

SWINE HEALTH

Title: Contribution of prior SIV infection in enhancing secondary *Haemophilus parasuis* disease - NPB #09-127

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Scientific Abstract:

Porcine respiratory disease complex (PRDC) is a multifactorial disease process that causes significant loss in the swine industry. Factors contributing to the disease process include a variety of infectious agents, such as swine influenza virus (SIV) and *Haemophilus parasuis* (Hps), and factors such as herd immune status and management practices. The disease process is not simply explained by infection with multiple pathogens, and the contribution of each infectious agent and timing of infection likely contribute to the disease process, but are difficult to model. Influenza virus has been shown to predispose other animal species to secondary bacterial infection; thus, studies were completed in pigs to evaluate the contribution of SIV infection to secondary Hps disease. Two separate studies were performed in which pigs were first inoculated with SIV and secondarily challenged with Hps, either 5 or 10 days following SIV challenge (8-week old versus 4-week old, respectively). In 4-week old pigs, Hps colonization was not altered by prior SIV infection (10-days before Hps), although cytokine responses by tracheal epithelial cells were increased in the SIV/Hps challenged pigs. We were unable to evaluate responses in 8-week old pigs challenged with Hps 5 days following SIV because the strain of Hps used for these studies was virulent in 8-week old pigs. These data indicate that host immune status plays a significant role in disease susceptibility. While not surprising, it does highlight the need for methods to evaluate host immunity to Hps, especially when designing studies with Hps challenge. In conclusion, co-infection can lead increased host immune responses at the local level and studies are ongoing to understand the mechanism by which this occurs.

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