

Abstract

Studies were conducted to determine the prevalence of *Escherichia coli* O157:H7 in fecal and hide samples from cattle in feedlots and on their carcasses at slaughter plants. Prevalence in pens (lots) ranged from 0 to 78% positive in feedlot pen-floor fecal samples, and from 0 to 5% on carcasses from those lots immediately after final intervention; however, too few positive samples were isolated from carcasses to develop a strong relationship between *E. coli* O157:H7-positive fecal samples and *E. coli* O157:H7-positive carcass samples. Nonetheless, data suggested that pens having 20% or more *E. coli* O157:H7-positive feedlot-floor fecal samples also had 22.5% hide, 46.3% colon, and 12.5%, 2.5% and 0.6% positive carcass samples at pre-evisceration, post-evisceration and after final intervention, respectively. Conversely, feedlot-floor samples that were less than 20% positive were associated with 5.7% hide, 7.1% colon, and 7.1%, 0% and 0% positive carcass samples at pre-evisceration, post-evisceration and post-final intervention, respectively.

A second study showed that preharvest pathogen mitigation strategies could aid in reducing prevalence of *E. coli* O157 in fecal and hide samples, as all treatments (i.e., *Lactobacillus acidophilus* -probiotic, neomycin sulfate-antibiotic and a prototype *E. coli* O157:H7 vaccine) resulted in fewer *E. coli* O157:H7 positive fecal and hide samples compared to controls. Although there was a significant lack of power, results from a preliminary antibiotic susceptibility study showed that there were no differences in antimicrobial resistance patterns between *E. coli* O157 isolates recovered from cattle treated with nothing versus those treated with neomycin sulfate before harvest.

Finally, a series of studies comparing activated lactoferrin (2%) with nonactivated lactoferrin (2%), lactic acid (2%) and water were conducted to determine their effectiveness in reducing and/or inhibiting *E. coli* O157:H7, *Salmonella* Typhimurium and *Listeria monocytogenes* populations on bologna and fresh beef products. Results from these studies showed that activated lactoferrin and lactic acid were effective in reducing initial populations and inhibiting growth of *E. coli* O157:H7 and *L. monocytogenes* during storage of bologna. Additionally, when activated lactoferrin and lactic acid were sequentially applied to beef adipose tissue, their effectiveness in reducing and inhibiting *E. coli* O157:H7, *L. monocytogenes*, and *S. Typhimurium* populations was enhanced.