“Efficacy of Intradermal Vaccination with Unistrain® PRRS in Piglets after a Heterologous Challenge at 24 Weeks Post-Vaccination”

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INTRODUCTION

The aim of this study was to demonstrate that UNISTRAIN® PRRS administered by the intradermal route (ID) with a suitable device was as effective as when administered with a conventional intramuscular injection (using needle and syringe) in piglets after a heterologous challenge at 24 weeks post-vaccination.

MATERIALS AND METHODS

Thirty-seven 2-week-old piglets, clinically healthy and free from virus and antibodies against PRRS, were randomly assigned to three different groups: ID vaccinated group (n=11), intramuscularly (IM) vaccinated group (n=12) and control group (CTR; n=14). Animals in the ID group were immunised intradermally with UNISTRAIN® PRRS (0.2 ml/dose; 10^3.5 CCID_50/animal) administered with a suitable device. Animals in the IM group were immunised intramuscularly with UNISTRAIN® PRRS (2 ml/dose; 10^3.5 CCID_50/animal; administered with needle and syringe. The animals in the CTR group received 2 ml of PBS using the same strategy as in the IM group. At 26 weeks of age, all piglets were challenged by the intranasal route with a heterologous pathogenic strain of European genotype I of the PRRSV (89% ORF5 homology; 10^6.39 CCID_50/animal). Animals were examined daily after challenge during the following 35 days. Virus detection was performed by real time RT-qPCR (at 2, 5, 8, 14, 21, 28 and 35 days post-challenge) and the Area Under the Curve (AUC) of viraemia was calculated from the challenge to the end of the study. AUC and length of the viraemia were analysed using a non-parametric Mann-Whitney U test (p<0.05) and percentage of viraemic animals using a two-tailed chi-square test/Fisher exact (p<0.05).

RESULTS

Vaccinated groups had a significantly lower serum viral load, as determined by AUC (IM=0.0x10^0 CCID_50/ml; ID=0.0x10^0 CCID_50/ml), when compared to non-vaccinated pigs (CTR=3.1x10^4 CCID_50/ml).

In the vaccinated groups, a significant reduction in the number of viraemic animals was observed at: 5, 8, 14, 21, 28 and 35 days after challenge (Figure 1).

CONCLUSIONS

The obtained results allow us to conclude that the duration of immunity of the UNISTRAIN® PRRSV vaccine was achieved 24 weeks after vaccination. In addition, UNISTRAIN® PRRS administered in piglets by the intradermal route with a suitable device had a comparable effect on the fast clearance of the virus to IM administration using a traditional syringe and needle. UNISTRAIN® PRRS administered ID or IM appears to be a useful tool to decrease viraemia and thus achieve a reduction in the infection pressure of PRRSV on an infected farm.