

Post harvest reduction of Salmonella by use of vaccination in growing pigs

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Abstract

This study was a randomized, blinded trial to evaluate effect of vaccine on post harvest Salmonella contamination rate of pig carcasses. Pig was the experimental unit.

Litters were assigned to treatment by farrowing date and parity. Piglets were double tagged, sex recorded and entire litters were either vaccinated (oral drench) or left as non-vaccinated controls. No movement of piglets between treatments was allowed. At weaning, control litters were placed on the top level of a truck, vaccinated pigs on the bottom level, transported to a wean-finish barn, and mixed within pen at the wean-finish barn.

At harvest, 100 animals per treatment were selected by random number and taken to a regional abattoir. Pigs were loaded by treatment into separate compartments of a cleaned, disinfected trailer, transported three hours to the abattoir, and held in adjacent cleaned, disinfected lairage pens overnight. Swabs for culture were taken from the transport vehicle and lairage pens.

After CO₂ stunning, exsanguination, and dehairing, individual pig numbers were written on each carcass in edible ink and the tags removed. The peritoneal cavity of each carcass was swabbed with an individual, sterile sponge hydrated in buffered peptone water, and the ileocecal lymph node was collected. Both were immediately sent to the Iowa State University Veterinary Diagnostic Laboratory for culture. The following morning, the surface of the chilled carcass was swabbed per the plant's USDA process (jowl, midline, tailhead) by the same method. Positive culture samples were serotyped at the National Veterinary Service Laboratory. Salmonella Anatum and S. Muenchen were isolated from two environmental pen samples. Salmonella Mbandaka was detected in lymph nodes of non vaccinated pigs.

No Salmonellae were isolated from vaccinated pigs, a significant reduction from control pigs (Fisher's Exact P-value = 0.0332). Vaccination may be considered to improve the post harvest safety of pork.