

Title Effectiveness of different sanitizers to control *Escherichia coli* O157:H7 on tomato surfaces

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Citation Book of Abstracts, Southeast Asia Symposium Quality and Safety of Fresh and Fresh Cut Produce Greater Mekong Subregion Conference on Postharvest Quality Management in Chains, August 3-5, 2009, Radisson Hotel, Bangkok, Thailand.

Keyword tomato; *Escherichia coli*; sanitizers

Abstract

The use of suitable sanitizer can contribute to reduce the risk of vegetable related foodborne illnesses. We evaluated the effectiveness of several sanitizers to reduce the inoculated *Escherichia coli* O157:H7 on petit (small) tomato surface. The difference of the effectiveness depending on the method of inoculation (dipping / spotting) was examined. Each of 80g of inoculated tomatoes was washed in 400 mL of sanitizer or water for 5 minutes. The obtained effectiveness of spot inoculated tomatoes was higher (2.0 log CFU/g) than those of dip inoculated samples. Washing with water or chlorine water could reduce 1.3 log CFU/g of *E. coli* O157:H7 in dip inoculated (6.7 log CFU/g) tomatoes. Washing with 1 g/L lactic acid, phytic acid, calcinated seashells (oyster / Sakhalin surf clam) and chitosan (in 0.5 g/L lactic acid) did not exhibit higher sanitary effectiveness than that of water wash alone (1.0 log CFU/g). Acidified sodium chlorite (ASC) solution prepared from 0.5 g/L of sodium chlorite and 5 g/L lactic or phytic acid reduced 3.5 log CFU/g of surface attached *E. coli*. The effectiveness of acidified sodium chloride was similar to that of water wash when the concentration of sodium chlorite was less than 0.05 g/l. Water or lactic acid (0.5 g/L) wash followed by a second wash with ASC (0.5 g/L of sodium chlorite and 5 g/L of lactic acid) did not exhibit additional sanitary effectiveness compare to single wash with ASC. However, washing with ASC followed by a second wash with 1 g/L chitosan (in 0.5 g/L lactic acid) exhibited additional 1.0 log CFU/g effectiveness compare to a secondary wash with up to 2 days of storage at 10°C. No significant difference of color, appearance, texture and taste was observed among all kinds of washed samples.