

Effect of organic acids on escherichia coli O157:H7 and staphylococcus aureus contaminated meat.

ABSTRACT

Appropriate and safe antibacterial agents able to decontaminate meat surfaces have long been big concern of meat industry. In an attempt to manage beef carcass contamination, spray wash treatments utilizing three concentrations (1, 1.5 and 2%) of acetic, lactic, propionic and formic acids were performed to evaluate their efficacy in reducing numbers of Escherichia coli O157:H7 and Staphylococcus aureus on meat tissues. The procured beef pieces of freshly slaughtered animals were decontaminated with hot water and then inoculated with E. coli O157:H7 and S. aureus individually which then were spray washed with organic acids separately. The total plate count of the treated samples showed that the populations of bacteria decreased after being exposed to organic acids. Spray wash of formic acid resulted in the highest reduction of both bacterial species on meat surface. Significantly, higher log reductions were obtained for S. aureus than E. coli O157:H7. It was concluded that organic acids are highly effective in decontaminating meat surfaces and organic acids are shown to be safe, simple, efficient, and cheap modality of meat decontamination which can be highly recommended for industrial scales.

Keyword: Meat; Beef; Escherichia coli; O157:H7; Staphylococcus aureus; Acetic acid; Lactic acid; Propionic acid; Formic acid; Food safety.