RESEARCH ABSTRACT

SWINE HEALTH

Title: Genomic Quasispecies Associated with the Persistence of PRRS Virus – **NPB #01-102**

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Date Received: March 26, 2004

II. Abstract: An important issue for the control of PRRS is the persistence of PRRS virus for extended periods of time following infection of pigs and the lack of methods to detect persistently infected pigs. Previous studies indicate that lymphoid tissues and tonsil are preferred tissue sites for the virus to persist. In this study, PRRS virus was found to associate with lymph nodes within 6 to 24 hours post-inoculation and precede detection of virus in other tissues such as lung. This indicates that lymphoid tissue is the primary site of PRRS viral replication and that the virus establishes residence in lymph nodes early in infection. During acute infection, which is defined as the period to 28 dpi, virus isolation or RT-PCR is both adequate methods for detection of virus. Lung is the traditional tissue used for diagnosis of acute PRRS virus infections and virus was isolated as frequently from this tissue as most lymph nodes during the acute phase. Virus was more frequently isolated from palatine tonsil ($p<.05$) than lung and lymph nodes during the acute phase. The number of isolations of infectious virus from lymphoid and non-lymphoid tissues dropped markedly after 28 dpi. From 43 to 126 dpi RT-PCR is the diagnostic test of choice as infectious virus is rarely isolated from lymphoid or non-lymphoid tissues. Viral RNA was detected most frequently from 43 to 126 dpi in palatine and lingual tonsils compared to lymph nodes and other tissues. The early association of PRRS virus with lymph nodes may also explain why the virus predisposes pigs to secondary infections and provide a means for the virus to escape elimination by the immune system. The role of viral variation (quasispecies) as a mechanism for establishing persistence indicated that the most frequent change was a point mutation on nucleotide 97 on the ectodomain of the ORF5 gene that results in an amino acid change from glycine to serine at amino acid 33. The significance of this mutation was not determined in this study, but it does exist in a potential glycosylation site on the ORF5 gene. Tissue tropism does not appear to be related to a particular viral quasispecies.