Abstract

The efficacy of mildly heated, slightly acidic electrolyzed water (mildly heated SlAEW) at 45 °C for disinfection and maintenance of sliced carrot quality was studied. Mildly heated SlAEW (23 mg/L available chlorine, pH at 5.5) was used to treat the carrots, followed by rinsing with tap water (TW) for 2 min at 4 °C, and its effectiveness as a disinfectant was evaluated. The physicochemical properties of the carrots were determined and a comparison was made between treatments with SlAEW at room temperature (18 °C), TW at 18 °C and mildly heated TW at 45 °C. Results show that total aerobic bacteria, mold and yeast populations were significantly lower after mildly heated SlAEW treatment. Mildly heated SlAEW treatment reduced the total aerobic bacteria by 2.2 $\log_{10}$ CFU/g and molds and yeasts by >1.9 $\log_{10}$ CFU/g compared with TW treatment. Color indices of hue and chroma of sample surfaces were not affected by mildly heated SlAEW treatment and there were insignificant differences in hardness or the ascorbic acid and β-carotene contents of sliced carrots. The use of mildly heated SlAEW is suggested as an effective disinfection method for fresh cut carrots with low available chlorine.