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NEUTRALIZING ANTIBODIES AGAINST PRRS VIRUS IN BREEDING PIGS VACCINATED WITH THE COMBINED ADMINISTRATION OF UNISTRAIN® PRRS AND ERYSENG® PARVO

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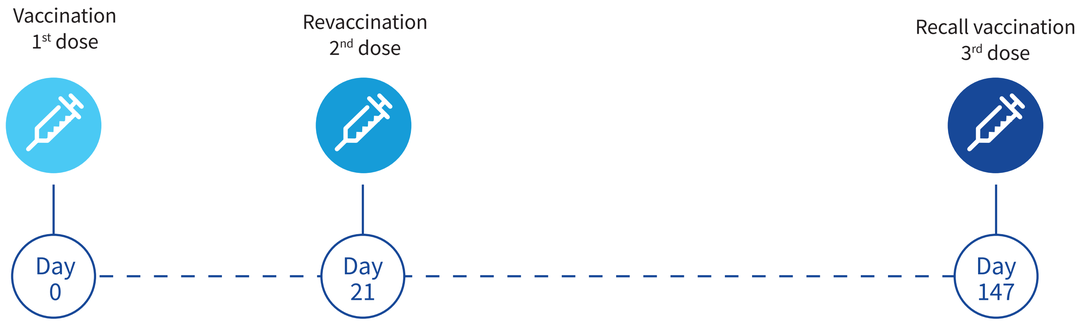
INTRODUCTION

Breeding sows are repeatedly vaccinated against several agents. To simplify complex immunization schedules combined administration of vaccines are applied.

Recently, the combined administration of UNISTRAIN® PRRS -PRRSV MLV vaccine-, and ERYSENG® PARVO -inactivated *Porcine Parvovirus* and Swine Erysipelas- has been licensed. In a previous study, this combined administration demonstrated a long-term homologous and heterologous cell-mediated immunity (CMI) during a common scheme including vaccination, revaccination and recall vaccination four months later[1]. Here, the dynamics of homologous neutralizing antibodies (NA) against the PRRSV MLV vaccine strain during this immunization schedule are presented.

MATERIALS AND METHODS

Ten six-month-old PRRS-naïve healthy gilts were randomly allocated into two groups: vaccinated (V) and control (C). After one week of acclimatization (day 0), animals in group V were intramuscularly vaccinated with 2 mL freshly mixed UNISTRAIN® PRRS and ERYSENG® PARVO vaccines (Vaccination, 1st dose). Animals were vaccinated again with the same mixture at days 21 (Revaccination 2nd dose) and 147 (Recall vaccination, 3rd dose). Vaccines were prepared and diluted following the manufacturer's recommendations. Gilts in group C received 2 ml of sterile PBS at the same time points.



Blood samples were collected at days 0, 21, 28, 42, 147 and 154. NAs against the PRRSV MLV vaccine were measured with a viral neutralization test following a previously described procedure with minor modifications[2]. Neutralization titres were expressed as the $\log_2$ of the reciprocal of the titre.

RESULTS

Homologous NAs were detected as early as day 21 in all vaccinated animals (individual $\log_2$ titres ranged between 2 and 3) and remained positive throughout the study. From day 21 onwards, NA titres increased and peaked at day 42 (mean titre = 4.6 ± 1.2). Remarkably, the titres remained unchanged during the four-month interval. Time point comparisons of the NA titres showed a significant boost after the second administration of the vaccine; so to say comparing days 21 and 28 post-vaccination ($p < 0.05$).

Table 1: Homologous viral neutralization test (VNT): neutralizing antibodies against the PRRS MLV vaccine strain. Results are expressed as the mean log2 ± standard deviation.

		DAYS OF THE EXPERIMENT					
	Group	0	21	28	42	147	154
Proportion of positive pigs			6/6	6/6	6/6	6/6	6/6
Homologous VNT expressed as log2 titer (Range)	**V**	0/6	2.5 ± 0.5 (2 - 3)	3.8 ± 0.4* (3 - 4)	4.6 ± 1.2 (3 - 6.6)	3.9 ± 1.3 (2 - 6.0)	4.0 ± 0.4 (3.6 - 4.6)
	C	0/4	0/4	0/4	0/4	0/4	0/4

**Statistically significant differences between a given sample and the previous one ($p < 0.05$) (Friedman test).*

DISCUSSION

The combined administration of UNISTRAIN® PRRS and ERYSENG® PARVO based on primary vaccination (two shot 3 weeks apart) and revaccination 4 months later showed: 1) to boost CMI after each administration against genetically and immunologically diverse PRRSV strains[1] (previously published), and 2) to induce a homologous NA response by day 21, which remained constant throughout the study. Our results demonstrate that the combined administration induced a sustained humoral and cellular immunity spanning at least four months. Overall, it supports the validity of the combined administration in this vaccination schedule, which is commonly implemented for gilts and sows in the field.

REFERENCES

[1] Miranda *et al.*, 2016; IPVS2016-1426
[2] Yoon *et al.*, 1994; J Vet Diagn Invest; 6:289–92.

The complete information of this trial has been published as manuscript "Safety and long-lasting immunity of the combined administration of a modified-live virus vaccine against porcine reproductive and respiratory syndrome virus 1 and an inactivated vaccine against porcine parvovirus and Erysipelothrix rhusiopathiae in breeding pigs" in the Porcine Health Management journal.