

Treating Ulcers in Horses: A U. C. Davis Study

by **HEATHER SMITH THOMAS**

Equine Gastric Ulcer Syndrome (EGUS) has become a subject of concern to many horse owners. Several studies in recent years have shown that horses in stressful performance careers are often affected by ulcers, even though some of them do not show obvious signs. Subtle symptoms may go unrecognized by trainers, owners and veterinarians. Some signs are mistaken for other problems.

According to a 1989 article ("Gastric Ulcers in Horses; A Comparison of Endoscopic Findings in Horses With and Without Clinical Signs") and a 1996 report ("Factors Associated with Gastric Lesions in Thoroughbred Race Horses"), both published by Michael J. Murray and associates in the *Equine Veterinary Journal*, gastric ulcers affect up to 93 percent of racehorses and almost 60 percent of horses in other careers. Gastric ulcers also affect up to 59 percent of foals, especially those raised in confinement.

The most effective treatment to date for equine ulcers has been omeprazole, available for several years as Gastrogard Oral Paste. Gastrogard is the first, and so far the only, prescription medication approved by the Food and Drug Administration (FDA) for horses, and for foals four weeks and older. Omeprazole is an effective anti-ulcer medication for humans, as well as horses. Before the introduction of Gastrogard paste, many antacids and human ulcer medications were used for treating horses, but many of them had poor results. There had been no research studies on safety, proper dosage or administration schedules for horses.

After a number of clinical trials, Gastrogard was found to be safe and effective. Recommended dosage is 1.8 mg of the paste per pound of body

weight, given daily for four weeks. To keep ulcers from recurring, treatment should be continued for another four weeks, at half that dosage.

Due to the high cost of Gastrogard, some veterinarians and horsemen have resorted to using other products, including non-regulated compounded omeprazole. Some of the compounded products, however, are not very effective. They often do not contain enough omeprazole, or not in the proper form to get through the stomach and



enter the bloodstream. Horses being treated with compounded products often do not improve.

Because of the problem with compounded substitutes, an independent study recently checked a variety of samples of compounded omeprazole and found that the amount of active ingredients these samples contained varied greatly. One of the samples, for instance, had only six percent of the amount stated on the label. The highest one had only 74 percent of the label claim.

Several U. C. Davis trials have been conducted at racetracks in Northern California, where the effects of Gastrogard and non-regulated compounded omeprazole were studied for 60 days on Thoroughbreds in active training—horses that had shown significant ulceration when their stomachs were examined endoscopically.

Heading one study were: Jorge Nieto, MVZ, Diplomate of American

College of Veterinary Surgeons; Sharon Spier, DVM, PhD, Diplomate of American College of Veterinary Internal Medicine, Head of Medicine at U. C. Davis; and Jack Snyder, DVM, PhD, Diplomate of American College of Veterinary Surgeons, Chief of Equine Lameness and Surgery, and a Professor. They worked with Snyder's Comparative Gastrointestinal Laboratory at U. C. Davis. The results of this study are published in the *Journal of the American Veterinary Medical Association* dated October 15, 2002.

Snyder says, "We did the study in the spring of 2001, at Golden Gate racetrack near San Francisco. The track veterinarian there who took part in the study was Donald C. Smith, DVM. First, we evaluated horses' stomachs at the track. We've performed a number of studies there, so we have good collaboration with the veterinarians and trainers at the track. We've done several studies, looking at gastric ulcers. In this one, we scoped the horses' stomachs and found 32 horses with ulcers. We divided those equally into two groups—16 apiece. The ulcers in all of these horses were all the same, in both groups."

One group of horses was treated with Gastrogard and the other group treated with compounded omeprazole. "We used the same dosage, for both products, which was four milligrams per kilo of body weight. This is the standard dose for Gastrogard. So one group was on Gastrogard and the other group on an omeprazole suspension. We treated them once a day for 30 days. After 30 days, we scoped their stomachs and evaluated their ulcers—blindly. We didn't know which group was which," he says.

"Then we switched the medications. The group that had started out with Gastrogard was then switched to compounded omeprazole, and the

group that had been on compounded omeprazole was put on Gastrogard. When we scoped them at 30 days, the horses that had been on Gastrogard had a significant reduction in severity of ulcers. The horses that got the compounded drug did not have significant reduction in ulcer severity at day 30 (comparing back to baseline, how they'd looked at the beginning)," says Snyder.

"After we switched drugs, we treated them for another 30 days and then scoped them again, at day 60. In the horses that started out with Gastrogard and were switched over to compounded omeprazole, at day 60 their ulcers were significantly lower than they'd been at day zero, but not significantly different from what they'd been at day 30. The ulcers hadn't changed much on the compounded omeprazole—they did not continue to improve," he says.

"The horses that started out on compounded omeprazole did not improve by day 30, and were changed to Gastrogard. By day 60, those horses had been on Gastrogard for 30 days and there was a significant decrease in their ulcers," explains Snyder.

"We also looked at four additional horses—healthy horses with no ulcers. We evaluated blood levels of omeprazole from the two products, to see if there was a difference. The horses getting Gastrogard had significantly higher levels of omeprazole, compared to the horses getting compounded omeprazole—less omeprazole was being absorbed from the latter," he says.

"In our profession, there is a need for compounded products. There are a number that we use because this is the only way we can get them made," says Snyder. There are situations in which there is no manufactured product available. Compounding pharmacies provide an important service. But with omeprazole there is an approved product available that is more consistent and effective. Lack of potency is one factor in the compounded omeprazole, but another factor is extreme variability in how much of the active ingredient can actually be absorbed by the horse—how much of it is absorbed into

the bloodstream from the intestine. Omeprazole is very unstable in the presence of acid, and must be formulated in a way that protects it as it moves through the stomach. Otherwise, the stomach acid destroys its effectiveness before it is absorbed into the bloodstream. Some people think it has a direct effect on the stomach, but it does not. The omeprazole must get into the bloodstream and come back to acid-producing cells of the stomach.

One of the patented aspects of Gastrogard is the process in which it is made, to protect it from stomach acid so that it can get to the intestine unharmed and then be both absorbed and consistently effective. "The compounding pharmacies have a place, but you need to know exactly what you are getting, and also what is legal," says Snyder. Omeprazole is not manufactured in the U.S. and is basically illegal to import, except by the company that makes Gastrogard.

"There are many companies that are compounding omeprazole, and they are all creating a different product," he says. These are not held to the same standards as manufactured FDA-approved drugs, and there may be some variations in quality, purity, and potency of the bulk ingredients. There can be variability between doses and some formulations may be unstable and have a shorter shelf life than the FDA-approved drugs. The compounded omeprazole is less expensive, but also less effective.

"I thought at first that if the compounded product was less effective than Gastrogard but had some omeprazole in it, it might be effective as follow-up treatment. The Gastrogard might make the ulcers better and then there might be enough omeprazole in the suspension to maintain the horse after it had been treated with Gastrogard for 30 days. But we did not see that," Snyder adds. The idea that a person might be able to maintain a horse on the cheaper product after the ulcers healed was therefore not validated.

"The compounded omeprazole was not able to do that. We know that once a horse is treated with Gastrogard

at the recommended dosage, you can then back off on the dosage—standard protocol is to decrease it by 50 percent. We thought this might be accomplished with the compounded product, but it was not," he concludes.

Horsemen need to be aware that for treatment of EGUS, there are no dependable substitutes for the FDA approved omeprazole product. Using the cheaper compounded products may not be helping the horse.