
Abstract

In this study efficacy of near neutral and alkaline pH electrolyzed oxidizing waters to reduce aerobic plate counts (AC) and Enterobacteriaceae (EC) from uninoculated fresh cattle hides and Escherichia coli O157:H7 and Salmonella Typhimurium DT 104 from inoculated hides were determined. Fresh hides were cut in to 15 by 20 cm pieces and subjected to a total of eight different treatment solutions; near neutral pH EO water (NEW-pH 6.5 at room temperature, 150 mg/L available chlorine), alkaline pH EO water (AEO-pH 11.6 at room temperature), hot alkaline pH EO water at 43 °C (HAEO-pH 11.60), alkaline pH EO water spray followed by 150 mg/L available chlorine containing near neutral pH EO water spray (A-NEW-both at room temperature), Blitz™ (PAA, pH 3.02 at room temperature), 5% lactic acid (LA, pH 2.04 at room temperature), deionized water (W) and no treatment (Control). For each treatment, 60 ml treatment solution was sprayed on hide using a hand held sprayer. Similar treatment protocol was employed to treat hide pieces inoculated with E. coli O157:H7 and S. Typhimurium DT 104. Five percent lactic acid spray treatment was found to be the most effective treatment and achieved 2.77, 2.74, 2.75 and 2.98 log CFU/cm² of AC, EC, E. coli O157:H7 and S. Typhimurium DT 104 reductions, respectively. All EO water treatments were equally effective in reducing all target microorganisms, except E. coli O157:H7. HAEO and A-NEW treatments yielded significant reduction of E. coli O157:H7 compared to other EO water treatments. These results indicate that various EO water treatments could become viable options to reduce pathogens on hide during slaughter.