

EFFICACY OF SIMULTANEOUS ADMINISTRATION OF A MODIFIED LIVE PRRS (EU STRAIN) AND A NEW INACTIVATED *M. HYOPNEUMONIAE* VACCINE

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Introduction

The porcine reproductive and respiratory syndrome virus (PRRSV) and *M. hyopneumoniae* (*M. hyo*) are the two major pathogens that are involved in the porcine respiratory disease complex (PRDC). Vaccination against these pathogens is therefore widely practised, but it has been shown previously that infection or vaccination with US-type PRRSV will decrease the efficacy of an *M. hyo* vaccine (1), thereby limiting the possibilities for immunoprophylaxis against PRDC.

In the present study, it was tested if a similar interference phenomenon could be observed when using a vaccine based on a European-type strain of PRRSV. To this aim, a newly available commercial *M. hyo* bacterin (Porcilis M Hyo) was used to reconstitute a modified live PRRSV vaccine (Porcilis PRRS) just prior to injection. The lyophilized PRRSV vaccine strain is normally reconstituted in a tocopheryl-based adjuvant, which is the same adjuvant that is present in Porcilis M Hyo. After combined vaccination, safety and efficacy parameters were analyzed.

Materials and Methods

Exp. 1: Groups of 12 SPF piglets were used.

Group 1; vaccination with *M. hyo* vaccine at one and four weeks of age.

Group 2; vaccination with *M. hyo* vaccine at one week of age and vaccination with PRRSV vaccine reconstituted in *M. hyo* vaccine at four weeks of age.

Group 3; unvaccinated controls.

Exp 2: Groups of 12 commercial MDA+ piglets were used.

Group 1; vaccination with *M. hyo* at one week of age and vaccination with PRRSV vaccine reconstituted in *M. hyo* vaccine at four weeks of age.

Group 2; vaccination with PRRSV vaccine reconstituted in Diluvac Forte (tocopheryl-based adjuvant) at four weeks of age.

In both experiments, the animals were infected with an *M. hyo* field isolate at six weeks of age. Challenge infection was performed with a culture of strain 98 (obtained from Dr. N. Friis, Danish National Veterinary Laboratory) by intratracheal inoculation on two consecutive days, followed by necropsy to evaluate *M. hyo*-induced lung lesions three weeks later. Blood samples were taken for serology at regular intervals.

Results

No abnormal local or systemic reactions were observed after combined vaccination with Porcilis M Hyo and Porcilis PRRS. Details on the safety of the simultaneous use of the two products are provided in an accompanying abstract by Drexler et al..

In both SPF and commercial piglets, combined vaccination did not interfere with the efficacy of the *M. hyo* vaccine as measured by protection against challenge infection (Tables 1 and 2). Also, no negative effect of combined vaccination on the antibody titer against PRRSV was measured (data not shown).

Table 1. *M. hyo*-induced lung lesions after challenge infection of SPF pigs (Experiment 1). Lung lesion score (LLS) according to Goodwin & Whittlestone (1969).

Group	1 (<i>M. hyo</i>)	2 (<i>M. hyo</i> /PRRS)	3 (control)
LLS*	5.9 ^a ± 7.0	3.7 ^a ± 2.8	13.4 ^b ± 7.5

Table 2. *M. hyo*-induced lung lesions after challenge infection of commercial pigs (Experiment 2).

Group	1 (<i>M. hyo</i> /PRRS)	2 (PRRS)
LLS*	1.3 ^a ± 2.1	11.7 ^b ± 10.2

*: within one experiment, groups with different superscripts are significantly different (p<0.05, Mann Whitney U-test)

Discussion

The interference that was previously reported for US PRRSV (vaccine) strains (1) was not found in the present study. Whether this is due to differences between US and European PRRSV strains or is relating to characteristics of the specific PRRSV vaccine strains tested needs further investigation. It has been shown for the PRRSV vaccine strain used in the current study, however, that it does not induce the massive influx of mononuclear cells into the lungs that is associated with an infection with wild-type PRRSV (2). This suggests that the vaccine strain has no or reduced immunomodulating properties, which could explain the observed absence of interference with *M. hyo* vaccine efficacy.

In conclusion, this is the first report showing the equal efficacy of an *M. hyo* vaccine when combined with a PRRSV vaccine compared to *M. hyo* vaccination only, in a pig challenge model involving both SPF and commercial animals. The combined use of these two vaccines, which have individually been shown to be safe and efficacious under field conditions (3, 4), could lead to new intervention strategies for PRDC.

References

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