

Title Effects of ozonated water on microbiological and physicochemical qualities of fresh-cut lettuce and cabbage

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Abstract

A preliminary study showed that dipping fresh-cut lettuce in ozonated water containing 5 or 10 ppm of ozone for 3 min was the most effective among the treatments studied in reducing microbial counts. Treatment concentration and times studied ranged from 2.5 to 10 ppm of ozone and 1 to 5 min. Therefore, the effects of dipping (3 min) in ozonated water (5 and 10 ppm ozone) on microbiological and physicochemical qualities on fresh-cut lettuce and cabbage were evaluated during storage in MA package at 10°C. When fresh-cut lettuce or cabbage were dipped in 5 or 10 ppm ozonated water, the ozone concentration decreased by 60% within 4 min or 3 min, respectively. With fresh-cut lettuce, ozonated water (10 ppm ozone) reduced only the mesophilic aerobic bacterial count by 0.5 log CFU/G on initial day. With fresh-cut cabbage, the counts of mesophilic aerobic bacteria and coliform group were about 0.5 to 1 logs lower in ozonated water (5 and 10 ppm ozone) treated samples than in tap water-rinsed controls for the first 2 days of storage. The ozonated water (5 and 10 ppm ozone) increased both the rate of electrolyte leakage from tissue and polyphenol content and accelerated brown discoloration of fresh-cut lettuce during 4 days of storage, but not of fresh-cut cabbage. Thus, ozonated water (5 and 10 ppm ozone) is a better disinfectant of fresh-cut cabbage than of lettuce.