

EFFICACY AND PHARMACOKINETICS OF PANTOPRAZOLE IN ALPACAS

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Third compartment (gastric) ulcers are a common cause of morbidity and mortality in CAMELIDS of all ages. Unfortunately, many of the accepted medications for treatment of gastroduodenal ulcers in other species have proven ineffective in CAMELIDS. Intravenous administration of omeprazole has been shown to significantly increase third compartment pH in llamas, however IV formulations are not readily available in North America and this route of administration is impractical for use by owners. Oral administration of omeprazole has been shown to be an ineffective method of increased third compartment pH in CAMELIDS. Pantoprazole is a proton pump inhibitor that is frequently used in humans for the treatment of gastric ulcers. It is widely available and has been shown to effectively inhibit gastric acid production in several species. The purpose of this study was to examine the pharmacokinetics of both IV and SC pantoprazole and to determine whether pantoprazole administration would increase third compartment pH in alpacas. Six adult male alpacas were anesthetized and fitted with a third compartment cannula for measuring gastric pH. Following recovery, alpacas received 1 mg/kg pantoprazole IV, every 24h for 3 days or 2 mg/kg SC every 24h for 3 days. All alpacas received both IV and SQ pantoprazole, with a minimum of 3 weeks between treatments. Third compartment pH was recorded at regular intervals and plasma samples were taken for pharmacokinetic analysis. Pantoprazole induced a slow but sustained increase in third compartment pH when given by both the IV and SC routes. Third compartment pH was significantly increased as compared to baseline values (1.81 ± 0.7 ; mean \pm SD) at 24 (2.47 ± 0.8), 48 (3.53 ± 1.0), and 72 hours (4.03 ± 1.3) following daily IV administration of pantoprazole. Third compartment pH increased from 1.73 ± 0.6 at baseline to 3.05 ± 1.1 , 4.02 ± 1.4 , and 3.61 ± 1.6 at 24, 48, and 72 hours following SC administration. Pharmacokinetic analysis demonstrated that pantoprazole had a short elimination half life (0.47 ± 0.06 hr) and a high clearance rate (12.2 ± 2.9 mL/kg/min) following both IV and SC administration. This study showed that pantoprazole represents a safe and effective drug for increasing third compartment pH in CAMELIDS. It is likely an effective treatment for gastric ulcers and might be useful for prophylactic administration in stressed CAMELIDS at high risk for developing ulcers.