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Mycoplasma hyopneumoniae efficacy and field safety evaluation of a 3-way *Haemophilus parasuis/Mycoplasma hyopneumoniae* combination bacterin

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Introduction

Glässer's Disease, caused by *Haemophilus parasuis* (HPS), is a well recognized disease of high-health status, young pigs throughout the world (1). Mycoplasmal pneumonia of swine or enzootic pneumonia caused by *Mycoplasma hyopneumoniae* (MHYO) is a widespread, chronic disease characterized by coughing, growth retardation and reduced feed efficiency (2). The objectives were to evaluate the MHYO efficacy of an experimental 3-way HPS + MHYO vaccine following an experimental MHYO challenge, as well as the safety of the combination vaccine under field conditions.

MHYO Efficacy.

Material and Methods.

Conventionally raised, MHYO seronegative 3-week-old pigs were randomized into groups of 20 pigs, vaccinated with a Negative Control vaccine (HPS only) or one of five experimental 3-way HPS + MHYO vaccines (various doses used to determine minimum immunizing and field dose) and re-vaccinated 2 weeks later with the appropriate vaccine. At 8 weeks of age, pigs were challenged intratracheally with a lung homogenate containing a heterologous strain of MHYO. At 12 weeks of age, pigs were necropsied, and the percent gross MHYO lung lesions were scored (3). The in-life phase was conducted under approval of Kalamazoo Institutional Animal Care and Use Committee.

Results.

The field dose HPS + MHYO vaccine significantly reduced MHYO lung lesions (P=0.0019) compared to the Control, least squares means lung lesions were 2.0% compared to 8.2%, respectively.

Field Safety.

Material and Methods.

Three different production systems in three different geographical regions in the U.S. were chosen to conduct field safety studies: Iowa, South Dakota and Missouri. At each site, one hundred 3-week-old pigs were randomly assigned to be vaccinated with one of two HPS + MHYO pre-licensing serials (PLS) or a commercially available HPS + MHYO vaccine and re-vaccinated 2 weeks later (4). All pigs were monitored daily for 2-3 days following each vaccination and 2 weeks following the second vaccination for clinical signs of depression, lethargy, dyspnea, "other" clinical signs and injection site reactions. Animal phases were conducted with approval of Kalamazoo VMRD Ethical Review Board.

Results.

Pigs did not develop any adverse product-related clinical signs at the Iowa or Missouri sites. At the South Dakota site, a few pigs in each treatment group had signs of depression, injection site reactions (ISR) and "other" clinical signs:

PLS 1, 1.0% depression on Day 15, 1.0% ISR on Day 17 lasting 2 days and 3.1% dyspnea on Day 28*;
PLS 2, 1.0% depression on Day 15, 2.1% "other" clinical signs on Day 15 and 5.2% dyspnea on Day 28*;
Commercial vaccine, 3.1% ISR on Day 17 lasting 3 to 6 days and 3.1% dyspnea on Day 28*.

*On Day 28 (2 weeks post-second vaccination), a ventilation failure affected the respiratory status of pigs in the entire barn; after applying proper ventilation, all study and non-study pigs returned to normal the next day.

Conclusions.

The experimental 3-way HPS + MHYO vaccine was safe under field conditions as evidenced by the lack of adverse post-vaccination reactions in 2 of 3 farms and minimal reactions at the third study site. In addition, the experimental combination vaccine aids in the reduction of chronic pneumonia caused by MHYO.

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