

Title Effect of natural antimicrobials and sensorial quality of fresh-cut cantaloupe melon
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Abstract

The possibility of future restrictions on the use of chlorine, associated with new trends in the preservation of food, leads the search for alternative treatments in fresh-cut fruits. The aim of this work was to determine the effect of different natural antimicrobials on the microbiological and sensorial quality of fresh-cut Cantaloupe melons. Melons were peeled and cut into trapezoidal sections. Pieces were washed for 1 min at 5°C in water (control), vanillin (1000 mg/L and 2000 mg/L) or cinnamic acid (148.16 mg/L and 296.32 mg/L). These washed pieces were packaged into polypropylene (PP) trays and heat-sealed with oriented polypropylene film. Other antimicrobial treatments consisted of packaging the pieces of melon with an antimicrobial pad which contained vapour of cinnamic acid (148.16 mg/L and 296.32 mg/L). These pads were inside the trays for all the storage time. All treatments were stored up to 10 days at 5°C. On days 0, 3, 6 and 10, three replicates were evaluated for each treatment. The parameters evaluated were: microbial growth and sensory evaluation. After 10 days of storage at 5°C, significative differences among antimicrobials treatments and water treatment were found. In water treatment, psychrotrophs reached $3.63 \pm 0.09 \log \text{ cfu g}^{-1}$ while on all antimicrobial treatments the values ranged from $3.04 \pm 0.13 \log \text{ cfu g}^{-1}$ and $3.28 \pm 0.1 \log \text{ cfu g}^{-1}$. Mesophilic growth in the water treatment averaged $6.79 \pm 0.06 \log \text{ cfu g}^{-1}$ while on antimicrobial treatments the counts were from $5.15 \pm 0.01 \log \text{ cfu g}^{-1}$ to $5.30 \pm 0.03 \log \text{ cfu g}^{-1}$. Total coliform levels were $7.8 \pm 0.1 \log \text{ cfu g}^{-1}$ when melon was washed in water, followed by washing with cinnamon (296.32 mg/L) at $6.5 \log \text{ cfu g}^{-1}$ and for the rest of the treatments were around $5.5 \log \text{ cfu g}^{-1}$. The treatments did not display differences among mold and yeast growth after 10 days of storage, and all values of about 2.4 to 2.6 $\log \text{ cfu g}^{-1}$, respectively. The sensorial quality decreased throughout storage. However, at the end of storage, the scores ranged between 6.5 and 7, above the minimum level for marketability (level 5). Sensorial panelist noted a sweet taste when vanillin was used as sanitizer. The use of natural antimicrobials added in water or using a pad inside the tray helped to reduce the microbiological quality in fresh-cut Cantaloupe melon compared to control.