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IMPACT OF REPEATED IMMUNIZATION WITH A CLOSELY RELATED VACCINE (INGELVAC MLV) ON PRRSV VR-2332 PERSISTENCE AND TRANSMISSION IN A POPULATION OF PIGS

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Introduction

The use of mass vaccination combined with unidirectional flow, breeding herd closure and/or partial depopulation has been successful on PRRS control and eradication (1,5,6). However, the effect on PRRSV persistence and transmission in these previously infected populations has not been studied. The aim of this study was to determine if vaccination can be an important component in PRRS control-eradication programs, by evaluating the effect of one, two or three doses of PRRSV MLV vaccine on persistence and transmission in a population of pigs under commercial conditions.

PRRSV persistence has been reported up to 120 (4), 135 (2) and 157 (7) days post-inoculation (DPI) on experimental infected pig tissues by PCR. Transmission of PRRSV from experimental infected pigs to naïve sentinels has been detected up to 86 DPI (3).

Materials and Methods

Three hundred thirty two (332), 6 to 8 week-old PRRSV-naïve pigs were divided into 5 different groups and barns, 4 groups with 80 pigs each, identified from A to D and the negative control group had 12 pigs (E). Ten pigs per group, from A to D and 5 pigs in group E were randomly selected as monitors and serum samples were taken at 0, 7, 14, 37, 67 and 97 DPI in order to evaluate presence of PRRSV nucleic acid in serum by PCR (Taqman ® RT PCR) and the antibody response by ELISA (IDEXX ELISA).

On day 0, pigs in groups A to D were inoculated intranasally with 3 mL of PRRSV VR-2332 (10^4 $TCID_{50}$). On day 7 PI, groups B, C and D were vaccinated intramuscularly with 2 mL of Ingelvac ® PRRS MLV. Groups C and D were re-vaccinated at 37 DPI and the third dose of group D was applied on day 67 PI. Group A was inoculated and not vaccinated. Ten PRRSV-naïve, age matched sentinel pigs were introduced in groups A and B at 37, 67 and 97 DPI; in group C at 67 and 97 DPI; and in group D at 97 DPI. All of them removed and slaughtered 30 days after introduction. To evaluate the PRRSV persistence, 10 pigs per group were randomly selected and slaughtered from groups A and B at days 37, 67 and 97 PI; from group C at 67 and 97 DPI; and from group D at 97 DPI. Tonsil samples and an individual animal pool conformed by lung, sternal lymph node and superficial inguinal lymph node were tested by PCR (Taqman ® RT PCR).

Results

Pigs in negative control group remained ELISA and PCR negative throughout the study. PRRSV nucleic acid was detected by PCR in serum from day 7 PI in all infected groups (12/12 in A, 7/12 in B, 11/12 in C and 11/12 in D) and declined very consistently until 67 DPI when all the serum samples were PCR negative. ELISA positive samples were detected from day 14 PI and all the pigs become seropositive at 37 DPI.

Table 1. Proportion of pigs detected with PRRSV in tissues by PCR and transmission to sentinel pigs 37, 67 and 97 DPI.

Group	37 DPI		67 DPI		97 DPI	
	Pers	Trans	Pers	Trans	Pers	Trans
A	9/10	NA	9/9	YES	8/10	YES
B	9/10	NA	9/10	YES	5/10	NO
C	NA	NA	8/10	NA	5/10	NO
D	NA	NA	NA	NA	4/10	NA
E	0/6	NA	0/6	NO	0/6	NO

Pers: proportion of persistence pigs detected by tissue PCR.

Trans: transmission to the sentinel pigs (YES OR NO).

NA: not available.

This study, designed to 127 DPI is still being performed; therefore statistical analyses and other tests such quantitative PCR and viral sequencing are in process.

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