Title Effect of time before storage and storage temperature on survival of *Salmonella* inoculated on fresh-cut melons

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Citation Food Microbiology, Volume 24, Issue 3, May 2007, Pages 288-295

Keywords Storage temperature; Fresh-cut; Watermelon; Honeydew; Cantaloupe; *Salmonella*

Abstract

The effects of a waiting period at room temperature (~22 °C) before refrigerating fresh-cut watermelon, cantaloupe and honeydew pieces contaminated with *Salmonella* on survival of the inoculated pathogen were investigated. Whole cantaloupes, honeydew melons and watermelons were washed with water, and fresh-cut pieces from individual melons were prepared and inoculated with a five strain cocktail of *Salmonella* at 10^5 cfu/ml. Populations of aerobic mesophilic bacteria, yeast and mold and *Pseudomonas* spp. were higher for fresh-cut cantaloupe than for fresh-cut watermelon and honeydew immediately after preparation. Populations of *Salmonella*, aerobic mesophilic bacteria, yeast and mold and *Pseudomonas* ssp. in fresh-cut melons left at room temperature for up to 5 h before refrigeration were significantly ($P<0.05$) higher than populations in fresh-cut melons stored at 5 °C immediately after preparation. Populations of *Salmonella* recovered in fresh-cut melon after inoculation with the cocktail of *Salmonella* strains averaged 2 $\log_{10}$ cfu/g for all three types of melons. Populations in fresh-cut watermelon and honeydew pieces declined by 1 log when stored immediately at 5 °C for 12 days, while the populations in fresh-cut cantaloupe did not show significant ($P>0.05$) changes. Populations of *Salmonella* in fresh-cut melons stored immediately at 10 °C for 12 days increased significantly ($P<0.05$) from 2.0 to 3.0 $\log_{10}$ cfu/g in watermelon, 1.9 to 3.0 $\log_{10}$ cfu/g in honeydew and 2.0 to 3.6 $\log_{10}$ cfu/g in cantaloupe pieces. Holding freshly prepared, contaminated fresh-cut melon pieces at 22 °C for 3 h or more prior to refrigerated storage would increase the chances of *Salmonella* proliferation, especially if the fresh-cut melons were subsequently stored at an abusive temperature.