Prevention of Occurrence and Recurrence of Gastric Ulcers in Horses by Treatment with Omeprazole at 1 mg/kg/day  (21-Nov-2003)

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Abstract
Omeprazole paste [a] administered at a dosage of 1 mg/kg, q 24 h, per os, is highly effective in preventing both the occurrence and recurrence of gastric ulcers in horses subjected to race training.

1. Introduction
Endoscopic and post-mortem studies have demonstrated gastric ulcers in up to 93% of Thoroughbred race horses in training [1]. The cause of the high prevalence of gastric ulcers in race horses is probably multifactorial, but recent findings demonstrate that the dorsal portion of the equine stomach becomes highly acidic during exercise [2]. In vitro studies have shown that injury to equine gastric squamous mucosa occurs within minutes of exposure to low pH solutions of hydrochloric acid [3]. Effective treatment and prevention of gastric ulcers in horses is dependent on decreased gastric acid secretion to increase the pH within the stomach. Omeprazole potently inhibits gastric hydrochloric acid secretion by blocking the H⁺, K⁺-ATPase enzyme system of the gastric parietal cell.

Omeprazole paste for horses is currently approved for the treatment (4 mg/kg/day) and prevention (2 mg/kg/day) of recurrence of gastric ulcers in horses and foals 4 wk of age and older. After extensive use of the product under field conditions, reports suggested that doses lower than 2 mg/kg/day may be effective in preventing the development of gastric ulcers in horses.

The objective of the study was to determine if 1 mg/kg/day of omeprazole paste will prevent the occurrence and recurrence of gastric ulcers in horses maintained under ulcerogenic conditions. A series of 10 dose-selection studies and dose confirmation field studies were conducted to select and confirm the dose of omeprazole required to prevent the occurrence and recurrence of gastric ulcers in horses held under ulcerogenic conditions.

2. Materials and Methods
There were 285 horses representing three breeds in 10 clinical studies in the United States and Canada. All horses were actively racing or in race training. Prevention of occurrence of ulcers was evaluated in horses that had no gastric ulcers entry into race training, and prevention of recurrence of gastric ulcers was evaluated in horses in racing and race training that had ulcers upon entry and that were treated with omeprazole (4 mg/kg, of 24 h, per os, for 28 days) to heal ulcers. Gastroscopy was performed in all horses before prevention treatments and after 28 - 30 days of prevention treatments, with lesions scored using a scale of 0 - 3 [4]. Dose-selection studies compared the effects of sham-dose and omeprazole paste [a] at 0.5, 1.0 or 2.0 mg/kg, per os, for 24 h, for 28 days. Dose-confirmation field studies compared the effects of sham-dose and omeprazole paste at 1.0 mg/kg, for 24 h, per os, for 28 days.
3. Results
In the dose-selection trials, omeprazole at 1.0 mg/kg/day was more effective in the prevention of recurrence of ulcers after 28 days of treatment with 4.0 mg/kg/day than either sham-dose or 0.5-mg/kg/day treatments. In prevention of occurrence trials, omeprazole at 1.0 mg/kg/day was more effective than sham-dose but was not different than 2.0 mg/kg/day in the prevention of worsening of ulcer scores.

With data combined from the dose-selection and dose confirmation trials, gastric ulcers developed in 86% (prevention of occurrence) and 82% (prevention of recurrence) of sham-dosed horses. In the horses receiving the 1.0 mg/kg/day dose of omeprazole, ulcer occurrence was seen in only 18% of cases (82% prevention of occurrence), and ulcer recurrence was seen in only 19% of cases (81% prevention of recurrence).

4. Discussion
Previous studies have clearly defined the effectiveness of omeprazole paste in the treatment of gastric ulcers when administered at 4 mg/kg [4]. Previous studies on prevention have shown that in horses that had ulcers that were resolved after treatment at 4 mg/kg, the dose could be dropped to 2 mg/kg to prevent recurrence while the ulcerogenic stimulus (race training) was maintained [4].

The data from the dose-selection and dose-confirmation field studies presented here support the use of omeprazole paste at 1 mg/kg/day for the prevention of gastric ulcers in horses under race training conditions.

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Footnotes
[a] Gastrogard Paste for Horses; Astra Zeneca Group of Companies, Merial Limited, Duluth, Georgia, GA 30096.

References


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