

Title Efficacy of Aerosolized Peroxyacetic Acid as a Sanitizer of Lettuce Leaves
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Abstract

Aerosolized sanitizer was investigated as a potential alternative to aqueous and gaseous sanitizers. Peroxyacetic acid was aerosolized (5.42-11.42 μm particle diameter) by a commercially available nebulizer into a model cabinet. Iceberg lettuce leaves were inoculated with a three strain each cocktail of *Escherichia coli* 0157:H7, *Listeria monocytogenes*, and *Salmonella typhimurium* and then treated with aerosolized peroxyacetic acid for 10, 30 or 60 min in a model aerosol cabinet at room temperature ($22 \pm 2^\circ\text{C}$). After treatment, surviving healthy and injured cells were enumerated on appropriate selective agar and with the overlay agar method, respectively. Inoculated iceberg lettuce leaves exposed to aerosolized peroxyacetic acid for 10 min exhibited a 0.8 log reduction in *E. coli* 0157:H7, a 0.3 log reduction in *Salmonella typhimurium* and a 2.5 log reduction in *L. monocytogenes* when compared to the control. After 30 min treatment, the three pathogens were reduced by 2.2, 3.3, and 2.7 log and after 60 min, the reductions were 3.4, 4.5, and 3.8 log, respectively. Aerosolized peroxyacetic acid is an effective sanitizer of lettuce leaves, and has potential for application in the food industry. In particular, aerosolized sanitizers may be useful for preventing regrowth of pathogenic and spoilage microorganisms during shipping or extended storage of produce, when dipping or spraying with aqueous sanitizers is unfeasible.