Title Prevention of *Escherichia coli* cross-contamination by different commercial sanitizers during washing of fresh-cut lettuce

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Abstract

The efficacy of fresh-cut produce sanitizers has mainly been evaluated by measuring microbial reductions on produce. However, its suitability to ensure that pathogens are rapidly killed avoiding cross-contamination of subsequent product also needs to be considered. The efficacy of chlorine, Tsunami®, Citrox® and Purac® on non pathogenic *Escherichia coli* reductions in processing water and on fresh-cut lettuce were studied. Selection of minimum effective doses was carried out in processing water, which contained a chemical oxygen demand (COD) within the range of 700–1000 mg/l and a total mesophilic load of about 7 log CFU/ml. The processing water was inoculated with two inoculum levels (3 and 5 log CFU/ml). It was observed that 40 mg/l of chlorine and 500 mg/l of Tsunami were effective in reducing the inoculum levels in the processing water to the detection limit (5 and 4 log units). However, Citrox and Purac were not effective in reducing *E. coli* population even at the highest manufacturer's recommended doses. Evaluation of cross-contamination in fresh-cut lettuce was carried out by measuring *E. coli* transfer from inoculated (~5 log CFU/g) to uninoculated lettuce after washing the contaminated product in the water containing different sanitizing agents. Chlorine and Tsunami were able to inactivate *E. coli* in wash water, avoiding cross-contamination between contaminated and non-contaminated product. However, Citrox and Purac at the recommended doses did not prevent transfer of *E. coli* cells between inoculated and uninoculated fresh-cut lettuce and therefore indicating cross-contamination. The results obtained show that chlorine and Tsunami are recommended as water disinfection agents preventing *E. coli* cross-contamination of produce during processing.