

Short title: **Omeprazole pharmacodynamics**

The effects of dose and diet on the pharmacodynamics of omeprazole in the horse

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The effects of two doses of omeprazole and two dietary regimes on the pharmacodynamics of omeprazole were studied in six horses that had percutaneous gastrostomy tubes fitted. A hay only diet was compared with a high grain/low fibre diet designed to replicate that of a racehorse in training. Once adapted to the diet, the intragastric pH of each horse was monitored for six consecutive days and measurements were taken from two locations within the stomach 5 cm apart. The percentage time that pH exceeded 4 was considered to be the conditions under which squamous ulceration healing occurs and a 1 mg/kg bodyweight dose of omeprazole (GastroGard paste) was compared to a 4 mg/kg dose once daily.

An effect of both diet and dose was evident with pH values typically higher at the higher (4 mg/kg bwt) dose and in high grain/low fibre diet. The overall efficacy of omeprazole in raising intragastric pH was good under the high grain/low fibre conditions but relatively poor with the hay diet. When comparing Day 5 to Day 1 of treatment, the pH values were higher at location 2 at both doses and on both diets.

Based on these results the authors recommend that on a roughage-only diet, omeprazole should be used at 4 mg/kg bwt in horses and that a period of fasting before administration of omeprazole may be beneficial in these horses. The differences in results obtained at two different sampling locations within the stomach may be attributable to regional pocketing of acid, and future studies investigating acid suppression should involve sampling at multiple locations.

Bottom line: Omeprazole is more effective at increasing gastric pH on high grain/low fibre. The use of singular dosing recommendations that encompass all horse types and management conditions may not be appropriate and dosing recommendations that take into account the diet of the horse are needed.