Title Effect of the sequential treatment of 1-methylcyclopropene and acidified sodium chlorite on microbial growth and quality of fresh-cut cilantro

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Abstract

This study investigated the effects of 1-methylcyclopropene and sanitizer (acidified sodium chlorite or sodium hypochlorite), treated alone or in combination, on microbial growth and quality of packaged fresh-cut cilantro (*Coriandrum sativum* L.). Cilantro bunches were treated with 1.5 mg L^{-1} 1-methylcyclopropene or air for 18 h at 10 °C. The samples were then cut and washed in tap water, 100 mg L^{-1} sodium hypochlorite, or 100 mg L^{-1} acidified sodium chlorite solution for 1 min. The washed cilantro leaves were centrifugally dried, packaged with 29.2 pmol s^{-1} m^{-2} Pa^{-1} oxygen transmission rate film, and stored at 5 °C for 14 d. Results indicated that 1-methylcyclopropene significantly ($P < 0.0001$) delayed the decrease in O_2 and accumulation of CO_2 partial pressures in the headspace of sample packages. Acidified sodium chlorite application significantly reduced initial coliform/*Escherichia coli* counts ($P < 0.001$), and reduced decay rate at the end of storage ($P < 0.05$). A combination treatment of 1-methylcyclopropene and acidified sodium chlorite, followed by acidified sodium chlorite treatment alone, maintained the lowest decay rates and the highest overall quality scores at the end of storage.