

Experimental Salmonella enterica infection in market-weight pigs

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Abstract

Market pigs infected with Salmonella pose significant food safety risk by carrying the pathogen into abattoirs. A study was conducted to determine the dynamic of Salmonella infection in market-weight pigs (220-240 lbs.). Pigs (n=24) were individually inoculated (intranasally; 10^8 cfu/mL) with Salmonella enterica serovar Typhimurium. Fecal samples were collected from each pig, and 3 pigs were randomly selected and euthanized to collect additional samples (spleen, liver, mesenteric lymph node, ileal and cecal contents) on days 1, 2, 7, 14, 21, 28, 35, and 42 post-inoculation (p.i.). All samples were processed for the isolation and enumeration of the challenge strain used. No inoculated animal showed any clinical sign of the infection. Bacteriological data revealed that all inoculated pigs started shedding Salmonella within 24 h p.i., and persistently shed the bacteria up to the end of the study (i.e., 6 weeks). Ileal and cecal content samples were all positive throughout the study. Mesenteric lymph nodes were also positive during the entire study and at the same level as intestinal content samples. All samples contained 3-4 logs (cfu/g) of Salmonella at 24 h p.i., and 4-5 logs (cfu/g) of Salmonella up to 4 wk p.i. Interestingly, levels of Salmonella dropped markedly (P<0.05) in all samples at 5 wk p.i., being detectable only by bacteriological enrichment. Understanding the dynamic of Salmonella enterica infection in market-weight pigs will enable the pork industry to develop and plan the application of intervention strategies that will contribute to increase pork safety.