RESEARCH ABSTRACT

SWINE HEALTH

Title: Epidemiological investigation of the role of retroviremia in endemic diseases of swine. **NPB #07-065**

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Abstract:

The objective of this study was to determine the prevalence of porcine endogenous retrovirus (PERV) A/C recombinants and their association with disease expression in three commercial swine operations in the United States. To accomplish this goal, a general real-time reverse transcriptase (RT)-PCR assay specific for PERV-A, B, and C (PERV-ABC) and a real-time RT-PCR assay specific for PERV-C were utilized. In addition, a quantitative real-time RT-PCR assay for the detection of PERV-A/C was developed. The real-time RT-PCR was able to detect as low as 5 fg/ reaction of the pJET PERV-A/C clone corresponding to 3,600 copies/reaction or 144 copies/µl. The diagnostic specificity was found to be 100% with an intra-run coefficient of variance (CV) of 0.23%. The three assays were then used to screen pig serum samples obtained from three to 25 week old pigs (n=204 pigs and 369 samples) from three commercial swine operations in the U.S. While all 369 samples were found to be positive for PERV-ABC RNA, PERV-C RNA and PERV-A/C RNA were detected in 24.1% (89/369) and 18.7% (69/369) of the samples respectively. Twenty percent (43/215) of the samples collected from nursery pigs (3-9 weeks of age) were found to be positive for PERV-A/C RNA compared to 16.9% (26/154) of the samples collected from grow-finisher pigs (12-25 weeks of age). On two of the farms, serum was collected from healthy appearing pigs (n=60 pigs) and from their pen-mates suffering from various clinical conditions including diarrhea, wasting and respiratory disease (n=60 pigs). When clinically affected pigs were compared to unaffected pigs, 25% (15/60) of the samples from affected pigs were found to be positive for PERV-A/C RNA, whereas in clinically healthy pigs 8.5% (5/60) of the samples were found to be PERV-A/C positive. Interestingly, it was possible to identify PERV-A/C in the same pigs on more than one consecutive bleeding indicating PERV-A/C viremia. The tools developed in the course of this study are ideal for rapid and easy screening of large numbers of pig serum samples for presence of PERV-ABC, PERV-C or PERV-A/C. The obtained results indicate that PERV-A/C is present in the U.S. pig population and associated with continuous viremia in selected pigs. More studies using larger numbers of samples are warranted.