night, this may not be enough hay for that horse.”

Most trainers increase the grain ration for horses that are working hard. But the more grain a horse eats, the less hay



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Having alfalfa (shown in cubes) available at certain times of the day is a good strategy

he might consume. The amount of grain in the total diet is a big part of the ulcer equation, according to Trotter.

### MANAGEMENT STRATEGIES

There are many good management strategies to prevent or try to heal ulcers, but some of these strategies—like more turnout time and grazing—are hard to fit into the life of a racehorse, and many

trainers don't have that option.

“If you can give a horse the opportunity to graze, however, this helps, along with changing the feed,” said Duren.

“More small, frequent meals can help, rather than large single concentrate meals. Keeping hay in front of them all the time is a good plan, along with feeding alfalfa hay at certain times of the day, and using a grain concentrate that is for-

tified with other energy sources besides the sugars,” Duren advised.

“Drug therapies, for a horse that has ulcers, do work. They are really good and have been highly effective,” he said.

These along with good feeding management can go a long way in reducing the risk for ulcers or helping heal them if they develop.

### RESEARCH ON SUPPLEMENTS FOR HORSES WITH ULCERS

Dr. Frank M. Andrews, professor and director of the Equine Health Studies Program at the Louisiana State University School of Veterinary Medicine, has been working on ulcer research for more than 25 years—first at the University of Tennessee, and more recently at LSU.

“Some of the things we're now looking at are feed supplements that may help horses with ulcers,” he said. “One of these is called sea buckthorn berry. We've looked at several preparations of these berries.”

Pharmaceutical treatments (such as omeprazole) for ulcers are expensive and also reduce the acidity of the stomach—which might adversely affect digestion. There is increased interest in use of herbs and berries that may have therapeutic qualities. The berries and pulp from the sea buckthorn plant, for instance, have proved to be a rich source of vitamins, trace minerals, amino acids, antioxidants, and other bioactive substances that seem to help in treating mucosal injuries, burns, bedsores/pressure sores, and stomach/duodenal ulcers in humans and rats.

A feed supplement containing sea buckthorn berries might help in treatment and prevention of gastric ulcers without altering gastric juice pH.

A commercially available product was recently introduced as a feed additive for horses.

“We've been looking at this natural omega-complex, and in one of our studies we evaluated whether it was effective in the treatment and prevention of gastric ulcers in horses,” Andrews explained.

The study was done with eight horses.

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Severe non-glandular ulceration in a foal

Each treatment phase (60 days) consisted of a control group that received feed only and a treatment group that twice daily was fed the supplement mixed with grain.

The treatment phase was immediately followed by a prevention phase that consisted of intermittently feeding the horses to simulate a typical management scenario. Endoscopy was performed to check each horse before the treatment period, again on day 30 and day 60, and following the intermittent feeding period (day 67).

Gastric ulcer scores remained the same in horses that received the supplement whereas ulcer scores increased in the untreated control group during the same period. Even though the supplement did not significantly decrease the ulcer scores, they either stayed the same or improved in seven of the eight supplemented horses.

“We found that feeding this supplement does help keep ulcer scores from getting worse, so we feel this product has the potential to prevent the worsening of ulcers in horses that are housed in stalls and stressed,” Andrews said.

“These types of supplements may be helpful to prevent ulcers from recurring after successful treatment with omeprazole (GastroGard® paste). We put horses that had chronic ulcers on this supplement, and it seemed to help.

“Our research is focused on natural products to help keep ulcers from recurring. From laboratory studies we know that GastroGard® paste (omeprazole) is the gold standard for treatment,” he said. “If horses have ulcers, you have to get them healed before you can just rely on a preventative.

“Using a pharmaceutical agent such as GastroGard® (FDA approved for treatment of gastric ulcers, horses) is important, but we realize that keeping horses on anti-ulcer medication for the rest of their lives has economic as well as possible health implications since it alters the pH of the stomach long-term. Many people are on ulcer medications long-term and can never seem to get off them. Our goal is to find ways to manipulate the horse’s diet and

find natural supplements that can help keep ulcers from returning by coating the stomach or stimulating the body’s own healing mechanisms. These might also protect horses that don’t have ulcers—and keep them from getting ulcers.”

## PROBIOTICS

“Another thing we’ve looked at is the use of probiotics that contain bacteria such as lactobacillus and acidophilus,” Andrews said. “We did a study with a microbiologist and equine clinicians at the University of Queensland in Australia and found ulcer scores decreased in horses fed a high-grain diet when they were given oral probiotics as well as antibiotics. The times we recommend antibiotics are when a horse has ulcers that just don’t heal, even with GastroGard. Some of the research that’s been done in rats suggests if there are bacteria involved with the ulcer, they inhibit healing. When you give antibiotics and kill the bacteria within the ulcer, it can then heal.”

When probiotic preparations are used, they also enter the ulcer bed and inhibit the bad bacteria and facilitate healing.

“It’s not as effective as antibiotics, but more effective than no treatment,” he explained. **BH**

*Heather Smith Thomas is a freelance writer based in Idaho.*

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