Allen D. Leman Swine Conference

UNIVERSITY OF MINNESOTA
College of Veterinary Medicine
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Volume 39
2012

Published by: Veterinary Continuing Education

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Efficacy and Duration of Infection Study for RespiSure® and Draxxin® Against a *Mycoplasma hyopneumoniae* Challenge in Swine

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Introduction

Experimental infections with *Mycoplasma yopneumoniae* (*M. hyopneumoniae*) can persist i the pig's respiratory tract for longer than 200 d ays post challenge with complete natural cleara nce confirmed by 254 days following challenge [1].The objective of this study was to evaluate the duration of *M. hyopneumoniae* infection in swine that received either a *M. hyopneumoniae* bacterin vaccination prior to infection, or combination of *M. hyopneumoniae* bacterin prior to infection, and tulathromycin following infection.

Materials and Methods

This study was conducted at commercial swine facilities. All animals enrolled in the study were from a single source, with an established status of being *M. hyopneumoniae* free, based on clinical history and laboratory tests. All pigs were enrolled in the study at weaning, approximately 19 days of age. There were 7 treatment groups (T1 –T7). Two hundred fifty-five (255) animals were designated as negative control animals (T1). Pigs in T2 – T7 were vaccinated for *M. hyopneumoniae* with RespiSure™ at 3 and 6 weeks of age. Eighty (80) animals were enrolled per each of groups (T2-T7). Animals were clinically healthy and were 60 days of age (+/- 5 days) at the time of challenge. All animals were administered an intratracheal challenge of 10 ml of the 1:100 dilution of the challenge material, *M. hyo*-positive lung homogenate obtained from Iowa State University, Ames, IA (*M. hyopneumoniae* strain 232[2], $1x10^6$ CCU/ml) on study day 35, which was 14 days after last vaccination. Pigs in T3, T5 and T7 were all administered two doses of Draxxin® (tulathromycin) injectable solution (2.5 mg/kg) at various intervals post-challenge (Table 1). Subsets of pigs from all treatment groups had lungs removed at slaughter, and a bronchial swab collected from each animal. Swabs were stored appropriately and transported to the University of Minnesota Veterinary Diagnostic Lab (UofM-VDL) for *M. hyopneumoniae* real time PCR (VetMax™, Applied Biosystems). Any lungs with lesions suspicious of *M. hyopneumoniae* had tissues collected and transported to the VDL for histopathology examination and further real time PCR.

Table 1. Antibiotic treatment and sample collection schedule for experimental groups

Treatment	Tulathromycin (Days post-challenge)	Bronchial Swab (Days post-challenge)
1	N/A	133, 161, 189
2	N/A	133
3	90 & 100	133
4	N/A	161
5	122 & 132	161
6	N/A	189
7	150 & 160	189

N/A: Not applicable.

Results

The *M. hyopneumoniae* real time PCR results from bronchial swabs are summarized below:

Day post-challenge	**133**		**161**		**189**	
	n	% Pos	n	% Pos	n	% Pos
Control	63	100	65	43.1	93	23.7
Vaccination	65	78.5	65	55.4	63	34.9
Vaccination & Medication	69	73.9	63	49.2	64	15.6

Discussion

It has been previously demonstrated that *M. hyopneumoniae* infected pigs can be carriers of the pathogen while convalescent carriers can remain infectious for up to 200 days. Total clearance of *M. hyopneumoniae* occurs by 254 days post-inoculation[1]. Under the conditions of this study, the use of *M. hyopneumoniae* vaccination alone or in combination with treatment with tulathromycin did not result in an elimination of the *M. hyopneumoniae* carrier status at 133, 161 or 189 days post-inoculation.

References

1 Pieters, et al., 2009. Vet Micro, 134 :261-266.
2 Minion et al., 2009. J Bacteriol. 186:7123-7133.