Title Efficacy of sanitizers in reducing *Escherichia coli* O157:H7, *Salmonella* spp. and *Listeria monocytogenes* populations on fresh-cut carrots

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Abstract

Shredded carrots were inoculated with *Escherichia coli* O157:H7, *Salmonella* or *Listeria monocytogenes* and washed for 1 or 2 min with chlorine (Cl; 200 ppm), peroxyacetic acid (PA; 40 ppm) or acidified sodium chlorite (ASC; 100, 200, 500 ppm) under simulated commercial processing conditions. After washed, the carrots were spin dried, packaged and stored at 5 °C for up to 10 days. Bacterial enumeration was significantly ($P \leq 0.05$) reduced by 1, 1.5 and 2.5 log CFU/g after washing with ASC 100, 250 and 500 ppm, respectively. All sanitizers reduced pathogen load below that of tap water wash and unwashed controls. During storage at 5 °C the bacterial load of all treatments increased gradually, but to different extent in different treatments. ASC inhibited bacterial growth more effectively than the other sanitizers and also maintained the lowest pathogen counts (<1 log CFU/g) during storage. Organic matter in the process water significantly ($P \leq 0.05$) reduced the antibacterial efficacy of Cl, but not that of PA or ASC. Therefore, ASC shows the potential to be used as a commercial sanitizer for washing shredded carrots.