RESEARCH ABSTRACT

SWINE HEALTH

Title: Evaluation of a new vaccine approach against mycoplasma pneumonia.
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Investigator: F. Chris Minion, PhD

Institution: Iowa State University

Co-Investigator: Eileen L. Thacker, DVM, PhD

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Abstract:

Mycoplasma hyopneumoniae is a common pathogen associated with the porcine respiratory disease complex (PRDC). The ISU Veterinary Diagnostic Laboratory has seen a three-fold increase in cases with mycoplasmal pneumonia, often from vaccinated herds. Vaccination and management strategies are currently the best methods to control mycoplasmal pneumonia in swine herds, but these strategies often fail. Enhancement of antigen-specific immune responses will lead to improved vaccines. The objective of this study is to investigate the potential of a new immune enhancing protein (ESAT-6) to enhance antigen-specific immune responses and provide protection against *M. hyopneumoniae* experimental challenge following vaccination. This protein will be incorporated into a DNA vaccine format with three different *M. hyopneumoniae* antigens. We used 66 pigs divided into 11 groups. There were 7 DNA vaccines tested (1 group per vaccine) plus 2 groups of vaccine combinations and 2 control groups. Pigs were inoculated with DNA vaccines using a new Bioject 2000 needleless injection device, boosted three weeks later and challenged three weeks following the booster. Twenty-eight days following challenge with *M. hyopneumoniae*, pigs were necropsied and percent lung lesions assessed. Additionally, serum antibody responses to each antigen were followed throughout the study. Our results indicated that DNA vaccines have potential for protecting against mycoplasma pneumonia in pigs. In addition, we showed that ESAT-6 fusions with individual antigens enhanced the efficacy of the vaccine. Further studies identifying additional antigens will be necessary before a fully effective vaccine can be developed.