RESEARCH ABSTRACT
PORK SAFETY

Title: Determining the Prevalence and Antimicrobial Susceptibility of *Salmonella* Serovars Isolated from U.S. Retail Ground Pork **- NPB #12-170**

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Abstract

Salmonella is a foodborne pathogen that may be associated with meat products and can cause disease or death in humans. The first objective of this study was to determine the overall prevalence of *Salmonella* in ground pork in stores in the United States over three seasons and four regions. Both case-ready and store-ground packages were obtained throughout the study. The package types collected were overwrap, chub, modified atmosphere packaging (MAP) and other. Because these package types represent different production systems and are subject to different microbiological government regulation and testing methodologies, both USDA-FSIS and FDA *Salmonella* isolation protocols were used. Another objective of the study was to determine the serotypes and antimicrobial resistance profiles of the isolates found. Ground pork aliquots were subjected to real-time PCR isolation. Recovered isolates were then serotyped and minimum inhibitory concentration analysis (MIC) to 15 antimicrobial compounds was

determined using micro-broth dilution in accordance with the national antimicrobial resistance monitoring system (NARMS). The overall prevalence of *Salmonella* in ground pork from the 865 samples collected was 1.39%. Prevalence was not affected by package type ($P = 0.29$) or grind location (case-ready vs. store-ground; $P = 0.17$). Season affected *Salmonella* prevalence ($P = 0.05$) with most isolates found during the fall season, and there was a tendency for region to affect *Salmonella* prevalence ($P = 0.07$). The USDA *Salmonella* isolation method was more effective at recovering isolates from packages ($P = 0.01$) in comparison to the FDA methodology and yielded a Kappa statistic of 0.26 as a measure of agreement. The serotypes isolated included: Infantis, 4,5,12:i:-, Brandenburg, Typhimurium var 5-, Seftenberg, and Johannesburg with only 2 packages containing multiple serotypes. There were no isolates resistant to antibiotics used to treat *Salmonella* infections including extended spectrum cephalosporins or flouroquinolones. Overall, the prevalence of retail ground pork in the U.S. retail market is low.