

Title Inactivation of *Salmonella* spp and *Escherichia coli* 0157:H7 on Cantaloupe Skin Using Citric Acid, Hydrogen Peroxide and a Foodgrade Surfactant

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Keyword cantaloupe; *Escherichia coli*; *Salmonella*; citric acid

Abstract

The study evaluated the efficacy of citric acid (CA) alone or combined with hydrogen peroxide (H₂O₂) and sodium lauryl sulfate (SLS) for destroying *Escherichia coli* 0157:H7 and *Salmonella* spp. on the outer rind surface of cantaloupe. Cantaloupe rinds were cut to 2.5 cm² pieces and inoculated with either a five strain mixture of nalidixic acid resistant *Salmonella* spp. or *E. coli* to give ~10⁸ CFU/rind. Inoculated rinds were dipped for 2.0 min in 500 ml of water (control) or sanitizer solutions at 23°C and then homogenized in buffered peptone water (100 ml). Samples of homogenate were serially diluted and plated onto Bismuth sulfite agar and MacConkey sorbitol agar, both containing nalidixic acid. All inoculated agar plates were incubated at 35°C for 48 h. *Salmonella* and *E. coli* survivors were enumerated following incubation and expressed as log CFU/rind. Compared to the water dipped control, exposure of rinds to 5% H₂O₂ reduced populations of *Salmonella* and *E. coli* by 2.77 and 2.83 log CFU/rind, respectively. A combination of 5% H₂O₂ and CA (1%) decreased populations of *Salmonella* and *E. coli* by 3.16 and 3.72 log, respectively. Further reductions were achieved by combining 5% H₂O₂ and CA (1%) with 1% SLS; populations of *Salmonella* spp. and *E. coli* decreased by 3.9 and 4.0 log, respectively. Based on these results, the combined use of acidified H₂O₂ with an anionic surfactant has good potential for improving the microbial safety of cantaloupe melons.