Antimicrobial Activity of Tulathromycin and 14 Other Antimicrobials Against Virulent Rhodococcus equi In Vitro

Kelly L. Carlson, DVM; Kyle R. Kuskie, BS; M. Keith Chaffin, DVM, MS, Diplomate ACVIM; Melissa C. Libal, DVM, MA, Diplomate ACVM; Steeve Giguère, DVM, PhD, Diplomate ACVIM; Sara D. Lawhon, DVM, PhD, Diplomate ACVM; and Noah D. Cohen, VMD, MPH, PhD, Diplomate ACVIM†

Tulathromycin was ineffective in vitro against both macrolide-susceptible and macrolide-resistant isolates of Rhodococcus equi. Our findings do not support the use of tulathromycin for the treatment of R. equi bronchopneumonia in foals. Authors’ addresses: Department of Large Animal Clinical Sciences (Carlson, Chaffin, Cohen), Equine Infectious Disease Laboratory (Kuskie), and Department of Pathobiology (Libal, Lawhon), College of Veterinary Medicine & Biomedical Sciences, Texas A&M University, College Station, Texas 77843; Department of Large Animal Medicine, College of Veterinary Medicine, University of Georgia, Athens, Georgia 30602 (Giguère); e-mail: ncohen@cvm.tamu.edu. †Corresponding author. © 2010 AAEP.

1. Introduction

Rhodococcus equi bronchopneumonia is a significant cause of morbidity and mortality in foals. A treatment with a longer dosing interval would be highly desirable. There is also a need to evaluate treatment options for macrolide-resistant isolates. Tulathromycin is an injectable semisynthetic veterinary macrolide with a long elimination half-life. The objective of this study was to determine the antimicrobial activity in vitro of tulathromycin against multiple strains of R. equi, including strains resistant to macrolides. A secondary objective was to determine the in vitro activity of 14 other antimicrobials against R. equi.

2. Materials and Methods

Ninety-eight isolates were cultured on a custom 96-well antimicrobial susceptibility testing plate, using various concentrations of antimicrobials (tulathromycin, azithromycin, ceftiofur, chloramphenicol, clarithromycin, doxycycline, enrofloxacin, erythromycin, gentamicin, linezolid, penicillin, rifampin, tilmicosin, trimethoprim-sulfamethoxazole, and vancomycin). Minimal inhibitory concentration (MIC) values were determined.

3. Results

Tulathromycin was found to have poor activity in vitro against R. equi isolates susceptible or resistant
4. Discussion

Although in vitro susceptibility does not necessarily equate to clinical efficacy, the MIC\textsubscript{90} of tulathromycin was more than 100-fold above achievable concentrations of tulathromycin in serum and broncho-alveolar cells after IM administration in foals,\textsuperscript{2} indicating tulathromycin should not be used for the treatment of \textit{R. equi} bronchopneumonia.

Acknowledgment

The costs associated with this study were provided by the Link Equine Research Endowment.

References
