

Performance of the Atlas[®] *Listeria monocytogenes* Detection Assay on Food and Environmental Samples

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Introduction: *Listeria monocytogenes* (*L. monocytogenes*) is a foodborne pathogen resulting in approximately 1,600 infections annually in the US. Listeriosis primarily affects the immunosuppressed, elderly, children, and pregnant women, causing severe health problems such as encephalitis, meningitis, septicemia, and miscarriage. *L. monocytogenes* control continues to be a food safety challenge given the organism's ability to survive and grow under low pH, low temperature, and high salt.

Purpose: To develop a molecular method for detecting *L. monocytogenes* in 25- and 125-g food portions and environmental samples with testing being performed after a single enrichment.

Methods: Fractionally inoculated food samples and non-inoculated environmental samples are analyzed using the Atlas *Listeria monocytogenes* Detection Assay, a messenger RNA (mRNA) based detection method with target specific to *L. monocytogenes*. 25-g food (Ice Cream, Lettuce, Chicken Salad, Hot Dog, Cured Ham, Frozen Cream Pie, Frozen Pizza, Brie) and environmental samples are enriched at 35°C in PALCAM base with 0.02 g/L of Nalidixic acid for 24 hr, and a 26-hr enrichment is used for 125-g food (Cooked Chicken and Deli Turkey) samples. Enriched samples are transferred to a proprietary lysis buffer, automatically purified via Target Capture, amplified by Transcription Mediated Amplification, and detected by Hybridization Protection Assay. Culture confirmation is performed by transferring 100 µL of enrichment to 10 mL of Fraser for 24 hr at 35°C and streaking onto MOX plates.

Results: The Atlas *Listeria monocytogenes* Detection Assay provides positive results for 100% of *L. monocytogenes* strains, and negative results for tested non-target microorganisms commonly found in food and grown to a titer $\geq 1E+08$ CFU/mL. The assay is comparable to culture for all tested matrices. Similar comparability is observed on environmental samples where positive samples are *L. monocytogenes* confirmed.

Significance: The Atlas *Listeria monocytogenes* Detection Assay specifically detects *L. monocytogenes* in a variety of inoculated food matrices (25 g and 125 g) and non-inoculated environmental samples after 24- to 26-hr enrichment on the Atlas System with comparable sensitivity to culture.

For more information or to request the full poster of this abstract, please email: info@rokabio.com



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