

SWINE HEALTH

Title: Assessment of viral load in clinical and subclinical pigs naturally infected with the novel PCV2b: implications for the control & prevention of PMWS/PCVD – **NPB #06-077**

Investigator: John C. S. Harding

Institution: University of Saskatchewan

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Abstract

The PCVD/PMWS epidemics experienced in various regions throughout North America since late 2004 pose a significant threat to the entire North America swine industry, and coincide with the isolation of a novel PCV2 strain referred to as PCV2-321 or PCV2b. Regardless of the PCV2 strain and co-factor(s) involved, we proposed that PMWS/PCVD control is dependent on reducing and maintaining low PCV2 viral load. The objectives of this study were to compare the amount of PCV2 in the tissues and sera of WASTING and age-matched HEALTHY pigs from 2 farms infected with PCV2b, and compare to age-matched UNAFFECTED pigs originating from a farm with no prior history of PMWS/PCVD. Microscopic lesions suggestive of PCVD, and PCV2 staining intensity were scored in all tissues, and the levels of PCV2 DNA were assessed by quantitative PCV2 PCR (qPCR) in all tissues and sera. The highest viral load was found in WASTING animals. By contrast, the lowest viral load was found in UNAFFECTED pigs from a barn with no prior history of PCVD/PMWS. Viral load, as measured by qPCR, was strongly correlated with PCV2 staining intensity, and microscopic lesions associated with PCVD. The simultaneous presence of both PCV2a and 2b in UNAFFECTED pigs from a farm with no history of PMWS/PCVD implies that PCV2b is of no greater virulence than PCV2a. Thus, the biological relevance of PCV2 genotypes (2a, 2b) needs to be further clarified.

The results of this study will enhance the diagnostic capability of North America, specifically the interpretation of quantitative PCR. Moreover, the results will enhance the on-farm testing protocols used to assess control and prevention programs and PMWS/PCVD risk. By objectively evaluating the level of PCV2 load in tissues and sera by qPCR, diagnosticians will more accurately assess the biological significance of PCV2 infection in subclinically and pre-clinically affected live pigs and tissues. Moreover, this research has identified the tissues most suited for population based studies on live pigs, for example, monitoring control or vaccination programs.

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For more information contact:

National Pork Board, P.O. Box 9114, Des Moines, Iowa USA

800-456-7675, **Fax:** 515-223-2646, **E-Mail:** porkboard@porkboard.org, **Web:** <http://www.porkboard.org/>