

Title Antibacterial effect of Grapefruit Seed Extract on food-borne pathogens and its application in the preservation of minimally processed vegetables

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Abstract

The application of Grapefruit Seed Extract (GSE) as a sanitizer for reducing the populations of human bacterial pathogens on whole and fresh-cut green vegetables was investigated. Cucumber and lettuce were selected as model green vegetables, and six bacteria strains, including three strains of *Salmonella* spp. and three strains of *Listeria monocytogenes*, were selected in our study in order to determine the antibacterial effects of sanitizers. The survival and growth of total aerobes, *Salmonella* spp., and *L. monocytogenes* on whole and fresh-cut cucumber and lettuce during storage (10 and 4 °C) were analyzed by using a classical microbiological enumeration. The antibacterial effects of GSE alone and GSE in combination with nisin and citric acid (Mixture agent II) were significant ($P < 0.05$). Treatments with sodium lactate and potassium sorbate (Mixture agent I) were also tested as chemically synthesized agents. Sensory quality was evaluated, and there was no significant difference between GSE and Mixture agent II treatments during storage in terms of organoleptic and visual properties. Our results suggest that GSE could inhibit bacteria significantly ($P < 0.05$) and prolong the preservation time; GSE might be applied as an effective and safe preservative for ready-to-eat cucumber and lettuce.