Title Sources of Beef Contamination with *Escherichia coli* 0157:H7 from Feedlot to Harvest Floor

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Abstract

The objective of this study was to examine sources and routes of cattle contamination with *Escherichia coli* 0157:H7 from feedlot to slaughter. Hide samples and associated colon fecal samples were collected from market-ready steers/heifers at three feedlots which were sent to one of two corresponding packing facilities in the Midwestern region or from three feedlots and one corresponding packing facility in the Southwestern region of the U.S., until a total of 25 hide samples were confirmed positive for *E. coli* 0157:H7 in each region. Companion samples were also collected from pen feces, water tanks, feed bunks, loading chutes, and truck trailers. At the corresponding packing plant, samples were collected from holding pens, pen water tanks, restrainers, hides, and colons. Sample groups were designated as either companion samples, hide samples or colon samples, and were analyzed in order: hides, followed by colons that were associated with E. coli 0157:H7 positive hides, and companion samples derived from hide positive cattle lots. Samples were screened for E. coli 0157 using enrichment, immunomagnetic bead separation and plating on Sorbitol MacConkey agar supplemented with cefexime and potassium tellurite, and on Rainbow-plus agar. Presumptive E. coli 0157:H7 colonies were confirmed by agglutination as well as biochemically. As an example, 25 positive hide samples from the Midwestern region were associated with eight positive colons, while companion positive samples included eight pen feces, two loading chutes, one feedlot water tank, one feedbunk, three truck trailers, two plant pen water tanks, and one plant pen sample. Potential origin of contamination and routes of transmission will be determined through molecular characterization of isolates by multiplex PCR and PFGE.