Title Effects of sodium hypochlorite and acidified sodium chlorite on the morphological, microbiological, and sensory qualities of selected vegetables

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Abstract

The effects of washing with sodium hypochlorite (NaClO) and acidified sodium chlorite (ASC) on the reduction of various pathogens contaminated produce, as well as the change in sensory qualities during storage and morphological characteristics of the surface of the washed produce, including cherry tomato, cucumber, and carrot were evaluated. Produce was inoculated with *Bacillus cereus, B. cereus* spore, *Campylobacter jejuni, Salmonella* Typhimurium, and *Listeria monocytogenes* and then washed with 100, 150, or 200 ppm NaClO and stored for 11 days at 4°C. The produce contaminated with *S.* Typhimurium or *L. monocytogenes* was also washed with 100 ppm NaClO containing 5% acetic acid and 500 ppm ASC. The greatest washing efficacy was observed in *B. cereus*, followed by *S.* Typhimurium, *L. monocytogenes*, and *C. jejuni*. NaClO with 5% acetic acid was significantly ($p<0.05$) more effective than 500 ppm ASC at *S.* Typhimurium, but not at *L. monocytogenes*, regardless of the types of produce, while ASC was the most effective sanitizer for *L. monocytogenes* in cucumber. Scanning electron microscopy showed that washing with NaClO removed the pathogens, but also part of the wax layer from the surface, which might affect sensory qualities of the produce during storage.