

Title Blade-tenderization of beef subprimals inoculated with *Escherichia coli* O157:H7
Author Jeffrey E. Call, Randall K. Phebus, Harshavardhan Thippareddi, and John B. Luchansky
Citation Program and Abstract Book, IAFP 2005 (International Association for Food Protection) - 92nd Annual Meeting, 14-17 August 2005, Baltimore, Maryland, USA. 256 pages.
Keyword *Escherichia coli*; beef; blade-tenderization

Abstract

We evaluated the penetration of *Escherichia coli* 0157:H7 (ECHO) from the lean-side surface to the interior of a beef subprimal during a single pass (lean-side up), inoculated at ca. 0.6 to 3 log CFU/cm², through a mechanical blade-tenderizer. A second set of inoculated subprimals were not tenderized (positive controls). Ten core samples were removed from each tenderized subprimal and cut into six consecutive segments starting from the inoculated side: segments 1 to 4 represent the top four cm of the core and segments 5 and 6 represent the deepest four cm. Ten cores were obtained from control subprimals but only segment 1 was sampled. Each segment was weighed, diluted, and blended. The slurry was plated onto Sorbitol-MacConkey agar plates. Data for two trials at each inoculum level were averaged. The levels of ECHO recovered from the core surface of control subprimals were 0.6, 1.46, 2.44 and 3.15 log CFU/cm², respectively. The extent of penetration of the pathogen into segment 1 at these four inoculum levels was 0.22, 1.06, 2.04, and 2.7 log CFU/g respectively. The levels recovered in segment 2 were at least seven-fold lower than levels in segment 1; however, depending on the inoculum level, it was possible to recover ECHO from all six segments. These results demonstrate that mechanical tenderization can transfer ECHO into the interior of a subprimal, most (ca. 40%) of which remains in the top segment. This information, coupled with proper cooking, can enhance the safety of blade-tenderized steaks that may become contaminated with ECHO.