The **Reference** in **Prevention** for **Animal Health**

2019 11th EUROPEAN SYMPOSIUM OF PORCINE HEALTH MANAGEMENT
UTRECHT NETHERLANDS 22-23-24 MAY 2019

COMPARATIVE STUDY OF THE HUMORAL RESPONSE AND SAFETY EFFECTS OF TWO COMMERCIAL REPRODUCTIVE VACCINES UNDER FIELD CONDITIONS IN BREEDING SOWS

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BACKGROUND AND OBJECTIVES

The economic impact due to reproductive diseases such as Swine Erysipelas (SE) and Porcine Parvovirus (PPV) during lactation and gestation period, is one of the major concerns on commercial farms[1]. The protective role of specific antibodies against SE and PPV enhanced through vaccination is key to control these diseases on sows[2].
The aim of this study was to assess and compare the humoral response and safety effects (rectal temperature and daily feed intake) after vaccination against SE and PPV using two commercial bivalent vaccines under field conditions.

MATERIALS AND METHODS

Two different trials were performed on two commercial farms to assess the humoral immune response and safety effects. The study animals were randomly assigned to two groups. Group 1 (G1) received ERYSENG® PARVO (HIPRAMUNE® G adjuvant), whilst Group 2 (G2) received Vaccine B (aluminium hydroxide adjuvant). Both vaccinations were performed following the manufacturer's instructions.

Humoral response: forty seronegative gilts were vaccinated against SE and PPV, revaccinated and randomly divided into two groups (G1 [20 gilts] and G2 [20 gilts]). The serological response was assessed at 0, 21, 42 and 63 days post vaccination (dpv) using a commercial ELISA kit (CIVTEST® SUIS SE/MR) and haemagglutination inhibition assay (HI) for quantification of SE and PPV antibodies, respectively. The SE kit's suitability for detection of anti-SE antibodies without bias towards any of the vaccines was previously reported[3].

Safety effects: thirty-eight multiparous sows and ten gilts were vaccinated once, ten days after farrowing, thus, during lactation. Safety effects were assessed by monitoring rectal temperature (RT) on day 0, 6 hours post-vaccination (hpv), 24 hpv and 30 hpv. Sow feed intake was measured two days before vaccination (Day -2, -1), on vaccination day (Day 0) and two days after vaccination (Day +1, +2), using a computer-controlled dosing device for farrowing pens.

RESULTS

Regarding the humoral response, SE and PPV antibodies in gilt serum increased significantly in G1 and G2 at all time points compared to day 0 of the study (Mann-Whitney U test; *p-value*<0.05) (Figures 1 and 2). It is noteworthy that G1 showed significant differences (Mann-Whitney U test; *p-value*<0.05) compared to G2 from day 21 until the end of the study for SE and PPV titres (Figure 1 and 2). In addition, G1 achieved 100% SE seropositive gilts from day 21 until the end of the study, while G2 did not reach 95% SE seropositive gilts throughout the study (Figures 1 and 2).

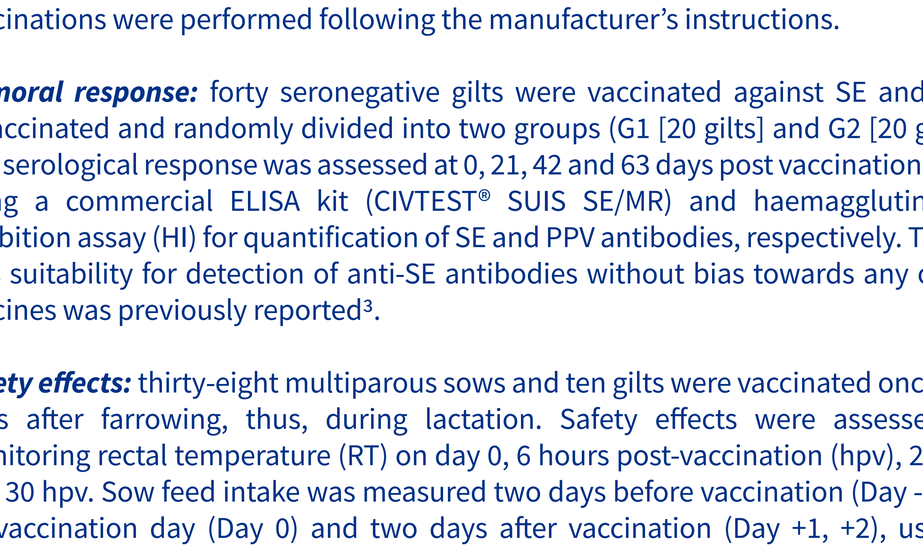

Figure 1. Mean antibody titres (±SD) against SE on days 0, 21, 42 and 63 of the study. *Statistically significant differences (Mann-Whitney U test *p<0.05*).

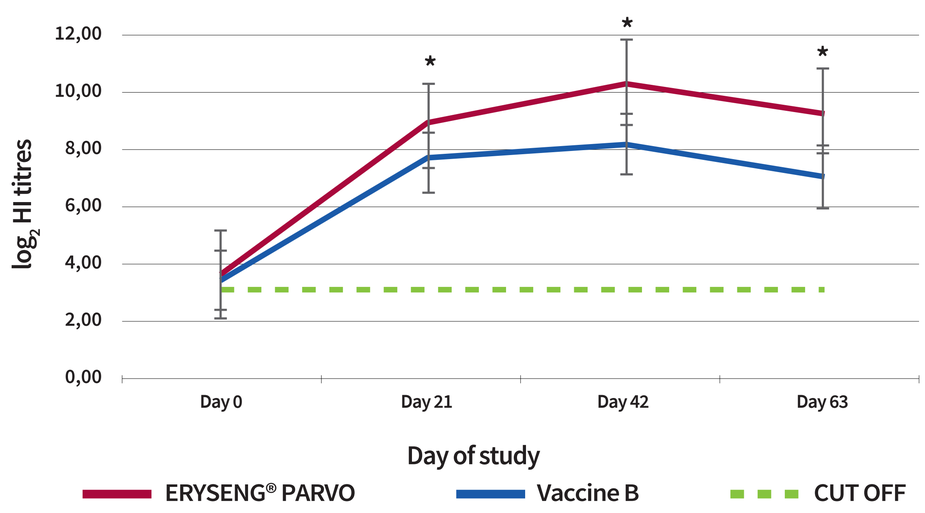

Figure 2. Mean PPV log_2 HI titres (±SD) on days 0, 21, 42 and 63 of the study. *Statistically significant differences (Mann-Whitney U test *p<0.05*)

No differences between G1 and G2 were observed in terms of safety effects after vaccination (Mann-Whitney U test; *p-value*>0.05). Likewise, mean RT remained within the physiological range (<40ºC) in all animals. Furthermore, no differences between G1 and G2 were observed regarding the mean sow feed consumption and percentage of feed consumed per group per day (Figure 3) during the study.

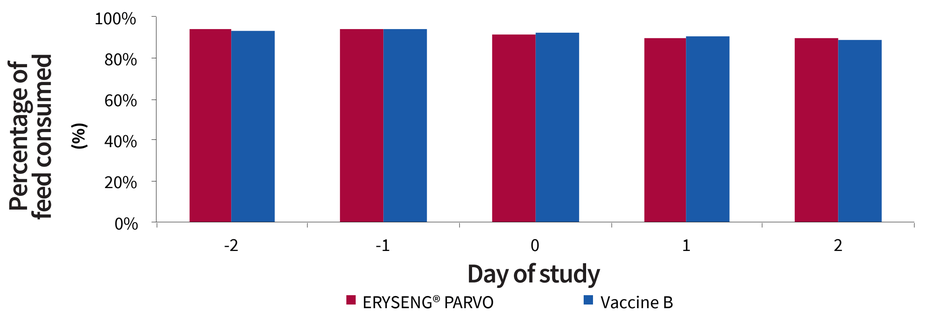

Figure 3. Mean percentage (%) of feed consumed per group per day.

DISCUSSION & CONCLUSION

The results of this study demonstrate that seroconversion against SE and PPV after vaccination with ERYSENG® PARVO was higher and tended to last longer than Vaccine B. This could be related to a different recognition of the antigen by the immune system and different effects of the adjuvants. On the other hand, both vaccines showed a similar degree of safety when injected under similar conditions.

ACKNOWLEDGEMENTS

The authors wish to thank Maria Bielsa and Jorge Sistac for their technical assistance and UCAM staff for trial monitoring, statistical analysis and laboratory support.

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2018-0204