

Title Survival of *Escherichia coli* 0157:H7, *Salmonella* spp. and *Shigella* spp. on Watermelon Surfaces
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Abstract

The survival of *Escherichia coli* 0157:H7, and multistrain mixtures of *Salmonella* spp. and *Shigella* spp., was evaluated on watermelon surfaces. Culture preparations (8 log CFU/ml) suspended in sterile 5% horse serum albumen were spot inoculated (20 μ l) central to 9-cm² areas or the stem scar and allowed to dry at 22°C for 3 h. Watermelons were stored at 10, 20, or 29°C for up to 14 days. At each time point, a 9-cm² core was removed, the exocarp aseptically excised and stomached in 0.1% peptone with 0.05% Tween 80. Replicate aliquots were plated onto appropriate selective agar amended with 0.1% pyruvic acid. Applied populations declined by approximately 1 log CFU/disc following drying. When stored at 10°C for 14 days, *Salmonella* spp. was reduced 3.0 and 3.3 log CFU/disc, *E. coli* 0157:H7 was reduced 4.9 and .8 log CFU/disc, and *Shigella* spp. was reduced 4.7 and 5.0 log CFU/disc on the green and yellow (ground spot) surface, respectively. When stored at 20°C for 7 days, *Salmonella* spp. was reduced 2.3 and 2.6 log CFU/disc, *E. coli* 0157:H7 was reduced 4.4 and 4.8 log CFU/disc, and *Shigella* spp. was reduced 3.2 and 3.9 log CFU/disc on the green and yellow rind, respectively. *Salmonella* spp. was selected for further studies. No differences in survival were found among inoculations spotted on the smooth green rind, naturally-healed superficial wounds, or the stem end of watermelons stored at 20°C for 10 days. Post-drying survival of *Salmonella* on the green upper-rind surface of watermelon was 1.83 log CFU/disk greater when stored at 20°C compared to 29°C. In contrast, the log difference at the stem-end was less than 0.3 log CFU at these temperatures. While postharvest factors common to watermelon handling would likely limit survival, the capacity of bacterial pathogens to persist on the external surfaces of watermelon underscore the importance of prevention of initial contamination and further reduction interventions prior to processing for consumption.