

# Efficacy of Ingelvac PRRS<sup>®</sup> MLV against a heterologous PRRSV 1-7-4 RFLP challenge



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## INTRODUCTION

The use of Ingelvac PRRS<sup>®</sup> 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<sup>1</sup>. However, the efficacy of Ingelvac PRRS<sup>®</sup> 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 isolate from 2014.

## MATERIALS AND METHODS

At approximately three weeks of age (Day 0 of the study), 159 PRRSV naïve piglets were randomized into groups, and intramuscularly vaccinated with 2 mL of either a placebo (challenged controls, n=64; non-challenged, n=5), Ingelvac PRRS<sup>®</sup> MLV (n=45) or a competitor commercial modified live PRRS vaccine (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 IM and 2.0 mL IN (1 mL per nostril) with 10<sup>4.6</sup> TCID<sub>50</sub>/mL of PRRSV RFLP 1-7-4. Serum samples were collected periodically from D0 through termination of the study on D42. Pigs were weighed at D0, day of challenge (D28), and termination of the study (D42) to assess average daily weight gain (ADWG). On D42 (14 days post-challenge), all pigs were necropsied and lungs were scored for the presence of macroscopic lesions. Serum samples were tested by RT-PCR for the presence of viremia and by ELISA for the presence of anti-PRRSV antibody. 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 summarizes average daily weight gain (ADWG) for the post-challenge period by group. Figure 1 displays the post-challenge viremia by group.

**Table 1. Day 42 Percent Lung Lesions (Median)**

| Group | Treatment                      | Lung Lesions      |
|-------|--------------------------------|-------------------|
| 1     | Ingelvac PRRS <sup>®</sup> MLV | 8.4 <sup>a</sup>  |
| 2     | Competitor Vaccine             | 12.9 <sup>a</sup> |
| 3     | Placebo                        | 25.4 <sup>b</sup> |

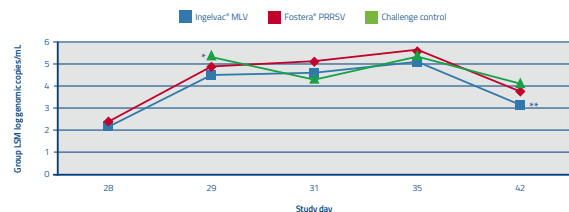
<sup>a</sup> significantly different from the placebo at p < 0.05

**Table 2. Post-challenge ADWG**

| Group | Treatment                      | Lung Lesions                       |
|-------|--------------------------------|------------------------------------|
| 1     | Ingelvac PRRS <sup>®</sup> MLV | 0.61 <sup>a</sup><br>(0.53, 0.70)* |
| 2     | Competitor Vaccine             | 12.9 <sup>a</sup><br>(0.41, 0.58)* |
| 3     | Placebo                        | 25.4 <sup>b</sup><br>(0.17, 0.31)* |

<sup>a</sup> significantly different from the placebo at p < 0.05  
\* ADWG (95% confidence intervals) in lbs. for the challenge phase

**Figure 1. Post-challenge Viremia – Group least square mean PRRSV qRT-PCR in serum**



<sup>a</sup> significantly different from the vaccinates at P < 0.001  
<sup>\*\*</sup> significantly different from Fosterer PRRS (P < 0.0017) and challenge control (P < 0.001)

## DISCUSSION AND CONCLUSION

The pigs vaccinated with Ingelvac PRRS<sup>®</sup> MLV had significantly reduced lung lesions, and increased ADWG, in comparison to placebo challenged control pigs. The Ingelvac PRRS<sup>®</sup> MLV group had a 20% and 61% higher ADWG when compared to the Fosterer<sup>®</sup> PRRS group and the challenge control group respectively. Ingelvac PRRS<sup>®</sup> MLV vaccinated pigs had a significant reduction in post-challenge viremia compared to both Fosterer<sup>®</sup> PRRS and challenge control pigs at D42. This study demonstrates the ability of Ingelvac PRRS<sup>®</sup> MLV to protect against a relevant PRRSV challenge.

## REFERENCES

1. Patterson, A., et al. 2013. Proc Leman Swine Conf.  
\* Fosterer<sup>®</sup> PRRS, Zoetis Inc.