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duration of viraemia and level of clinical protection

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SIMULTANEOUS VACCINATION WITH PRRS MLV AGAINST BOTH PRRSV TYPE 1 AND TYPE 2: DURATION OF VIRAEMIA AND LEVEL OF CLINICAL PROTECTION

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Introduction

Both type 1 (subtype 1) and type 2 PRRSV are currently circulating in Denmark. In some double infected herds, the pigs are simultaneously vaccinated with PRRS modified live vaccines (MLV) against type 1 and type 2. After vaccination with a single PRRS ML vaccine, viraemia can be measured for five to seven days (Nielsen et al., 1997). There is, however, a lack of data on the impact on vaccine efficacy and viral dynamics following simultaneous administration of PRRSV MLVs against both type 1 and type 2 PRRSV.

The objective of this experimental study was to compare the level of viraemia and clinical responses of single vaccinated pigs with responses of double vaccinated pigs. Furthermore, the efficacy of the two vaccination strategies was assessed following challenge with homologous and heterologous virus strains.

Materials and methods

Sixty-six, four-week-old PRRSV-negative pigs were included in the study. The pigs were purchased from a specific pathogen-free herd and verified free of a range of pathogens including PRRSV by serology. The pigs were housed at the experimental animal facilities at the National Veterinary Institute under appropriate biosecurity conditions. On arrival (week 0), the pigs were randomly distributed into four groups (Table 1). Each group was housed in a separate room. One week after arrival (week 1), the pigs in groups 1-3 were vaccinated according to the schedule listed in Table 1. Nine weeks after vaccination, all pigs were moved to new groups according to the challenge strain. The pigs were then challenged with PRRSV type 1 (strain 18794), PRRSV type 2 (strain 19407b) or PRRSV atypical strain (strain BOR59) by the intranasal route according to Table 1.

Blood samples were collected daily from all pigs during the first week after vaccination and challenge. In the remaining periods, samples were taken once a week from all pigs.

The level of PRRS virus was quantified by real-time reverse transcriptase Polymerase Chain Reaction (RT-PCR). Initially, samples from each group were tested in pools of nine and subsequently analysed individually if the pool tested positive.

Group	No. pigs	PRRSV vaccination	PRRSV challenge
VAC-T1	18	Porcilis® PRRS VET	6 pigs type 1 6 pigs type 2 6 pigs atypical
VAC-T2	18	Ingelvac® PRRS VET	6 pigs type 1 6 pigs type 2 6 pigs atypical
Vac-T1T2	18	Porcilis® PRRS VET + Ingelvac® PRRS VET	6 pigs type 1 6 pigs type 2 6 pigs atypical
Control	12	No vaccination	4 pigs type 1 4 pigs type 2 4 pigs atypical

Table 1. Number of pigs in each of the four groups, PRRS vaccination and PRRSV challenge.

Results and discussion

To date, only pooled samples have been analysed. There seemed to be a comparable duration of viraemia after vaccination with a single PRRSV vaccine and after simultaneous vaccination with the two PRRSV vaccines. Similarly, the duration of viraemia in pigs vaccinated with the type 2 vaccine was similar to that in pigs vaccinated with the type 1 vaccine.

No clinical symptoms were observed after challenge. In pigs vaccinated against PRRSV type 2, no viraemia was measured after challenge with type 2 virus. In all other groups, viraemia was measured at various times after challenge. In general, there was limited cross-protection against challenge with heterologous virus, and none of the vaccines protected against challenge with the atypical BOR59 strain. Further results will be presented at the meeting.

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References

1. Nielsen et al. (1997). Vet. Microbiol, 54, 101-112.