



Modified McBride Listeria Agar Base

M891

Modified McBride Listeria Agar base is used for selective isolation and cultivation of *Listeria monocytogenes* from foodstuffs, clinical samples etc.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	5.000
Peptic digest of animal tissue	5.000
Beef extract	3.000
Sodium chloride	5.000
Glycine anhydride	10.000
Lithium chloride	0.500
Phenyl ethanol	2.500
Agar	15.000
Final pH (at 25°C)	7.3±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 46.00 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool below 50°C. Before gelling, aseptically add sterile rehydrated contents of 1 vial of McBride Listeria Supplement (FD070). Mix well and pour 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 disease listeriosis is a frequent cause of abortions in cattle and sheep. In human, symptoms are manifested as septicemia, encephalitis and circulatory monocytosis (1). In women, *Listeria* may be harboured in the genital tract and may be transmitted transplacentally from infected amniotic fluid and vaginal discharge to infants (2). *Listeria* was first definitively described by Murray et al (3) in connection with an epizootic disease among laboratory-raised guinea pigs and rabbits. Since *Listeria* species are generally associated with animals, outbreaks of listeriosis are usually associated with contaminated dairy products. *Listeria* multiplies over a wide range of temperatures, from 3°C to 45°C, and over a pH range of 5.0 to 9.6. It also survives in food products with pH levels outside these parameters (4). Because of these properties, *Listeria* survives the various food processing techniques (5).

Modified McBride Listeria Agar Base differ from McBride Listeria Agar Base in the nutrient source available to *Listeria* species.

Casein enzymic hydrolysate and beef extract in the medium supply nitrogen, carbon, sulphur and trace nutrients required for the growth of *Listeria*. Phenyl ethyl alcohol is bacteriostatic for gram-negative bacteria as it selectively inhibits DNA synthesis (6). Sodium chloride maintains the osmotic balance of the medium. Glycine inhibits certain gram-negative and gram-positive bacteria including *Escherichia coli* and *Enterococcus faecalis*, the common accompanying contaminants. Lithium chloride also has antibacterial activity. Further selectivity is achieved by the addition of McBride Listeria Supplement (FD070). The detection of *L.monocytogenes* is greatly improved by pre-enrichment in liquid media either by one step or two steps. In one step method (7), infected material is inoculated directly in Listeria Selective Broth Base (M889), while in two steps method (8), infected material is inoculated in Listeria Enrichment Broth Base (UVM) (M890A) and incubated at refrigeration temperature of 4°C for few weeks (cold enrichment), as the organism has the ability to grow in low temperature. It is then inoculated in Fraser Secondary Enrichment Broth Base (M1083), followed by plating onto selective agar such as Modified McBride Listeria Agar. The presumptive *Listeria* colonies are selected under 45° transillumination. *Listeria*

colonies are dense white to iridescent white appearing as crushed glass. Small colonies tend to be blue, while non- *Listeria* show yellowish orange colonies that are further purified.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Light amber clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 4.6% w/v aqueous solution at 25°C. pH : 7.3±0.2

pH

7.10-7.50

Cultural Response

M891: Cultural characteristics observed under anaerobic condition with added McBride Listeria Supplement (FD070) after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery
<i>Enterococcus faecalis</i> ATCC 29212	50-100	none - poor	0-10%
<i>Escherichia coli</i> ATCC 25922	50-100	none - poor	0-10%
<i>Listeria monocytogenes</i> ATCC 19112	50-100	good-luxuriant	≥50%
<i>Pseudomonas aeruginosa</i> ATCC 27853	50-100	none - poor	0-10%

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.Murray E. G. D., Webb R. A. and Swann M. B. R., 1926, J. Pathol. Bacteriol., 29:407.
- 4.Conner D. E., Brackett R. E., and Beuchat L. R., 1986, Appl. Environ. Microbiol., 52: 59
- 5.Doyle M. P., Meske L. M. and Marth E. H., 1985, J. Food Prot., 48:740
- 6.Dowell, Hill and Altemeier, 1964, J. Bacteriol., 88:1811.
- 7.FDA Bacteriological Analytical Manual, 2005, 18th Ed., AOAC, Washington, DC.
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