"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

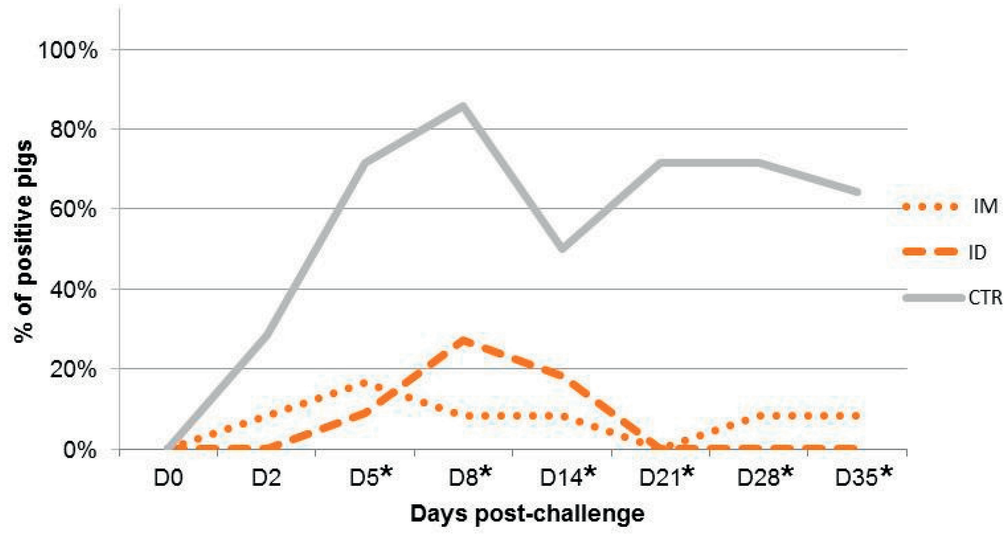
Thirty-seven 2-week-old piglets, clinically healthy and free from virus and antibodies against PRRS, were randomly assigned to three different groups: ID vaccinated group (n=11), intramuscularly (IM) vaccinated group (n=12) and control group (CTR; n=14). Animals in the ID group were immunised intradermally 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).

Figure 1. Virus detection in serum.



*Statistically significant differences between groups ($p<0.05$).

The length of the viraemia after challenge (Table 1) was also statistically lower in the vaccinated groups compared to non-vaccinated pigs.

Table 1. Length of viraemia after challenge.

Group		IM	ID	CTR
Days of viraemia*	*Mean*	6.8[a]	4.7[a]	29.1[b]
	SD	12.3	5.8	9.3

[a,b] Different superscripts indicate statistically significant differences between groups ($p<0.05$).

CONCLUSIONS

The obtained results allow us to conclude that the duration of immunity of the UNISTRAIN® PRRS 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.

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