Evaluation of the Humoral Immune Response and Fecal Shedding in Weanling Foals After Oral and Intra-Rectal Administration of an Avirulent Live Vaccine of *Lawsonia intracellularis*

Nicola Pusterla, DVM, Diplomate ACVIM; Hugo Hilton, BVM&S; Suphot Wattanaphansak; Jessica R. Collier; Samantha M. Mapes, MS; Robert M. Stenbom, DVM; and Connie Gebhart, DVM, PhD

Measurable serologic response follows oral and intra-rectal administration of an avirulent live vaccine of *Lawsonia intracellularis* in weanling foals. Vaccination of foals against *L. intracellularis* could be a useful measure for the prevention of equine proliferative enteropathy. Authors' addresses: Department of Medicine and Epidemiology, School of Veterinary Medicine, University of California, One Shields Avenue, Davis, CA 95616 (Pusterla, Collier, Mapes); The William R. Pritchard Veterinary Medical Teaching Hospital, School of Veterinary Medicine, University of California, Davis, CA 95616 (Hilton); Department of Veterinary Biomedical Sciences, University of Minnesota, College of Veterinary Medicine, St. Paul, MN 55108 (Wattanaphansak, Gebhart); and Boehringer Ingelheim Vetmedica, St. Joseph, MO 64506 (Stenbom); e-mail: npusterla@ucdavis.edu. © 2008 AAEP.

1. Introduction

Equine proliferative enteropathy (EPE) caused by *Lawsonia intracellularis* has recently been recognized as an emerging disease in foals. Although the clinical entity, diagnostic evaluation, and treatment of affected foals have been well established and described, preventive measures for EPE have remained largely unaddressed. The objectives of this study were to investigate the humoral immune response and onset and duration of fecal shedding in foals after oral and intra-rectal administration of a modified-live vaccine of *L. intracellularis*.

2. Materials and Methods

Foals were vaccinated with a commercial modified-live vaccine of *L. intracellularis*. The vaccine was given twice, 3 wk apart, by oral drenching after pre-medication with a proton-pump inhibitor (group 1), intra-rectally (group 2), or orally without any pre-medication (group 3). The health status of the foals was monitored daily for 42 days, and feces and serum were collected at regular intervals for real-time polymerase chain reaction (PCR) testing and serology, respectively.

3. Results

All foals remained healthy, and no adverse vaccine reactions were observed. Fecal shedding lasted from 1 to 12 days and was mainly detected in foals receiving the intra-rectal vaccine 11–15 days after the first vaccine administration. Serologic responses were measured in the majority of the vacci-
nated foals. All foals vaccinated intra-rectally seroconverted after the first vaccine, compared with 50% and 0% of foals of group 1 and group 3, respectively. Furthermore, pre-medication with omeprazole before oral vaccination in foals of group 1 led to an earlier and stronger detectable humoral response compared with non-pre-medicated foals.

4. Discussion

Although this work represents an initial attempt at characterizing the humoral immune response and onset and duration of shedding in foals exposed to an attenuated vaccine strain of *L. intracellularis*, the efficacy of this approach and potential for improvement of the well being of weanling foals needs to be further studied by experimental challenge studies or field efficacy trials.

This study was supported by a Resident Research Grant Award from the William R. Pritchard Veterinary Medical Teaching Hospital, University of California at Davis. The authors thank Boehringer Ingelheim Vetmedica, St. Joseph, MO, for providing the vaccine.

Footnotes

*aEnterisol Ileitis, Boehringer Ingelheim Vetmedica, St. Joseph, MO 64506.*

*bGastroGard, Merial, Duluth, GA 30096.*