

# Safety comparative study of two reproductive vaccines administered during lactation

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## Introduction

Vaccination with Parvovirus, Erysipelas, and Leptospira is common in most pig farms around the world to prevent infectious reproductive problems.<sup>1,2</sup> The recommended vaccination plan for Parvovirus, Erysipelas and Leptospira is mainly during lactation, thus preventing a future infection during pregnancy. The safety of reproductive vaccines has always been a concern because they are administered at the time of high milk production by the sow, around 2 to 3 weeks after farrowing<sup>3</sup> and, therefore, any safety issues with the administration of reproductive vaccines can affect milk production and piglet performance until weaning.<sup>4</sup> The safety difference between commercial reproductive vaccines has already been previously reported.<sup>5</sup> The objective of this study is to compare how the safety difference between two reproductive vaccines can affect the production performance of sows and piglets during lactation.

**Key words:** lactation, vaccine safety, production performance

## Materials and methods

This study was conducted in a herd of 580 sows, working in a four-week batch system, with a total of approximately 110 farrowings per batch. The study was divided in two repetitions, so that the desired number of farrowing sows was obtained. Experimental design: 160 sows were selected in two repetitions (80 sows per repetition) and divided in 2 groups per repetition. Treatments: Group A: vaccinated with a trivalent vaccine (ZOE-TIS); Group B: vaccinated with ERYSENG® PARVO/LEPTO (HIPRA). Both vaccines were administered by the intramuscular route (2 mL/dose) according to the manufacturer's instructions. The vaccination plan was the same for both groups, one dose 13 days after farrowing. Sows were divided randomly in two groups (A and B) on farrowing day. Piglets from selected sows were identified with numbered ear tags and two different colors that indicated the group they belonged to (744 piglets in Group A and 827 piglets in Group B). Vaccine safety was measured indirectly through the absence/presence of fever (mean rectal temperature [MRT] in °C) at 6, 12 and 24 hours post vaccination (hpv). Sow feed intake was measured two days before vaccination (Day -1, -2), on vaccination day (Day 0) and two days after vaccination (Day +1, +2). Litters were weighed at 7 days of age and at 21 days of age (weaning day). Statistical analysis software (SPSS) was used to check differences between the groups.

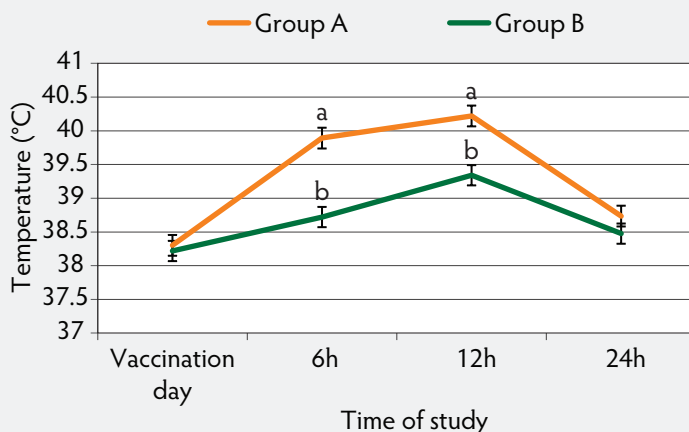
## Results and discussion

Statistically significant differences were observed in MRT measured at 6 and 12 hpv between both groups. In Group A, 66% and 77% of animals had MRT above the physiological temperature ( $> 39.5^{\circ}\text{C}$ ) at 6 hpv ( $39.89 \pm 0.21^{\circ}\text{C}$  vs.  $38.72 \pm 0.17^{\circ}\text{C}$  in Group B sows), and at 12 hpv ( $40.22 \pm 0.15^{\circ}\text{C}$  vs.  $39.34 \pm 0.21^{\circ}\text{C}$  in Group B sows), respectively (Mann-Whitney U test,  $P < 0.05$ ) (Figure 1). A statistically significant difference was also observed in sow feed intake between the experimental groups. Thus, Group B consumed, in average, 0.559 kg more than Group A on vaccination day ( $6.95 \pm 0.34$  kg/day vs.  $6.37 \pm 0.36$  kg/day in Group A sows); and the day after, Group B consumed 0.392 kg more than Group A ( $7.29 \pm 0.33$  kg/day vs.  $6.90 \pm 0.30$  kg/day in Group A sows) (Mann-Whitney U test,  $P < 0.05$ ). At weaning, litters from Group B sows showed an increase of 119 g per piglet in body weight compared with litters from Group A sows ( $5.63 \pm 0.14$  g vs.  $5.54 \pm 0.19$  g in Group A litters), although it did not reach statistical significance (t-student test,  $P = 0.3$ ) (Figure 3).

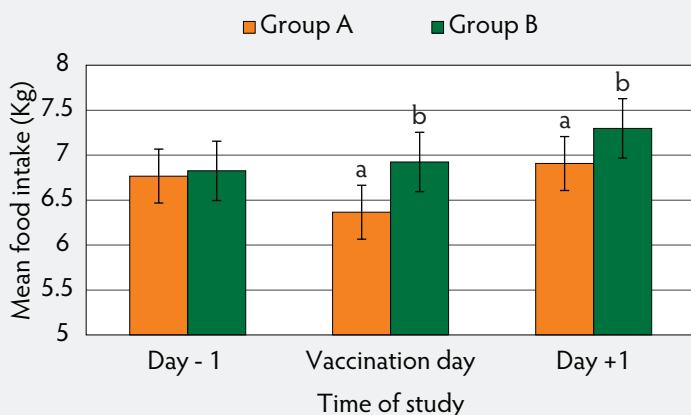
## Conclusion

The vaccine administered to Group A showed safety concerns due to a significant increase in mean rectal temperature, which negatively affected sows feed intake during lactation. Reduced

**Figure 1:** Mean rectal temperature (°C) on vaccination day, 6h, 12h and 24h after vaccination ( $\pm$  SEM). Different super indexes at each time point show statistically significant differences ( $P < 0.05$ ).

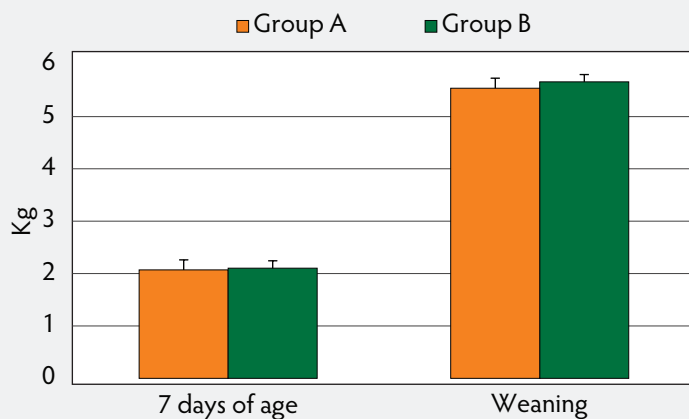


**Figure 2:** Mean feed consumption per sow one day before vaccination (-1), on vaccination day and one day after vaccination (+1) ( $\pm$  SEM). Different super indexes at each time point show statistically significant differences ( $P < 0.05$ ).



feed intake during lactation causes reduced milk production<sup>6</sup> and this, consequently, could negatively affect piglet performance until weaning. Further studies should determine how the lack of safety of some reproductive vaccines could affect the reproductive performance of the sow during insemination and gestation, since previous studies have already reported the negative impact of food restriction during lactation on the ovarian development of the sow.<sup>7</sup>

**Figure 3:** Mean piglet weight at birth and at weaning ( $\pm$  SEM).



## References

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