

METHOD SUMMARY – QWI-FM0068

Method Title	Listeria Confirmation using MALDI-TOF Biotyper		
Document number	QWI-FM0068	Date Issued	15 th November 2017

Method External References	AS/NZS 5013.24.1 Microbiology of food and animal feeding stuffs – Horizontal method for the detection and enumeration of Listeria monocytogenes – Detection method (ISO 11290-1:1996, MOD) Bruker standard operating procedure
Matrix	All matrices
ALS Department	<input type="checkbox"/> Pharmaceutical Chemistry <input checked="" type="checkbox"/> Water Microbiology <input type="checkbox"/> Pharmaceutical Microbiology <input checked="" type="checkbox"/> Food Microbiology <input type="checkbox"/> Food Chemistry
Accreditation Status	<input checked="" type="checkbox"/> NATA <input type="checkbox"/> NON-NATA <input type="checkbox"/> N/A
Analysis technique	<input type="checkbox"/> HPLC <input type="checkbox"/> GC <input type="checkbox"/> Wet Chemistry <input type="checkbox"/> Physical <input type="checkbox"/> Gravimetric <input checked="" type="checkbox"/> Qualitative <input type="checkbox"/> Pour Plate <input type="checkbox"/> Spread Plate <input type="checkbox"/> MPN <input type="checkbox"/> Filtration <input type="checkbox"/> Petrifilm <input type="checkbox"/> EHS <input type="checkbox"/> ELISA <input type="checkbox"/> VIDAS UP <input type="checkbox"/> VIDAS <input type="checkbox"/> TEMPO
Method Principle	<p>This method describes the procedure for the confirmation of Listeria using MALDI-TOF Biotyper in food products, pharmaceutical and cosmetic products, water samples and environmental samples (hygiene swabs).</p> <p>The Bruker MALDI biotyper is a mass spectrometer based on MALDI-TOF (Matrix-assisted laser desorption/ionisation time of flight) technology for rapid identification of organisms from microbial cultures.</p> <p>A portion of a colony from an agar plate is applied to a spot onto a target slide. A matrix solution is applied to the spot on the slide; the slide is then dried and loaded into the biotyper.</p> <p>Matrix-Assisted Laser Desorption - Ionization Time Of Flight (MALDI – TOF) is a soft ionisation technique used in mass spectrometry, allowing the analysis of biomolecules (biopolymers such as nucleic acids, peptides, proteins, and sugars) and large organic molecules (such as polymers, dendrimers and other macromolecules), which tend to be fragile and fragment when ionised by more conventional ionisation methods.</p> <p>These ions are electrostatically accelerated over a short distance and arrive in the flight tube at a mass-dependent speed. Because different proteins/peptides have different masses, ions arrive at the detector at different times (time of flight). The mass spectrometer measures the time (in the microsecond range) between pulsed acceleration and the corresponding detector signal, and the speed is converted into an exact molecular mass.</p> <p>The highly abundant microbial ribosomal proteins result in a mass</p>

	spectrum with a characteristic mass and intensity distribution pattern. For many microorganisms, this pattern is species-specific and can be used as a 'molecular fingerprint' to identify the sample.
Reporting Unit	Listeria species Detected / Not Detected in X g/X mL of product or swab or <i>Listeria monocytogenes</i> Detected / Not Detected in X g/X mL of product or swab
LOR/LOQ	<1

Minimum amount of sample required for analysis	1 isolated culture	Turnaround time	1 day
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