

## PRRSGard®

### Efficacy of a unique 1.0-mL MLV PRRS vaccine following heterologous challenge

Porcine reproductive and respiratory syndrome (PRRS) costs the US pork industry \$664 million annually (\$1.8 million/day) in production-related losses.<sup>1</sup> Modified-live virus vaccines remain a major tool in reducing clinical signs of disease and the associated economic losses.

In this study, experimental efficacy of a 1.0-mL modified-live virus (MLV) vaccine was evaluated in pigs vaccinated at 21 days of age and challenged with an heterologous strain.

### Experiment Design

- Known PRRSV naïve weaned pigs (~21 days old) were randomly allocated to two groups.
- Vaccine group received 1.0-mL of PRRSGard® intramuscularly and the placebo group was sham-vaccinated.
- All pigs were challenged 49 days post-vaccination with a heterologous PRRSV strain (NADC-20/RFLP142/Lineage 9).
- The challenge virus was administered as 2.0-mL intranasally containing  $1.5 \times 10^4$  virus particles/mL.
- Viremic pigs after vaccination and challenge were tested weekly by virus isolation.
- Viremia after challenge was measured using a TCID<sub>50</sub> assay at 1- and 2-weeks post challenge.
- Antibody response after vaccination and challenge was tested weekly with a commercial enzyme-linked immunosorbent assay (ELISA) PRRSV kit.
- Individual body weight measurements were taken at vaccination, challenge and end of study to calculate average daily weight gain (ADG).
- Rectal temperatures were measured daily for 14 days after both vaccination and challenge.
- Pigs were necropsied 14 days post-challenge to assess macroscopic lung lesions. Lung tissue samples were used for microscopic lesion analysis and immunohistochemistry (IHC) testing and scoring.

### Results

PRRSGard® significantly reduced macroscopic lung lesions, PRRSV viremia and the number of viremic pigs post-challenge (Figures 1-3). PRRSGard® also significantly improved weight gain after challenge and reduced the duration of viremia, fever and microscopic lung lesions (Table 1).

Figure 1

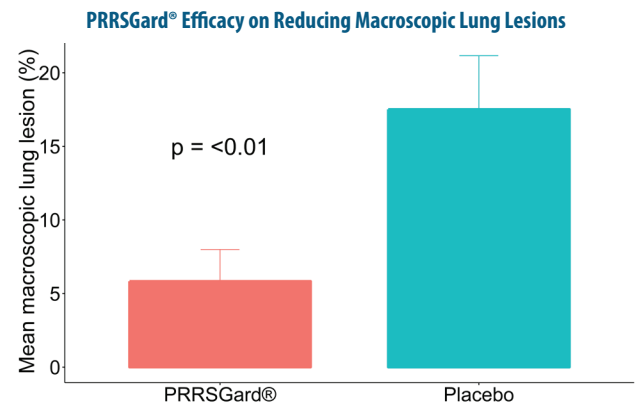


Figure 2

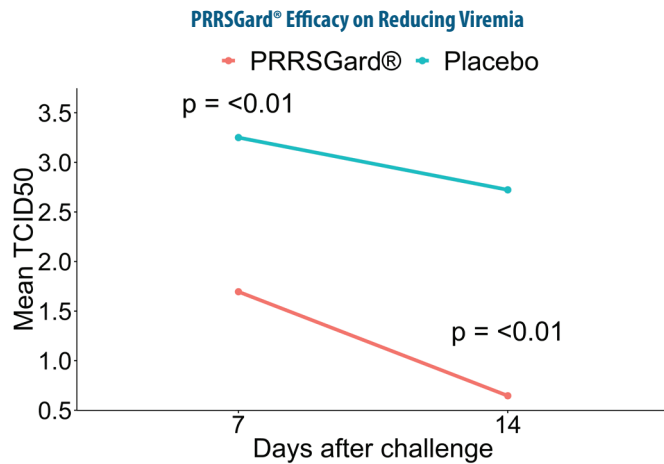


Figure 3

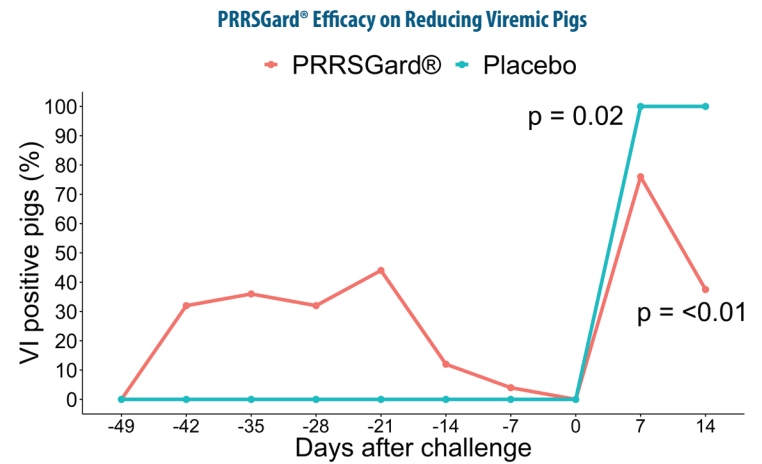


Table 1

**PRRSGard® Efficacy Post-Challenge with a Heterologous Strain**

Study Group	PRRSGard®	Placebo	P-Value
Number of Pigs	25	25	-
ADG (Lb./Day)	0.72	0.43	0.03
Duration of Viremia (Weeks)	1.10	2.00	<0.01
Duration of Fever (Days)	4.50	6.60	0.03
Number of Pigs with Clinical Signs	10/25	12/25	0.78
Duration of Clinical Signs (Days)	0.80	1.30	0.32
Microscopic Lung Lesion Score	2.30	2.80	0.08
Immunohistochemistry (IHC) Lung Score	0.90	1.60	0.02

**Conclusion**

Based upon the results of this study, PRRSGard® was efficacious against a heterologous challenge measured by reductions in viremia, number of viremic pigs, lung lesions and average daily weight gain.

**References**

<sup>1</sup>Holtkamp D. et al. Assessment of the economic impact of porcine reproductive and respiratory syndrome virus on the United States pork producers. Swine Health and Production. 2013. 21:72-84