Prevalence of Salmonella spp. in piglet producing and rearing systems in North-Rhine-Westphalia

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Introduction

Salmonella is well as in Europe, Salmonellosis is still the second most commonly recorded zoonosis (EFSA & EEC 2017, RKI 2018). Fattening farms are committed to do frequent monitoring to reduce entry of Salmonella spp. in the food chain. This is regulated by law (Schweine-Salmonellen-Verordnung) since 2007. However, one problem, especially in farms with good hygiene management, is the housing of Salmonella-infected piglets. The purpose of our study was to investigate the prevalence of Salmonella spp. in piglet producing and rearing systems in North-Rhine-Westphalia. The project was financially supported with resources of animal diseases fund (Tierseuchenkasse NRW). The immediate objective was to reduce Salmonella burden of each farm by using individually adapted measures. The long-term objective was to evaluate general measures, which are able to permanently reduce Salmonella load in pig farms.

Methods

All piglet producers of North Rhine-Westphalia could volunteer for an initial survey of their Salmonella status. All piglet producers of North Rhine-Westphalia could volunteer for an initial survey of their Salmonella status. Of the 751 environmental swabs, 102 contained Salmonella spp. Three farms had only positive environmental samples (23 %) were Salmonella-positive by culture. On 81 out of 102 farms at least one positive faecal sample was found. In total 611 samples (23 %) were Salmonella-positive by culture. Of 751 environmental swabs, 102 contained Salmonella spp. Three farms had only positive environmental swabs but in 25 farms, Salmonella was detected in faecal as well as in environmental samples. Serotyping resulted in 12 different Salmonella-Serovars. Most frequently S.Typhimurium was detected (80.79%), followed by S. Derby (4.91%) and S. SUBSPEC. 1. Rauform (1.26%). All other serovars were only a few cases (< 1 % of isolates).

Conclusion

This study shows a seroprevalence of Salmonella in sows in North Rhine-Westphalia on a medium level. Hence, the seroprevalence in post-weaning pigs was on a low level, the detection rate of Salmonella spp. by culture was quite high. All results point to the fact that reducing the risk of Salmonella infection by pork has to start at the basis of the production pyramid.

Results

Overall 102 farms were visited for initial survey, 87 of them were sampled two times or more. There were different production types: sow breeders, piglet producers, farms only with piglet rearing units, grow-to-finish farms and farrow-to-finish farms. The number of sows varied from 40 to 2000 (mean 333, median 260). Rearring units had a mean size of 1595 piglets (median 1175; min. 100, max. 9000) and fattening units had a mean size of 1055 pigs (median 780); the smallest fattening unit of 20 pigs and the biggest farm with 5000 pigs. Status survey contained the question of measures already taken against Salmonella. In five farms, gilts were vaccinated against S.Typhimurium. One farmer vaccinated only sows and five farmers vaccinated sow and gilts against S.Typhimurium. In three farms gilts, sows and piglets were vaccinated against S.Typhimurium. Two of these farms used a stock-specific vaccination; all others used a commercial live vaccine. Approximately 9000 blood serum samples were collected. Excluding samples of Salmonella vaccinated animals, 4596 serum samples of sows were analysed and nearly 31% of them showed an optical density (OD%) over 40%. According to “Ox-Salmonella-Monitoring-System” in fattening pigs, those samples are Salmonella-antibody-positive. The proportion of positive samples (ODs=40) of gilts lies about 14% and about 12% in pigs with an average weight of 28kg. In total 2630 faecal samples were collected. On 81 out of 102 farms at least one positive faecal sample was found. In total 611 samples (23 %) were Salmonella-positive by culture. Of 751 environmental swabs, 102 contained Salmonella spp. Three farms had only positive environmental swabs but in 25 farms, Salmonella was detected in faecal as well as in environmental samples. Serotyping resulted in 12 different Salmonella-Serovars. Most frequently S.Typhimurium was detected (80.79%), followed by S. Derby (4.91%) and S. SUBSPEC. 1. Rauform (1.26%). All other serovars were only a few cases (< 1 % of isolates).

Discussion and Conclusion

This study shows a seroprevalence of Salmonella in pigs and piglets in North Rhine-Westphalia. One farmer vaccinated only gilts and sow and the other vaccinated against S.Typhimurium and S.Heidelberg. One farmer vaccinated only gilts against S.Typhimurium. One farmer vaccinated only gilts against S.Typhimurium. One farmer vaccinated only gilts against S.Typhimurium. Of these farms, gilts were vaccinated against S.Typhimurium. One farmer vaccinated only sows and five farmers vaccinated sow and gilts against S.Typhimurium. In three farms gilts, sows and piglets were vaccinated against S.Typhimurium. Two of these farms used a stock-specific vaccination; all others used a commercial live vaccine. Approximately 9000 blood serum samples were collected. Excluding samples of Salmonella vaccinated animals, 4596 serum samples of sows were analysed and nearly 31% of them showed an optical density (OD%) over 40%. According to “Ox-Salmonella-Monitoring-System” in fattening pigs, those samples are Salmonella-antibody-positive. The proportion of positive samples (ODs=40) of gilts lies about 14% and about 12% in pigs with an average weight of 28kg. In total 2630 faecal samples were collected. On 81 out of 102 farms at least one positive faecal sample was found. In total 611 samples (23 %) were Salmonella-positive by culture. Of 751 environmental swabs, 102 contained Salmonella spp. Three farms had only positive environmental swabs but in 25 farms, Salmonella was detected in faecal as well as in environmental samples. Serotyping resulted in 12 different Salmonella-Serovars. Most frequently S.Typhimurium was detected (80.79%), followed by S. Derby (4.91%) and S. SUBSPEC. 1. Rauform (1.26%). All other serovars were only a few cases (< 1 % of isolates).

References
