RESEARCH ABSTRACT

SWINE HEALTH

Title: Immunogenicity and potency of PRRS MLV vaccines with and without interferon-alpha suppressing capacity – **NPB - #06-184**

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Date submitted: March 2, 2009.

Scientific Abstract:

The goal of this project was to examine the potency several attenuated PRRS virus strains, which either had a marked, mild or negligible ability to inhibit the ability of porcine leukocytes to produce IFN-alpha. Two vaccination and challenge studies were conducted with groups of 8-10 week-old pigs, which were immunized with the different PRRS virus attenuated strains. Two additional groups of pigs for each experiment were not vaccinated and served as controls. Four weeks later, one of the unvaccinated groups and all of the vaccinated groups were challenged with the highly virulent atypical PRRS virus isolate NADC-20. At 7-10 days after challenge the amount of virus in the bronchoalveolar lavage fluid and weight gain were measured in all groups and used as parameters to evaluate protective immunity. The results obtained in both experiments demonstrated that as predicted, the PRRS live attenuated virus vaccine exhibiting minimal IFN-alpha suppressing activity was the most effective in providing protection from the clinical signs resulting from the challenge with a genetically divergent and highly virulent PRRS virus. This was evidenced by a significantly higher (35-100%) body weight gain during the seven days after the virus challenge, as compared to that of the pigs immunized with vaccine viruses that have either a strong or mild IFN-alpha inhibitory effect. In addition, the virus load in the lung was reduced >100-fold (day 7 post-challenge) or eliminated (day 10 post-challenge) in the pigs that were immunized with the virus with the minimal IFN-alpha suppressing activity as compared to unvaccinated pigs or those immunized with the MLV with either mild or strong IFN-alpha inhibitory activity. The results of this project indicate that the level of IFN-alpha inhibitory effect of a PRRS MLV vaccine on porcine leukocytes can be used as a predictive parameter of the potential potency of PRRS virus vaccine and that the use of this biological property of this virus as selection criteria for vaccine strain selection will aid in the development of a more effective PRRS virus vaccine.