Evaluation of Decontamination Efficacy of Commonly Used Antimicrobial Interventions for Beef Carcasses Against Shiga Toxin-producing Escherichia coli

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Abstract

In Argentina, Shiga toxin producing Escherichia coli (STEC) serogroups O157, O26, O103, O111, O145 and O121 are adulterant in ground beef. In other countries, the zero-tolerance approach to all STEC is implemented for chilled beef. Argentinean abattoirs are interested in implementing effective interventions against STEC on carcasses. Pre-rigor beef carcasses were used to determine whether nine antimicrobial strategies effectively reduced aerobic plate, coliform and E. coli counts and stx and eae gene prevalence. These strategies were: citric acid (2%; automated), acetic acid (2%; manual and automated), lactic acid (LA 2%; manual and automated), LA (3%; automated), electrolytically-generated hypochlorous acid (400 ppm; manual), hot water (82 °C; automated) and INSPEXX (0.2%; automated).

Automated application of 2% LA after 30-60-min aeration and 3% LA at 55 °C were the most effective interventions. Automated application was more effective than manual application. Decontamination of beef carcasses through automated application of lactic acid and hot water would reduce public health risks associated with STEC contamination.

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