Antimicrobial-Resistant Fecal Bacteria from Ceftiofur-Treated and Nonantimicrobial-Treated Comingled Beef Cows at a Cow-Calf Operation

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Abstract
We compared the occurrences of 3rd-generation cephalosporin-resistant (3GC’), tetracycline-resistant (TET’), and trimethoprim–sulfamethoxazole-resistant (COT’) Escherichia coli, 3GC’ and nalidixic acid-resistant (NAL’) Salmonella enterica, and erythromycin-resistant (ERY’) enterococci from the fecal samples of ceftiofur-treated (n = 162) and nonantimicrobial-treated (n = 207) comingled beef cows ≥8 years old, for which complete antimicrobial treatment records were available. The prevalence of 3GC’ (17%; n = 369), TET’ (88%), COT’ E. coli (22%), and ERY’ enterococci (69%) was not significantly (p > 0.05) associated with ceftiofur treatment, prior history of other antimicrobial treatments, or duration of time between last antimicrobial treatment and sampling. 3GC’ and NAL’ S. enterica were not detected. The prevalence of tetB was significantly (p < 0.05) higher compared with tetA among TET’ E. coli. However, the prevalence of tetA was significantly (p < 0.05) higher than tetB among 3GC’ and COT’ E. coli. There was a significant (p < 0.05) association between tetM and ermB among ERY’ enterococci. In conclusion, occurrences of 3GC’, TET’, and COT’ E. coli and ERY’ enterococci in comingled antimicrobial-treated and nonantimicrobial-treated beef cows were not associated with ceftiofur or other antimicrobial use, indicating that other factors influenced the observed levels of antimicrobial-resistant bacteria in feces of beef cows.


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