

Title The Identification of an *Escherichia coli* 0157:H7 Meat Processing Indicator for Fresh Meat through the Comparison of the Effects of Selected Antimicrobial Interventions

Author K. M. Marshall, S. E. Niebuhr, G. R. Acuff, and J. S. Dickson

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 meat; *Escherichia coli*; antimicrobial intervention

Abstract

Pre rigor lean and adipose beef carcass tissue was artificially contaminated with stationary phase cultures of five generic *Escherichia coli* beef cattle isolates or a composite culture of five *E. coli* 0157:H7 strains suspended in a fecal inoculum. Each tissue sample was processed with one of the following antimicrobial interventions: 90°C water followed by 55°C, 2% lactic acid; 90°C water followed by 20°C, 2% lactic acid; 20°C water followed by 20°C, 2% lactic acid; 20°C water followed by 20°C, 20 ppm chlorine; or 20°C water followed by 20°C, 10% trisodium phosphate. The ability of the generic *E. coli* isolates to predict the response of *E. coli* 0157:H7 was found to be dependent upon the microbial intervention. For all microbial intervention methods applied, irrespective of issue type, the mean log reductions of at least two *E. coli* isolates were not significantly different ($P > 0.05$) from the mean log reduction of the *E. coli* 0157:H7 composite culture. Due to the frequent employment of multiple microbial intervention methods in industry, it is unlikely that a single isolate can realistically represent the effectiveness of all microbial interventions on *E. coli* 0157:H7. Thus, the use of a combination of *E. coli* isolates evaluated here may be required to accurately predict the effectiveness of the total microbial interventions on the reduction of *E. coli* 0157:H7 from beef carcass tissue.