Efficacy of Ingelvac PRRS® MLV against a heterologous PRRSV 1-7-4 RFLP challenge

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Introduction

The use of Ingelvac PRRS® vaccines can significantly reduce lung lesions following challenge with heterologous isolates (86-94% ORF5 nucleotide similarity) in the three-week-old pig respiratory challenge model.[1] However, the efficacy of Ingelvac PRRS® MLV vaccine against current virulent PRRSV isolates , such as RFLP 1-7-4, has not been reported to date. This experiment was designed to evaluate the efficacy of two commercially available PRRSV vaccines in a three-week-old pig respiratory challenge model, using a heterologous RFLP 1-7-4 field isolate from 2014.

Materials and Methods

At approximately three weeks of age (Day 0 of the study), 154 PRRSV naïve piglets pigs were randomized into groups, and intramuscularly vaccinated with 2 ml of either a placebo (challenge controls n=64), Ingelvac PRRS® MLV (n=45) or Fostera® PRRS (n=45). Pigs were housed in rooms by group during the vaccination period. At day 28 of the study (D28), all pigs were comingled and challenged with 2.0 mL intramuscularly and 2.0 mL intranasally (1 mL per nostril) with $10^{4.6}$ $TCID_{50}$/mL of PRRSV RFLP 1-7-4. Serum samples, weights, and temperatures were collected periodically from D0 through termination of the study on D42. On D42 (14 days post-challenge), all pigs were necropsied and lungs were scored for the presence of macroscopic lesions and BALF samples were collected. Serum samples were tested by RT-PCR for the presence of viremia and by ELISA for the presence of anti-PRRSV antibody. A subset of samples were assayed by bead-based multiplex assay for multiple cytokines including IFN-α. Data were analyzed using Generalized and Linear Mixed Models. Pairwise comparisons between groups were conducted as appropriate using a level of confidence of 0.05 to indicate statistical significance.

Results

Table 1 summarizes lung lesions (percentage) for each group. Table 2 summaries average daily weight gain (ADWG) for the post-challenge period by group. Figure 1 displays the percentage of animals with detectable amounts of INF-α at D29 and D35. Additional data analysis is in progress at the time of abstract preparation.

Table 1. Day 42 Percent Lung Lesions (Median)

Group	Treatment	Lung Lesions
1	Ingelvac PRRS® MLV	8.4[a]
2	Fostera® PRRS	12.9[a]
3	Placebo	25.4[b]

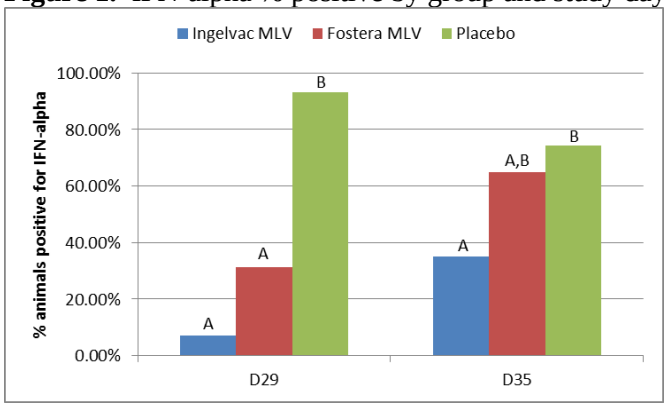
[a] significantly different from the placebo at P≤0.05

Table 2. Post-challenge ADWG

Group	Treatment	ADWG in lbs.
1	Ingelvac PRRS® MLV	0.61[a]
2	Fostera® PRRS	0.49[a]
3	Placebo	0.24[b]

[a] significantly different from the placebo at P≤0.05

Figure 1. IFN-alpha % positive by group and study day



A,B values are significantly different at P≤0.05

Conclusion

The pigs vaccinated with Ingelvac PRRS® MLV had significantly reduced lung lesions, and increased ADWG, in comparison to placebo vaccinated pigs, following challenge with a recent PRRSV RFLP 1-7-4 isolate. In addition, vaccination with Ingelvac PRRS® MLV resulted in a significantly lower percentage of animals with an IFN-α response as compared to placebos at D29 and D35.

References

1. Patterson, A., et al. 2013. *Proc Leman Swine Conf.*