

032

Detection of Salmonella antibodies in oral fluid samples from pigs. A tool for easier monitoring of fattening Herds?

Harlizius J.¹, Erdmann C.², Tschentscher A.², Lambrecht C.³, Schütze S.³, Strutzberg-Minder K.²

¹Chamber of Agriculture North Rhine-Westphalia, Animal Health Services, Bad Sassendorf, Germany, ²IVD Innovative Veterinary Diagnostics, Seelze, Germany, ³Chamber of Agriculture North Rhine-Westphalia, Bad Sassendorf, Germany

Introduction

In Germany, all pig-fattening farms take part in a mandatory serological screening for Salmonella via meat juice or blood samples shortly before slaughtering. Depending on the results, farms are classified in 3 categories (cat. 1: 0-20% positive samples, cat. 2: 20-40% positive samples, cat.3 > 40% positive samples). Within the framework of the German-Dutch INTERREG V A-project Food Protects, we tested for antibodies against Salmonella spp. in oral fluids (OF) for classification of the herds.

Material and Methods

We chose 10 pig farms with a high and 10 with a low burden of Salmonella for the study. We took 2 x 5 blood (BS) samples, 2 x 1 OF and one pooled faecal sample at the same day in groups at beginning, in the middle and at the end of the fattening period. In one farm with a high burden, we followed one group and took samples from 2 pigs from the 10th to the 22th week of life. We took OF every week and BS every 4th week.

Individual serum samples were analysed by Swine Salmonella ELISA IDEXX and compared to the OF samples using another Swine Salmonella ELISA adapted to OF by using a special conjugate appropriate for testing OF samples. The dilution of BS was 1:100 and the dilution of OF was 1:2. For the OF samples, we prolonged the incubation time from 60 min (BS) to 120 min.

The cut-off value for Salmonella OF ELISA was determined by ROC analysis.

Results

For the OF Swine Salmonella-ELISA Kit, the cut-off values of 29 OD% (positive) and 10 OD% (negative) were determined at the specificity and sensitivity level of greater than 95%. Results achieved by the OF Swine Salmonella ELISA represented the approximate mean of the results of all individual BS samples of the same animal group. The 120 statistical mean values from BS results were compared to OF results of the same animal group; 94 (78.3%) of these results were identical, in less than 13.3% (10 and 16 animal groups) the results differed between the BS- and OF-ELISA.

Discussion and Conclusion

OF is a good tool for Salmonella herd monitoring. We could detect herds with a high burden of Salmonella comparable using BS-ELISA. It is easy to take the OF-samples and you can take them more often. In the BS we found more individual different and you have to take more samples. With OF an additional diagnostic tool is available to classify herds.

References

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