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The associations between animal-based welfare measures and the presence of indicators of food safety in finishing pigs

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Abstract

Stressful housing and management practices affect animals, potentially increasing their receptiveness to pathogens. Since some pathogens do not lead to clinical signs of sickness, subclinical pigs could enter the food-chain, contaminating carcases and offal at slaughter, representing a threat to human health. Here, we assess the feasibility of a new approach (using animal-based welfare outcomes) to investigate the association between the animal welfare status of finishing pigs on-farm and the occurrence of Yersinia enterocolitica *and* Salmonella enterica *in slaughtered pigs in Northern Italy. Thirty batches of finishing pigs were assessed for animal-, resource- and management-based measures according to the Welfare Quality® protocol for pigs on-farm and at slaughter. A sample of five individuals per batch was tested for* Y. enterocolitica *and* S. enterica *in tonsils and in mesenteric lymph nodes, respectively, and gross pathological changes were recorded. Environmental faecal samples per batch on-farm were tested for the same pathogens. Univariable logistic regression models were used to investigate the association between batches of pigs that were positive to* Y. enterocolitica *and* S. enterica *and indicators of poor welfare. The animal-based measures of welfare, greater on-farm mortality and poor human-animal relationship, were found to be associated with* Y. enterocolitica*. This study provides a good indication of the validity of this approach, but there is a need for larger-scale studies in the future to confirm the magnitude of the associations between these animal welfare and food safety indicators.*

Keywords: *animal-based measures, animal welfare, finishing pigs, food safety,* Salmonella enterica, Yersinia enterocolitica