
Abstract:

One milliliter of culture containing a five-strain mixture of *Escherichia coli* O157:H7 (∼10^{10} CFU) was inoculated on a 100-cm² area marked on unscarred cutting boards. Following inoculation, the boards were air-dried under a laminar flow hood for 1 h, immersed in 2 liters of electrolyzed oxidizing water or sterile deionized water at 23°C or 35°C for 10 or 20 min; 45°C for 5 or 10 min; or 55°C for 5 min. After each temperature–time combination, the surviving population of the pathogen on cutting boards and in soaking water was determined. Soaking of inoculated cutting boards in electrolyzed oxidizing water reduced *E. coli* O157:H7 populations by ≥5.0 log CFU/100 cm² on cutting boards. However, immersion of cutting boards in deionized water decreased the pathogen count only by 1.0 to 1.5 log CFU/100 cm². Treatment of cutting boards inoculated with *Listeria monocytogenes* in electrolyzed oxidizing water at selected temperature–time combinations (23°C for 20 min, 35°C for 10 min, and 45°C for 10 min) substantially reduced the populations of *L. monocytogenes* in comparison to the counts recovered from the boards immersed in deionized water. *E. coli* O157:H7 and *L. monocytogenes* were not detected in electrolyzed oxidizing water after soaking treatment, whereas the pathogens survived in the deionized water used for soaking the cutting boards. This study revealed that immersion of kitchen cutting boards in electrolyzed oxidizing water could be used as an effective method for inactivating foodborne pathogens on smooth, plastic cutting boards.