

Title The use of electrolyzed water as a disinfectant for minimally processed apples
Author Ana Graça, Maribel Abadias, Miguel Salazar and Carla Nunes
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Abstract

Chlorine (sodium hypochlorite solution) is the most common disinfectant used in the fresh-cut industry, however, environmental and health risks related to its use have resulted in a need to find new sanitizers. Electrolyzed water (EW) is a promising alternative, showing a broad spectrum of microbial decontamination. In this study the efficacy of acidic electrolyzed water (AEW) and neutral electrolyzed water (NEW) as disinfectants of apple slices inoculated with *Escherichia coli*, *Listeria innocua* or *Salmonella choleraesuis*, individually or in a mixture, were compared to that of sodium hypochlorite solution and distilled water. Apple slices were inoculated with a 10^7 cfu/mL suspension of the pathogens and treated with diluted electrolyzed water. Bactericidal activity of washing treatments was assessed after 30 min and after storage for 5 days at 4 °C. AEW and NEW disinfection efficacy was compared to that of washings with sodium hypochlorite at the same free chlorine concentration and with distilled water. AEW diluted to 100 mg/L of free chlorine was the treatment with the highest bactericidal activity in all tested conditions (reductions obtained ranged from 1.2 to 2.4 log units) followed by NEW and AEW at 100 and 50 mg/L of free chlorine respectively. In general these treatments were equal or more effective than sodium hypochlorite washings at 100 mg/L of free chlorine. The effect of the different sanitizer washings when pathogens were in a mixture was similar to that which occurred when pathogens were individually inoculated. The effectiveness of all washings slightly decreased when apple slices were stored for 5 days at 4 °C.