Evaluation of Fogger Technology with Plant-Based Sanitizers against *Listeria monocytogenes* in Different Food Products

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Listeria monocytogenes is a foodborne pathogen of concern in various foods from ready-to-eat meats to fresh produce. *L. monocytogenes* causes severe disease in vulnerable populations. Hence, the food industry needs reliable methods to control this bacterium. Current consumers prefer natural ingredients and processes in food production. Fogging technology can produce micron size particles of a specific sanitizer to decontaminate food surfaces. The objective of this study was to evaluate the efficacy of plant-based sanitizers applied via a fogger against *L. monocytogenes* on ready-to-eat meats and lettuce.

Test food products were inoculated with 6 log CFU/ml of *L. monocytogenes* on the surfaces and kept in a biohood for 1 hour to let the bacteria attach to the food surface. Following this, the food was treated with plant-based sanitizer microemulsion, applied via the fogger in an enclosed space for 2, 10 or 15 min. Controls included samples treated with sterile deionized water and an untreated sample. After treatment, for enumeration of surviving bacteria, 25-grams samples were taken from the food products, mixed thoroughly in buffered peptone water using a stomacher, serially diluted and plated on modified Oxford formulation agar. Food products were stored in the refrigerator and samples taken for enumeration on days 0, 3, 7 and 10.

On ham, a reduction of 1.6-logs was observed after 3 days of storage with 2% plant-based sanitizer microemulsion 15-minute treatment. On Romaine lettuce, a 0.4-0.6-log reduction was observed immediately after a 10- and 15-minute treatment, respectively, and a 1.3-log reduction after 10 days with 2% microemulsion treatment for 15-minutes. On turkey, and roast beef an average of 1.6-log, and 0.7-log reduction was observed immediately after treatment for 2-minutes, respectively, with 3% microemulsion treatment. These results show the potential of a plant-based sanitizer microemulsion applied via fogging to inactivate *L. monocytogenes* on meats and produce.