LPM Agar Base

M1228

LPM (Lithium Phenylethanol Moxalactam) Agar is recommended for isolation and cultivation of *Listeria monocytogenes* from food and dairy products.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	5.000
Peptic digest of animal tissue	5.000
Beef extract	3.000
Glycine anhydride	10.000
Lithium chloride	5.000
Sodium chloride	5.000
Phenylethyl alcohol	2.500
Agar	15.000
Final pH (at 25°C)	7.3±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 50.5 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 12 minutes. Cool to 50°C and aseptically add rehydrated contents of 1 vial of Moxalactam Supplement (FD151). Mix well before pouring into sterile Petri plates.

Warning : Lithium chloride is harmful. Avoid bodily contact and inhalation of vapours. On contact with skin, wash with plenty of water immediately.

Principle And Interpretation

The first reported foodborne outbreak of listeriosis was in 1985 (6) and since then, microbiological and epidemiological evidence from both sporadic and epidemic cases of listeriosis has shown that the principal route of transmission is via the consumption of foodstuffs contaminated with *Listeria monocytogenes* (7). The organism has been isolated from commercial dairy and other food processing plants, and is ubiquitous in nature, being present in a wide range of unprocessed foods and in soil, sewage and silage and river water (8). *Listeria* species grow over a pH range of 4.4 to 9.6, and survive in food products with pH levels outside these parameters (2). Motility is most pronounced at 20°C.

L. monocytogenes is a gram-positive foodborne human pathogen responsible for serious infections in pregnant women that may ultimately result in abortion, stillbirth, birth of child with meningitis or primary bacteremia in adults and juveniles. Lee and McClain (1) developed LPM Agar, which is a modification of McBride Listeria Agar. It enhances the recovery of low numbers of *L. monocytogenes* from mixed microflora in samples. APHA also recommends this medium for food and dairy sample testing (2, 3).

In LPM Agar peptic digest of animal tissue, casein enzymic hydrolysate and beef extract are sources of nitrogen, vitamins and minerals. Sodium chloride maintains the osmotic balance of the medium. Glycine anhydride improves recovery of Listeria. Lithium chloride, moxalactam and phenyl ethanol aids in suppression of both gram-positive and gram-negative organisms including *Staphylococcus* , *Proteus* and *Pseudomonas* species. *Listeria monocytogenes* show blue-green iridescence when examined with oblique transmitted light (4, 5).For liquid samples, pipette 25 ml sample in to 225 ml Listeria Enrichment Broth in 500 ml flask and mix well by shaking. For solid samples, weigh 25 grams into a stomacher bag and add 225 ml of enrichment broth. Mix the sample by stomaching for 2 minutes and incubate the mixture in the plastic bag at 30°C. After incubation for 24 hours and again at 48 hours, the enriched culture is streaked onto LPM Agar (M1228). Incubate at 35°C for 48 hours and presumptive *Listeria* colonies are selected under 45°C transillumination.

Quality Control

Appearance
Cream to light yellow homogeneous free flowing powder

Gelling
Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium
Light yellow coloured clear to slightly opalescent gel forms in Petri plates

Reaction
Reaction of 5.05% w/v aqueous solution at 25°C. pH : 7.3±0.2

pH
7.10-7.50

Cultural Response
M1228: Cultural characteristics observed with added Moxalactum Supplement (FD151) after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery
Cultural Response			
Escherichia coli ATCC 25922	>=10^3	inhibited	0%
Listeria monocytogenes ATCC 19111	50-100	good-luxuriant	>=50%
Listeria monocytogenes ATCC 19112	50-100	good-luxuriant	>=50%
Listeria monocytogenes ATCC 19117	50-100	good-luxuriant	>=50%
Pseudomonas aeruginosa ATCC 27853	>=10^3	inhibited	0%
Staphylococcus aureus ATCC 25923	>=10^3	inhibited	0

Storage and Shelf Life
Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

Reference
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3. Marshall R. T., (Ed.), 1992, Standard Methods for the Examination of Dairy Products, 16th Ed., APHA, Washington, D.C.
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5. Murray P. R., Baron J. H., Pfaller M. A., Jorgensen J. H. and Yolken R. H., (Ed.), 2003, Manual of Clinical Microbiology, 8th Ed., American Society for Microbiology, Washington, D.C.
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