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Effect of group vaccination of sows and gilts against Salmonella Typhimurium on Salmonella serology and excretion in sows and their offspring

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Introduction

Vaccination might be effective to control *Salmonella* infections at farm level. The present study evaluated the effect of group vaccination of sows and gilts against S. Typhimurium (ST) on *Salmonella* serology in sows and their offspring and the excretion in the offspring in three pig farms.

Materials and Methods

In each farm (A-B-C), all sows and gilts were vaccinated twice with an attenuated live vaccine (Salmoporc®, IDT Biologika) (3 weeks apart, subcutaneously, 1 mL/dose). From 3 months after the group vaccination onwards, all sows were given a booster dose 3 weeks before every farrowing. The farms were monitored serologically (sows and their offspring at slaughter age) and bacteriologically (fattening pigs of 18 and 26 weeks of age) one year before and one year after the group vaccination.

The presence of ST-field strain was evaluated based on ISO6579:2002, serotyping and distinguishing field/vaccine-strains using IDT Salmonella Diagnostikum®. Sera were analyzed by ELISA (IDEXX) and S/P-ratios were assessed. Data were analyzed using a logistic regression model (bacteriology) or a linear regression model (serology).

Results

After group vaccination, the mean S/P-ratios of the sows increased from 1.60 to 2.97 in farm A, from 1.58 to 1.85 in farm B and from 1.31 to 2.14 in farm C. The mean S/P-ratios of the offspring at slaughter age decreased from 0.99 to 0.72 in farm A, from 1.48 to 0.83 in farm B and from 2.69 to 1.57 in farm C. In the combined analysis of all farms, the increase in the S/P-ratios of sows and the decrease in the S/P-ratios of their offspring at slaughter age were both significant ($p<0.001$ and $p=0.001$, respectively). After group vaccination, the percentage ST-field strain positive fecal and overshoe samples decreased from 17% to 11% ($p=0.242$) and from 15% to 7% ($p=0.092$) in the fattening pigs of 18 and 26 weeks of age, respectively. None of the collected samples tested positive for the vaccine strain.

Discussion and Conclusion

Group vaccination of sows and gilts induced a serological response in sows and resulted in significantly lower S/P-ratios in their offspring at slaughter age, although the excretion of ST-field strains in the offspring of the sows did not significantly decrease.

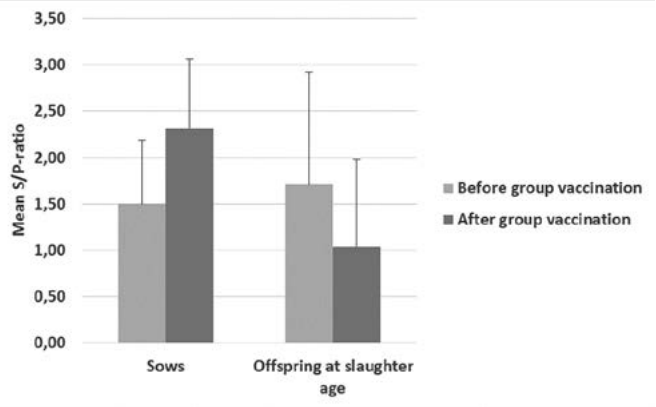

Figure 1: Mean S/P-ratios and standard deviations (SD) from the sows and their offspring at slaughter age before and after group vaccination on farms A, B and C.
The increase in the S/P-ratios of sows and the decrease in the S/P-ratios of their offspring at slaughter age were both significant ($p<0.001$ and $p=0.001$, respectively)

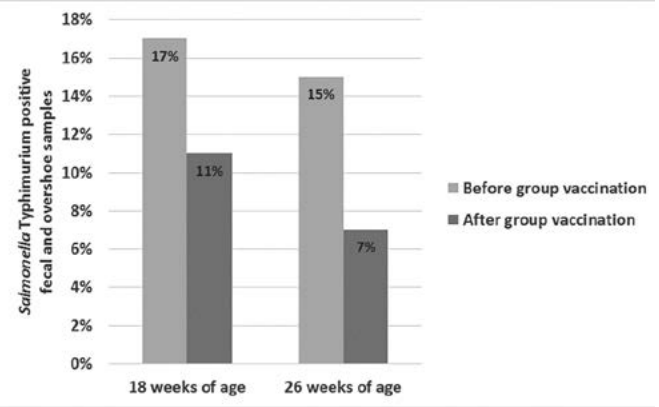

Figure 2: Percentage Salmonella Typhimurium positive fecal and overshoe samples collected from the offspring at 18 and 26 weeks of age before and after group vaccination on farms A, B and C.
The excretion of Salmonella Typhimurium did not significantly decrease