

“VACCINATION WITH UNISTRAIN® PRRS IN PIGLETS REDUCES VIREMIA AND PRRSV SECRETION AFTER CHALLENGE WITH AN EAST EUROPEAN SUBTYPE 3 ISOLATE (LENA STRAIN)”

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INTRODUCTION

Lena strain is a highly pathogenic PRRSV subtype 3 strain isolated from a Belarusian farm with severe reproductive failure in sows and respiratory disorders in young piglets. The aim of the present study was to evaluate the cross-protection of a commercially available live attenuated PRRSV vaccine (UNISTRAIN® PRRS) assessing the evolution of viremia and secretion upon challenge with Lena strain.

MATERIALS AND METHODS

Twelve 4-weeks-old piglets, clinically healthy and free from virus and antibodies against PRRS were randomly assigned in two groups: in vaccinated group animals were intramuscularly vaccinated with UNISTRAIN® PRRS (VP-046 BIS) and control group was left unvaccinated. Four weeks after vaccination, all pigs were intranasally inoculated with the highly pathogenic Lena strain (subtype 1.3; 82.3 % ORF5 homology to the vaccine strain; 10^5 TCID₅₀/ml). Blood samples and nasal swabs were collected from all the animals at 0, 3, 5, 7, 10, 14, 21 and 28 days post challenge (dpc) to assess viremia (measuring virus titration of sera) and viral shedding (measuring virus titration of nasal swabs), respectively. Viremia and secretion were analysed using non-parametric Mann-Whitney ($p < 0.05$).

RESULTS

Virus was present in serum of all animals as of 3 dpc. A peak was observed at 10 dpc in

the control group ($4.2 \pm 0.2 \log_{10}$ TCID₅₀ / ml) and at 5 dpc in vaccinated group ($4.7 \pm 0.6 \log_{10}$ TCID₅₀ / ml). In the control group, viremia lasted at least until 28 dpc with 2 out of 6 animals (2.1 and $1.6 \log_{10}$ TCID₅₀ / ml). In the vaccinated group, viremia lasted at least until 21 dpc. Viremia was reduced 7 days in the vaccinated group although no significant differences were observed between groups. Virus secretion was observed as of 3 dpc in both groups. Titres peaked at 3 and 7 dpc in the control group (5.6 ± 0.8 and $5.4 \pm 0.6 \log_{10}$ TCID₅₀/100mg) group and at 5 dpc in vaccinated group ($5.0 \pm 0.3 \log_{10}$ TCID₅₀/100mg). In the control group, viral shedding was observed until at least 28 dpc and in the vaccinated group up till 21 dpc. Significant differences in secretion titers were found at 3, 7 and 10 dpc between groups. Moreover, the AUC value of virus secretion was significantly lower in the vaccinated pigs (11.6 ± 3.5) than in the non-vaccinated pigs (18.4 ± 1.9).

CONCLUSIONS

The results of the study demonstrate that vaccination with UNISTRAIN® PRRS provides a partial virological protection against challenge with the East European subtype 3 PRRSV strain Lena.



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