

**Title** Isolation and characterization of Shiga toxin-producing *Escherichia coli* O157:H7 and non-O157 from beef carcasses at a slaughter plant in Mexico

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### Abstract

The contamination of beef carcasses with Shiga toxin-producing O157:H7 and non-O157 *Escherichia coli* (STEC) obtained from a slaughter plant in Guadalajara, Mexico was investigated. A total of 258 beef carcasses were sampled during a 12-month period. All samples were assayed for STEC by selective enrichment in modified tryptone soy broth supplemented with cefixime, cefsulodin and vancomycin, followed by plating on Sorbitol MacConkey Agar supplemented with cefixime and tellurite (CT–SMAC). Simultaneously, all samples were assayed by immunomagnetic separation (IMS) and plated on CT–SMAC and CHROMagar®. The presence of the *stx1*, *stx2*, *eaeA* and *hly<sub>933</sub>* genes, recognized as major virulence factors of STEC, was tested for O157:H7 and non-O157 *E. coli* isolates by multiplex polymerase chain reaction (PCR). STEC was detected in two (0.8%) samples. One of these STEC isolates corresponded to the serotype O157:H7 showing *stx2*, *eaeA* and *hly<sub>933</sub>* genes. The other isolate corresponded to non-O157 STEC and only had the *stx1* gene. Thirteen carcasses (5%) were positive for nonmotile *E. coli* O157 and 7 (2.7%) were positive for *E. coli* O157:H7. The presence of O157:H7 and non-O157 STEC on beef carcasses in this slaughter plant in Guadalajara, Mexico, emphasizes the importance of implementing the Hazard Analysis and Critical Control Point (HACCP) system, as well as the need for implementing, evaluating, and validating antimicrobial interventions to reduce the presence of potential pathogenic microorganisms.