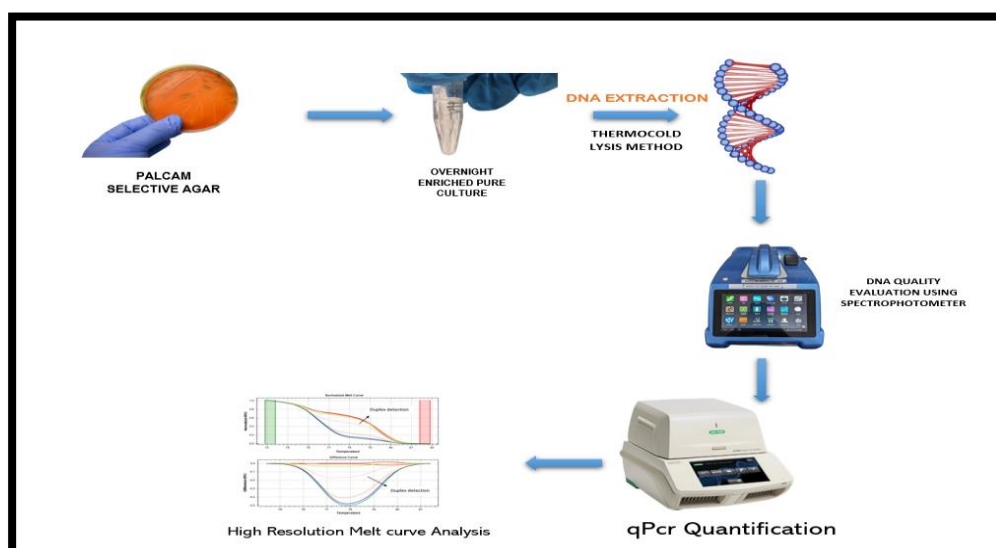


Technology for detection of *Listeria species* and *Listeria monocytogenes* in meat products using duplex real time PCR assay with high resolution melt analysis.

Inventor: Dr. Vishnuraj M.R.

Brief description about technology

This study tackles the critical challenge of *Listeria monocytogenes* contamination in animal-derived foods, highlighting the importance of early and accurate detection. The core focus is the development of a duplex real-time PCR assay utilizing SYBR Green chemistry coupled with high-resolution melting analysis (HRMA). To ensure specificity and avoid cross-reactivity with closely related *Listeria* species, two primer sets were designed—one targeting the *Listeria* genus and the other specific to *L. monocytogenes*. Detailed interpretation of HRM curve profiles was carried out to enhance the clarity and reliability of detection. The assay was meticulously optimized through a non-orthogonal approach and rigorously validated in accordance with international standards. It demonstrated high sensitivity, with an absolute limit of detection (LOD_{abs}) of 0.78 ng and a limit of quantification (LOQ) of 1.56 ng of target DNA. Additionally, a relative limit of detection (LOD_{rel}) of 1% *Listeria* DNA in a mixed background confirms its effectiveness in complex samples. When applied to artificially spiked samples, the assay achieved a notable detection threshold of 120 CFU/mL, underscoring its potential for practical food safety applications.

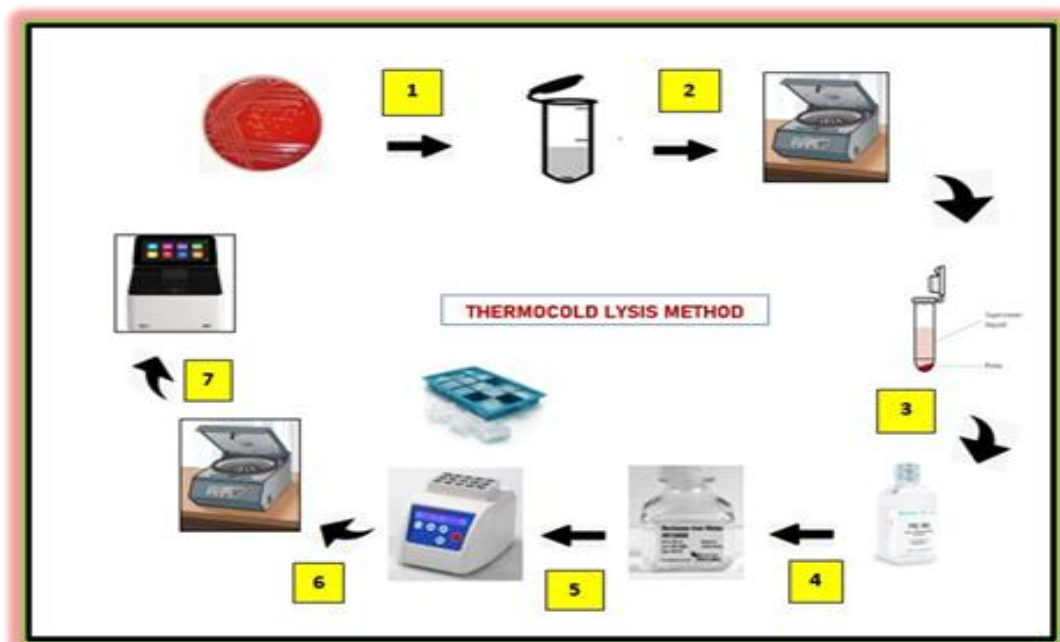


Basic process of the developed technology (Duplex real-time PCR assay with high-resolution melt analysis for the detection of *Listeria* species and *Listeria monocytogene*

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(ISO 9001:2015 और FSSC 22000 प्रमाणित, ISO/IEC 17025:2017 NABL मान्यता प्राप्त, FSSAI रेफरल प्रयोगशाला)



DNA Extraction from a Pure culture using Thermocold lysis method

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