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Influence of variations in methodology on populations of *Listeria monocytogenes* recovered from lettuce treated with sanitizers.

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Abstract

The elimination of *Listeria monocytogenes* inoculated onto a piece of cut iceberg lettuce (3.8 by 3.8 cm) by treatment with chlorinated water (200 micrograms/ml free chlorine) and a 0.5% (wt/vol) solution of FIT Professional Line Antibacterial Cleaner (FIT) was investigated. The efficacy of the two sanitizers was not influenced by the composition of the medium used to culture the *L. monocytogenes* used in the inocula, the number of strains in the inoculum, or the recovery medium used to enumerate the pathogen on lettuce after treatment. Drying inoculum on lettuce for 45 min at 37 degrees C caused more cells to die or not be retrieved compared with drying inoculum for 30 min at 25 degrees C. However, the percentage of cells in the inoculum recovered from lettuce treated with chlorine or FIT was not significantly different, regardless of the drying method. Stomaching, homogenizing, or stomaching followed by homogenizing lettuce treated with sanitizers resulted in recovery of similar numbers of *L. monocytogenes*, indicating that stomaching and homogenizing are equivalent in extracting cells; the sequential use of both processing methods did not substantially increase the efficiency of recovery. Washing lettuce with water or treating lettuce with 200 micrograms/ml chlorine or FIT resulted in decreases in populations of 0.60, 1.76, and 1.51 log CFU per lettuce piece, respectively, regardless of variations in test parameters. Reductions caused by sanitizers were significantly greater ($\alpha = 0.05$) than that observed for water but not significantly different from each other. It is concluded that evaluation of sanitizers for their efficacy in killing *L. monocytogenes* on lettuce can be determined by spot inoculating 50 microliters of a five-strain mixture of cells from 24-h cultures suspended in 5% horse serum albumen, followed by drying the inoculum for 45 min at 37 degrees C, treatment by submerging in 50 ml of sanitizer for 5 min, stomaching samples in 50 ml of Dey-Engley neutralizing broth for 2 min, and enumerating survivors on modified Oxford medium.

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