

## **Efficacy of acidic and alkaline electrolyzed water for inactivating *Escherichia coli* O104:H4, *Listeria monocytogenes*, *Campylobacter jejuni*, *Aeromonas hydrophila*, and *Vibrio parahaemolyticus* in cell suspensions**

### **Abstract**

This study investigated the effect of electrolyzed water on pathogenic bacteria cell suspensions. Specifically, we evaluated the efficacy of strong and weak acidic electrolyzed waters (SACEW, WACEW) and strong and weak alkaline electrolyzed waters (SALEW, WALEW) on *Vibrio parahaemolyticus*, *Listeria monocytogenes*, *Aeromonas hydrophila*, *Campylobacter jejuni*, and *Escherichia coli* O104:H4 in suspensions of ( $10^7$ - $10^9$ CFU/mL) in 1% NaCl. SACEW and WACEW were applied at available chlorine concentrations (ACC) of 20 and 10mg/mL, pH 3.1 and 3.55 and oxidation-reduction potentials (ORP) of 1150 and 950mV, respectively. Results show that no viable cells were recovered for *V.parahaemolyticus*, *L.monocytogenes*, *A.hydrophila*, *C.jejuni* within 2min at 20°C. However, *E.coli* O104:H4 was significantly more resistant to ALEW compared to ACEW. Results also show that the bactericidal activity of SACEW (20mg/mL ACC) was more effective than WACEW (10mg/mL ACC) in terms of inactivating *E.coli* O104:H4. Alkaline-electrolyzed waters were found to reduce cell numbers by 1-3 log ( $P<0.05$ ). However, alkaline electrolyzed water was less effective ( $P<0.05$ ) than acidic electrolyzed treatment. © 2015 Elsevier Ltd.