

The 106th CRWAD 2026 Conference of Research Workers in Animal Diseases



Proceedings

Conference of Research Workers in Animal Diseases
January 17–20, 2026

Chicago Marriott Downtown Magnificent Mile
Chicago, IL

266 - A new integrated approach for reducing *Salmonella* contamination in pig abattoirs.

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Salmonellosis is a major foodborne threat worldwide, with pigs being one of the main sources of human infection. Pork contamination at abattoirs is strongly linked to the presence of *Salmonella* in pigs' feces at slaughter, making the prediction and mitigation of shedding crucial for food safety. In this study, a predictive model was developed to estimate the risk of *Salmonella* shedding upon arrival at the slaughterhouse. Thirty batches of 50 pigs each from different fattening units were monitored through serology, pooled fecal samples, and farm-level biosecurity data collected one month before slaughter. Colon content samples were then obtained from the same pigs at the abattoir. Using random-effects logistic regression, the model achieved good predictive accuracy (AUC = 0.76; sensitivity = 71.6%; specificity = 73.6%). Key risk factors included seroprevalence, the percentage of *Salmonella*-positive pens, and internal biosecurity scores. These results show that predictive tools can identify high-risk batches, providing a framework for targeted interventions. Building on this, the efficacy of organic acids was assessed. The administration of esterified formic acid (30% formic acid, 10 kg/1,000 L) in drinking water during the 5 d before slaughter was tested in 3 *Salmonella*-positive farms. Compared with controls, treated pigs showed a significantly lower prevalence of shedding (20% vs. 50%; $P < 0.001$), with the odds of shedding being 5.63 times higher in the control group. The intervention prevented 82.2% of potential shedders and reduced bacterial loads, demonstrating its effectiveness as a pre-harvest measure. A second strategy, applied at the abattoir by supplementing lairage drinking water with the same organic acid, also reduced shedding, with prevalence decreasing from 60.7% in controls to 44.3% in treated pigs ($P < 0.01$). After adjusting for clustering, control pigs were 2.75 times more likely to shed *Salmonella*, suggesting a reduction in shedding of up to 63.6%. Together, these results illustrate a complementary framework: predictive modeling identifies high-risk batches, while the use of organic acids—applied either on-farm or at the abattoir—provides effective mitigation. Importantly, combining both approaches may yield synergistic benefits, reducing *Salmonella* shedding at multiple points in the production chain and contributing to safer pork and improved public health.

Key Words: salmonella control, pig, abattoir, prediction model, organic acid, public health