
ABSTRACT

Treatment of fresh fruits and vegetables with electrolyzed water (EW) has been shown to kill or reduce foodborne pathogens. We evaluated the efficacy of EW in killing Escherichia coli O157:H7 on iceberg lettuce, cabbage, lemons, and tomatoes by using washing and/or chilling treatments simulating those followed in some food service kitchens. Greatest reduction levels on lettuce were achieved by sequentially washing with 14-A (amperage) acidic EW (AcEW) for 15 or 30 s followed by chilling in 16-A AcEW for 15 min. This procedure reduced the pathogen by 2.8 and 3.0 log CFU per leaf, respectively, whereas washing and chilling with tap water reduced the pathogen by 1.9 and 2.4 log CFU per leaf. Washing cabbage leaves for 15 or 30 s with tap water or 14-A AcEW reduced the pathogen by 2.0 and 3.0 log CFU per leaf and 2.5 to 3.0 log CFU per leaf, respectively. The pathogen was reduced by 4.7 log CFU per lemon by washing with 14-A AcEW and 4.1 and 4.5 log CFU per lemon by washing with tap water for 15 or 30 s. A reduction of 5.3 log CFU per lemon was achieved by washing with 14-A alkaline EW for 15 s prior to washing with 14-A AcEW for 15 s. Washing tomatoes with tap water or 14-A AcEW for 15 s reduced the pathogen by 6.4 and 7.9 log CFU per tomato, respectively. Application of AcEW using procedures mimicking food service operations should help minimize cross-contamination and reduce the risk of E. coli O157:H7 being present on produce at the time of consumption.