
Abstract

The effectiveness of electrolyzed (EO) water at killing *Enterobacter aerogenes* and *Staphylococcus aureus* in pure culture was evaluated. One milliliter (approximately $10^9$ CFU/ml) of each bacterium was subjected to 9 ml of EO water or control water (EO water containing 10% neutralizing buffer) at room temperature for 30 s. Inactivation (reduction of $>9 \log_{10}$ CFU/ml) of both pathogens occurred within 30 s after exposure to EO water containing approximately 25 or 50 mg of residual chlorine per liter. The effectiveness of EO water in reducing *E. aerogenes* and *S. aureus* on different surfaces (glass, stainless steel, glazed ceramic tile, unglazed ceramic tile, and vitreous china) was also evaluated. After immersion of the tested surfaces in EO water for 5 min without agitation, populations of *E. aerogenes* and *S. aureus* were reduced by 2.2 to 2.4 $\log_{10}$ CFU/cm$^2$ and by 1.7 to 1.9 $\log_{10}$ CFU/cm$^2$, respectively, whereas washing with control water resulted in a reduction of only 0.1 to 0.3 $\log_{10}$ CFU/cm$^2$. The washing of tested surfaces in EO water with agitation (50 rpm) reduced populations of viable cells on the tested surfaces to <1 CFU/cm$^2$. For the control water treatment with agitation, the surviving numbers of both strains on the tested surfaces were approximately 3 $\log_{10}$CFU/cm$^2$. No viable cells of either strain were observed in the EO water after treatment, regardless of agitation. However, large populations of both pathogens were recovered from control wash solution after treatment.