

The use of electrolyzed water as a disinfectant for fresh cut mango

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Abstract

The consumption of fresh-cut fruit is attributed to the health and convenience benefits of consumers. However, reports about associated-microorganism diseases have aroused the consumer's interest. Chlorine-based compounds are the classic method for the microbiological control. These compounds have been used to sanitize fruits and vegetables in the minimal processing industry worldwide, but they react with the organic matter present in the water that leads to the formation of potentially cancerous chlorinated compounds. Aiming to develop alternative technology to sodium hypochlorite, this study evaluated treatment with neutral electrolyzed water (NEW) on microbiology, quality and sensory parameters of fresh-cut mangoes. 'Tommy Atkins' mangoes were processed into cubes and treated by immersion in NEW solutions (0, 75, 150, 225 and 300 mg L⁻¹) or chlorine-based product at 200 mg L⁻¹, and then, stored at 3 ± 2 °C, 85 ± 5% RH for 0, 6 or 12 days. The microbiota of fresh-cut mangoes was reduced by NEW treatments similarly as observed by sanitization with commercial product. Nutritional components as vitamin C, carotenoids and phenolics were preserved by NEW treatments or commercial chlorine. Concerning the sensory aspects, the NEW at 150 mg L⁻¹ presented the same good acceptability as observed for commercial chlorine and even lower off-flavor intensity than this chlorine-based sanitizer. Fresh-cut mangoes treated with NEW at different concentrations showed equivalent microbiological and quality parameters to the mango treated with commercial sanitizer, which allow to provide that electrolyzed water is a viable alternative to chlorine-based compounds as a disinfectant, considering the lower adverse impact on the environment and possibly on human health.