

## PORK SAFETY

**Title:** Effect of antibiotic regimens on resistance in salmonella and other bacteria in swine - **NPB# 01-033**

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**Date Received:** 7/25/2002

**Abstract:** To compare the effects of antimicrobial regimens on resistance of *Salmonella* Typhimurium and non-pathogenic bacteria associated with swine, 29-day-old weaned pigs, were challenged with *Salmonella* Typhimurium and divided into 6 groups and housed in identical SEW nursery rooms. Pigs were assigned by room to treatments including a control (no antibiotic); oxytetracycline in the feed for 30 days, increasing gradient application of oxytetracycline, pulse dosing with oxytetracycline, rotation with oxytetracycline, apramycin sulfate, and sodium sulfamethazine in the drinking water and carbadox in the feed, and rotation with oxytetracycline, apramycin, and neomycin sulfate in the drinking water, and neomycin sulfate in the drinking water. Fecal samples were collected prior to antibiotic treatment and throughout the grow/finish period for culture of the *Salmonella* challenge organism and *E. coli*. Isolates were tested for resistance to test antibiotics using minimum inhibitory concentration analysis. DNA-based techniques, including PCR and PFGE were used to detect resistance genes and to determine relatedness of isolates. Antibiotic regimen affected resistance of *E. coli* but not of the salmonella challenge organism. Molecular analysis indicated that the apramycin resistance gene is associated with bacterial plasmids, whereas tetracycline resistance genes are associated with the chromosome in *E. coli*.

*These research results were submitted in fulfillment of checkoff funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer reviewed*

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