

Comparative Analysis of Inoculation and Recovery Techniques for Better Recovery of *Listeria monocytogenes* on Ready-to-eat Meats

Likitha Mudigonda, Vanshika Chauhan, Luis Rodríguez, and Sadhana Ravishankar
School of Animal & Comparative Biomedical Sciences, University of Arizona, Tucson, AZ

Listeria monocytogenes is a foodborne pathogen of concern in ready-to-eat (RTE) meats because of its ubiquitous and psychrotrophic nature. It can cause life-threatening illnesses in vulnerable populations. Therefore, reliable inoculation and recovery methods are essential for formulating food safety regulations, assessing the effectiveness of preventive measures, and enhancing food processing methodologies.

A comparative analysis of inoculation (spreading/brushing) and recovery (stomaching/shaking) techniques for *L. monocytogenes* on two RTE meats, roast beef and turkey ham was performed. The objective was to identify the most effective combination of inoculation and recovery techniques for *L. monocytogenes* on ready-to-eat meats.

A cocktail of three *L. monocytogenes* strains (Scott A, 101M, and F6854) was inoculated (6 log CFU/ml) on the surface of roast beef and turkey ham. Two inoculation methods were employed; brushing method utilized a silicon brush to evenly spread *Listeria* inoculum on the meat surface and, spreading method involved use of a disposable hockey stick spreader for a comprehensive coverage of the meat with *Listeria* inoculum. For recovery in buffered peptone water, two methods were applied. Stomaching involved processing the collected samples in a stomacher, and shaking method employed gentle manual massaging of collected samples. Samples taken for enumeration on days 0, 3, and 7 were serially diluted in 0.1% peptone water and plated on modified Oxford formulation agar.

For roast beef, the brushing and stomaching technique demonstrated the highest recovery with *L. monocytogenes* population of 3.61 log. Comparative results revealed that brushing, regardless of the recovery method, consistently outperformed spreading in uniform and efficient inoculation of *L. monocytogenes* on roast beef. For turkey ham, no considerable difference was observed between the two inoculation and recovery methods. This suggests a need for additional investigation.

Results highlight the importance of precise inoculation and recovery techniques in ensuring accurate pathogen enumeration and reinforcing food safety standards.