

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.¹ 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 1.5×10^4 virus particles/mL.
- Viremic pigs after vaccination and challenge were tested weekly by virus isolation.
- Viremia after challenge was measured using a TCID₅₀ 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

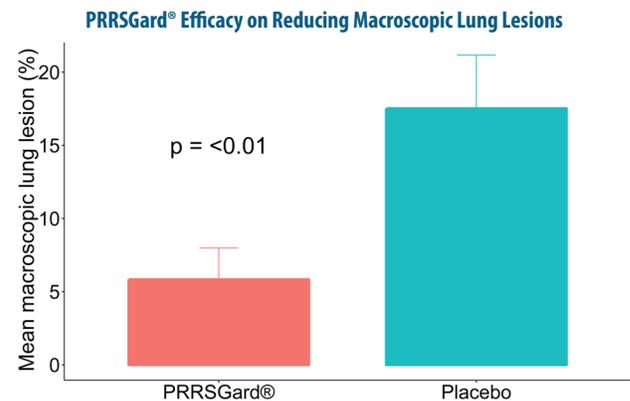


Figure 2

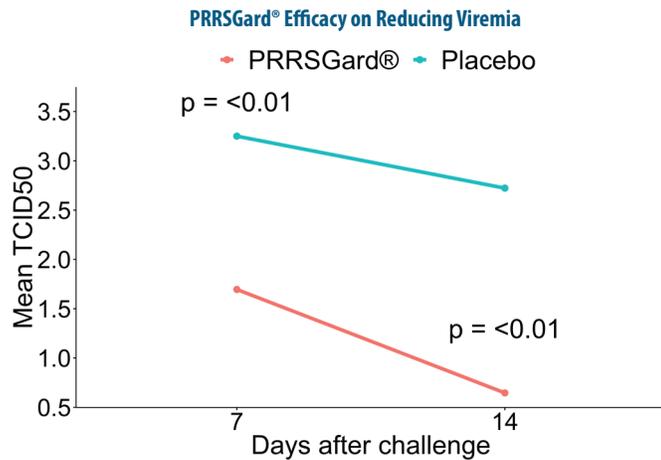


Figure 3

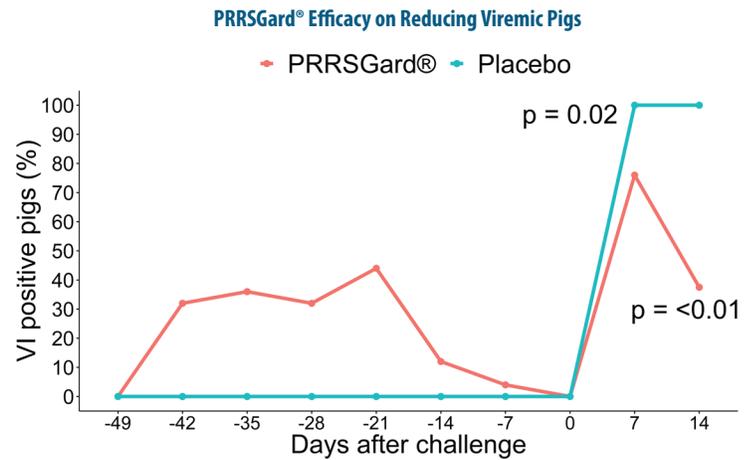


Table 1

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

¹Holtkamp 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