

Bulletin

Boehringer Ingelheim Vetmedica, Inc.

TECHNICAL

Evaluation of the Efficacy of Ingelvac® PRRS ATP Against Three Different Challenge Strains of PRRS

This is a summary of a collaborative research study done with Dr. Pat Halbur at ISU/VDL to evaluate the efficacy of Ingelvac® PRRS ATP in a respiratory challenge model against three heterologous and highly virulent PRRS isolates.

Our hypothesis is that **protective immunity against widely varying and highly virulent strains of PRRSV can be achieved by vaccination of pigs with Ingelvac® PRRS ATP modified live vaccine.**

Pigs were vaccinated with Ingelvac® PRRS ATP and challenged five weeks post-vaccination with three different isolates of PRRSV. These three isolates vary considerably from each other and from the vaccine based on partial genome sequencing.

The PRRS challenge isolates used in this study were SDSU 73, VR 2385, and Mn-01-A1 184. The SDSU 73 (144), VR 2385, and Mn-01-A1 184 isolates are 91.7%, 90.1%, and 85.1% homologous to Ingelvac® PRRS ATP vaccine. All three challenge isolates are known highly virulent PRRSV isolates.

The measure of protective immunity was measured by reduction of clinical disease, gross and microscopic lesions, and the length of viremia. A measurement of average daily gain post-challenge was also evaluated.

Study Design and Methods:

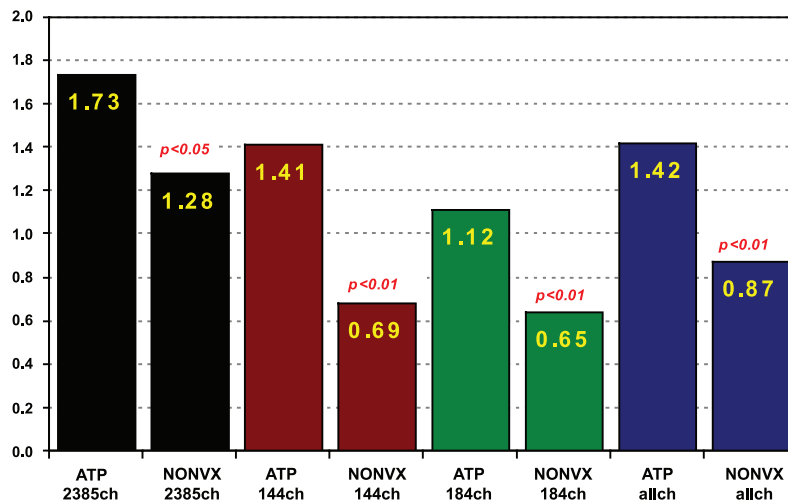
The study consisted of eight treatment groups of pigs. Three groups were vaccinated and challenged, three groups were non-vaccinated and challenged, and one group was non-vaccinated and non-challenged serving as strict controls. The sample size was 10 (n=10) pigs in each of these treatment groups. Treatment group eight were vaccinated and non-challenged (n=3) and served as vaccine controls.

Pigs were vaccinated with Ingelvac® PRRS ATP at 15 days of age, and challenged with one of three PRRS challenge isolates five weeks post-vaccination. All pigs were necropsied 14 days post-challenge (period of peak lesion development following PRRS infection) for assessment of gross and microscopic lung lesions due to PRRSV infection. Pigs were also weighed on the day of vaccination, challenge, and at the termination of the study for evaluation of average daily gain measurements. Other parameters measured in this study included: clinical signs, quantitative PCR of serum and bronchioalveolar lavage fluids for an assessment of length and amount of viremia post-challenge, and histopathological examination of lymphoid tissues, heart, and brain.

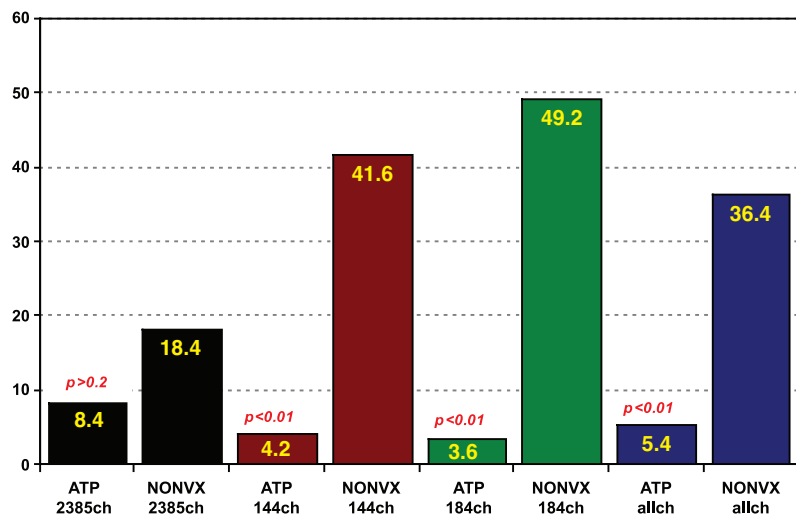
Severity of clinical signs, gross lesions, microscopic lesions, length and amount of viremia provide the data for comparison of protection; vaccinates versus non-vaccinates, against heterologous PRRSV challenge.

Results:

Graph 1 summarizes the results of the average daily gain measurement from day zero to day 14 post inoculation in pounds per day.



Graph 2 summarizes the results of the percent gross lung lesion evaluation post-challenge.



Summary and Key Points

- Ingelvac® PRRS ATP provided consistent protective immunity against 3 highly virulent heterologous PRRS isolates.
- Vaccinates demonstrated a significant reduction in gross lesions compared to non-vaccinates.
- Vaccinates demonstrated a significant increase in average daily gain compared to non-vaccinates.
- Timing of vaccination is a key component for consistent protection. Optimal protective immunity requires at least four weeks between vaccination and challenge.
- Results of this study suggest that Ingelvac PRRS ATP should be considered as a tool to develop protective immunity when devising a control program for PRRS.