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### Chloramphenicol in Horses

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Research Abstract:

Pharmacokinetics of oral chloramphenicol base in adult horses.

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The purpose of this study was to determine the pharmacokinetics of chloramphenicol after intravenous and oral administration in adult horses.

Chloramphenicol is a broad-spectrum antibiotic that is typically administered orally in horses; however there are very few studies that have looked at its pharmacokinetics in adult horses. It is unique in that it is one of a few antibiotics that can be administered by mouth to horses without serious side effects to the equine gastrointestinal tract.

Chloramphenicol has significant human health concerns and is illegal in food animal species which horses may be considered in certain countries. Therefore, determining the pharmacokinetics of chloramphenicol as it is routinely administered in horses will provide more information for making appropriate antibiotic therapeutic decisions. In this study, five adult non fasted horses were administered 50 mg/kg of chloramphenicol base via 60 cc catheter tip syringe and blood samples were collected at 0, 5, 10, 15, 30 min, 1, 2, 4, 8 and 12 hours. After at least a 2-5 day washout period, three adult non-fasted horses were given chloramphenicol Na succinate at 25 mg/kg IV and blood samples were collected at 0, 3, 5, 10, 15, 30, 45, 60 min, 2, 4, and 8 hours. Samples were analyzed using a validated high performance liquid chromatographic method. No adverse effects were observed for either oral or intravenous administration. The preliminary data revealed that chloramphenicol half-life, volume of distribution at steady state, clearance

and AUC after intravenous administration ranged from 0.65-1.2 h, 507- 782 mL/kg, 779-1217 mL/h/kg, and 20.5-32.1 h\* $\mu$ g/ml, respectively. The half-life,  $T_{\max}$ ,  $C_{\max}$  and AUC after oral administration ranged from 1.7 – 7.4 h, 0.25 – 2 h, 0.81 – 5.45  $\mu$ g/mL, and 10.3 – 21.6 h\*  $\mu$ g/mL. The minimum inhibitory concentrations for organisms susceptible to chloramphenicol are  $\leq 8 \mu$ g/mL. Administration of chloramphenicol resulted in concentrations greater than 2  $\mu$ g/mL for 45 minutes and greater than 0.5  $\mu$ g/mL for 12 hours.