

Title Effects of electrolyzed oxidizing water on reducing *Listeria monocytogenes* contamination on seafood processing surfaces

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Abstract

The effects of electrolyzed oxidizing (EO) water on reducing *Listeria monocytogenes* contamination on seafood processing surfaces were studied. Chips ($5 \times 5 \text{ cm}^2$) of stainless steel sheet (SS), ceramic tile (CT), and floor tile (FT) with and without crabmeat residue on the surface were inoculated with *L. monocytogenes* and soaked in tap or EO water for 5 min. Viable cells of *L. monocytogenes* were detected on all chip surfaces with or without crabmeat residue after being held at room temperature for 1 h. Soaking contaminated chips in tap water resulted in small-degree reductions of the organism (0.40–0.66 log cfu/chip on clean surfaces and 0.78–1.33 log cfu/chip on dirty surfaces). Treatments of EO water significantly ($p < 0.05$) reduced *L. monocytogenes* on clean surfaces (3.73 log on SS, 4.24 log on CT, and 5.12 log on FT). Presence of crabmeat residue on chip surfaces reduced the effectiveness of EO water on inactivating *Listeria* cells. However, treatments of EO water also resulted in significant reductions of *L. monocytogenes* on dirty surfaces (2.33 log on SS and CT and 1.52 log on FT) when compared with tap water treatments. The antimicrobial activity of EO water was positively correlated with its chlorine content. High oxidation–reduction potential (ORP) of EO water also contributed significantly to its antimicrobial activity against *L. monocytogenes*. EO water was more effective than chlorine water on inactivating *L. monocytogenes* on surfaces and could be used as a chlorine alternative for sanitation purpose. Application of EO water following a thorough cleaning process could greatly reduce *L. monocytogenes* contamination in seafood processing environments.