RESEARCH ABSTRACT

SWINE HEALTH

Title: The influence of maternal PCV2 immune response on piglet infection rates at weaning and the effect of PCV2 infection at weaning on lifetime performance and vaccine efficacy – **NPB #09-188**

Investigator: J.F. Lowe, DVM, MS

Institution: Carthage Veterinary Service, Ltd.

Date Submitted: November 5, 2010

Scientific Abstract

Purpose: With the recent development of porcine circovirus vaccines, porcine circovirus associated disease (PCVAD) has become less of a challenge for swine producers. However, much is unknown about the transmission of the virus from dam to offspring and the effects of viremia at birth on vaccine efficacy. We theorized that viremia at birth would lower vaccine efficacy as measured by growth rate of pigs from birth to 150 days of age.

Methods: In a case control study, serum was collected from 300 sows 21 days prior to and at farrowing. In addition, umbical cord blood was collected from 4 pigs in each litter and pooled within litter after serum separation. All samples were submitted for qPCR analysis of PCV2 and anti-PCV2 antibodies as measured by IFA to a commercial diagnostic lab. Eight viremic litters were identified and were matched to 8 control litters. Litters were matched based on farrow date, dam parity and antibody titer (at least two-fold higher). Within litter, pigs were blocked to treatment (vaccine, no vaccine) based on birth weight. At weaning pigs were moved to an offsite facility that housed pigs from the same weaning cohort. At weaning and three weeks later pigs were either vaccinated with 2cc of Cirumvent PCV2 (Intervet Schering Plough) or 2 cc of saline. Pigs were weighed at 14, 84 and 154 days of age. Serum samples were collected at 14, 49, 77, 105, 133 and 154 days of age.

Results: Pigs that were viremic at birth were heavier at 14 (4.46 vs. 4.11 kg, SEM 0.08, p=0.002), 84 (45.63 vs. 41.89 kg, SEM 0.60, p=0.001) and 154 (93.9 vs. 89.9 kg, SEM 1.18, p=0.020) days of age compared to non-viremic pigs. Vaccine improved weight gain at 154 days of age by 4.98 kg (94.46 vs 89.4 kg, SEM 1.18 kg, p=0.003) but not at other time points. There was no interaction detected between vaccination and viremia at birth. Dams that were viremic at 21 days prior to farrowing were 3.65 (1.27, 10.55, 95%CI) more likely to have a viremic litter. Sow viremia at farrowing was not predictive of piglet infection status.

Conclusions: Based on these data, viremia at birth does not influence vaccine efficacy or lifetime growth under the conditions of this study. Control of sow PCV2 infection is not likely to impact growing pig performance.