

Antimicrobial Susceptibility Patterns of Selected Respiratory Tract Bacteria of Feedlot Cattle

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This project investigated patterns of antimicrobial susceptibility of three common respiratory tract pathogens of feedlot calves. Two thousand six hundred and thirty-nine calves at four Alberta feedlots were randomly selected from a larger population of 81,967 animals and enrolled in the study during the fall of 1999. Candidate animals originated from across western Canada. Each calf was sampled by deep nasal swab on three occasions – at feedlot arrival, approximately 70 days on feed, and at feedlot exit. All swabs were cultured on media containing tetracycline or tilmicosin, and a random 10% of swabs were also cultured on non-selective media. Isolates of *Histophilus somni* (formerly *Haemophilus somnus*), *Mannheimia haemolytica*, and *Pasteurella multocida* were subjected to minimum inhibitory concentration determination against seven antimicrobials.

Overall, the number of animals carrying bacterial strains resistant to tetracycline, oxytetracycline, or tilmicosin, as defined by the Clinical and Laboratory Standards Institute (CLSI) breakpoints, was low on both selective and non-selective media. Resistant isolates were found in less than 1% of animals at feedlot arrival, 0 to 14% of animals at the interim sample time, and less than 4% of animals at feedlot exit. This pattern was similar across pathogen, culture method, and antimicrobial evaluated. Rates of cross-resistance with other antimicrobials were negligible.

The data generated from this project demonstrate that feedlot cattle in Alberta do not appear to carry significant numbers of respiratory tract pathogens resistant to commonly used antimicrobials. The results of this study provide a benchmark for subsequent antimicrobial resistance monitoring efforts in beef feedlots.