

**Title** Reduction of *Escherichia coli* O157:H7 and *Salmonella enteritidis* on mung bean seeds and sprouts by slightly acidic electrolyzed water

**Author** Chunling Zhang, Zhanhui Lu, Yongyu Li, Yuchao Shang, Gong Zhang and Wei Cao

**Citation** Food Control, Volume 22, Issue 5, May 2011, Pages 792-796

**Keywords** Slightly acidic electrolyzed water; *Escherichia coli* O157:H7; *Salmonella enteritidis*; Mung bean seeds; Sprouts; Inactivation

### Abstract

High microbial populations on mung beans and its sprouts are the primary reason of a short shelf life of these products, and potentially present pathogens may cause human illness outbreak. The efficiency for inactivating *Escherichia coli* O157:H7 (*E. coli* O157:H7) and *Salmonella enteritidis* (*S. enteritidis*), which were artificially inoculated on mung bean seeds and sprouts, by means of slightly acidic electrolyzed water (SAEW, pH 5.0 to 6.5) generated through electrolysis of a mixture of NaCl and hydrochloric acid solution in a non-membrane electrolytic chamber, was evaluated at the different available chlorine concentrations (ACCs, 20–120 mg/l) and treatment time (3–15 min), respectively. The effect of SAEW treatment on the viability of seeds was also determined. Results indicate that the ACC had more significant effect on the bactericidal activity of SAEW for reducing both pathogens on the seeds and sprouts compared to treatment time ( $P < 0.05$ ). The seeds and sprouts treated with SAEW at ACCs of 20 and 80 mg/l resulted in a reduction of 1.32–1.78 log<sub>10</sub> CFU/g and 3.32–4.24 log<sub>10</sub> CFU/g for *E. coli*, while 1.27–1.76 log<sub>10</sub> CFU/g and 3.12–4.19 log<sub>10</sub> CFU/g for *S. enteritidis*, respectively. The germination percentage of mung bean seeds was not significantly affected by the treatment of SAEW at an ACC of 20 mg/l for less than 10 min ( $P > 0.05$ ). The finding of this study implies that SAEW with a near-neutral pH value and low available chlorine is an effective method to reduce foodborne pathogens on seeds and sprouts with less effects on the viability of seeds.