Pharmacokinetics of Chloramphenicol at Steady State in Adult Horses

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When administered at a dose of 50 mg/kg by mouth every 6 hours, the highest reliably achievable mean inhibitory concentration (MIC) is 2.0 µg/mL when using average duration above MIC. Authors’ addresses: Department of Medicine and Epidemiology, School of Veterinary Medicine University of California–Davis, Davis, CA 95616 (Estell, Patel, Edman, Magdesian); K. L. Maddy Equine Analytical Chemistry Laboratory, Davis CA 95616 (Knych); e-mail: krista.estell@gmail.com. *Corresponding and presenting author. © 2016 AAEP.

1. Introduction
Chloramphenicol is routinely recommended for the treatment of a variety of bacterial infections in the horse. The recommended susceptibility breakpoint for chloramphenicol by the Clinical Laboratory Standards Institute is 8.0 µg/mL. The authors hypothesize that this level is not achievable in adult horses with the commonly prescribed dose rate of 50 mg/kg by mouth every 6 hours, and therefore a lower mean inhibitory concentration (MIC) should be targeted.

2. Materials and Methods
Seven horses were administered chloramphenicol palmitate tablets orally at a dose of 50 mg/kg by mouth every 6 hours for 16 doses. Blood was collected at regular intervals for analysis using liquid chromatography–mass spectrometry.

3. Results
The physical examination parameters were normal for each horse. Although 3/7 horses developed soft feces, no other adverse reactions occurred. If chloramphenicol was administered every 6 hours, 6/7 horses achieved adequate plasma concentrations for ≥50% of the dosing interval to target bacteria with a MIC ≤ 2.0 µg/mL. All horses had plasma concentrations ≥ 1 µg/mL for long enough to reliably target bacteria with a MIC ≤ 1 µg/mL.

4. Discussion
Clinicians who intend on using chloramphenicol should obtain a MIC for target bacteria rather than relying on laboratory interpretation according to Clinical Laboratory Standards Institute guidelines, which mistakenly categorize bacteria as susceptible to chloramphenicol based on an unachievable MIC in adult horses.

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Declaration of Ethics
The Authors have adhered to the Principles of the Veterinary Medical Ethics of the AVMA.

NOTES—for more information, contact the corresponding author
Conflict of Interest
The Authors declare no conflicts of interest.

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