LPM Agar Base Listeria Selective Supplement

Intended Use

LPM Agar Base is used with Listeria Selective Supplement for isolating and cultivating *Listeria monocytogenes*.

Summary and Explanation

First described in 1926 by Murray, Webb and Swann,¹ Listeria monocytogenes is a widespread problem in public health and the food industries. This organism can cause human illness and death, particularly in immunocompromised individuals and pregnant women.² The first reported foodborne outbreak of listeriosis was in 1985,³ 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 *L. monocytogenes*.⁴

Implicated vehicles of transmission include turkey frankfurters,⁵ coleslaw, pasteurized milk, Mexican-style cheese, paté, and pickled pork tongue. 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, silage and river water.⁶

Listeria species grow over a pH range of 4.4-9.6, and survive in food products with pH levels outside these parameters.⁷ *Listeria* spp. are microaerophilic, gram-positive, asporogenous, non-encapsulated, non-branching, regular, short, motile rods. Motility is most pronounced at 20°C.

The most common contaminating bacteria found in food sources potentially containing *Listeria* are: streptococci, especially the enterococci, micrococci and *Bacillus* species, *Escherichia coli*, *Pseudomonas aeruginosa* and *Proteus vulgaris*.⁸

Identification of *Listeria* is based on successful isolation of the organism, biochemical characterization and serological confirmation.

LPM Agar, a modification of McBride Listeria Agar, was developed by Lee and McClain⁹ to recover low numbers of *L. monocytogenes* from samples with profusely mixed microflora. Its use is recommended when testing food and dairy samples and clinical specimens for *Listeria*.





Principles of the Procedure

In LPM Agar, peptones and beef extract provide nitrogen, vitamins and minerals. Sodium chloride maintains the osmotic balance of the medium. Glycine anhydride is used for improved recovery of Listeria. Lithium chloride, in an increased concentration, and phenylethanol are incorporated to aid in suppression of both gram-positive and gram-negative contaminants. Agar is the solidifying agent. Listeria Selective Supplement is added to LPM Agar Base after autoclaving to inhibit staphylococci, bacilli and Proteus species.

Formulae

Difco[™] LPM Agar Base

Approximate Formula* Per Liter	
Pancreatic Digest of Casein	5.0
Proteose Peptone No. 3	5.0
Beef Extract	
Sodium Chloride	5.0
Lithium Chloride	5.0

Lithium Chloride	g
Glycine Anhydride10.0	ğ
Phenylethanol	g
Agar	g

BBL[™] Listeria Selective Supplement

Formula Per 1 mL Vial		
Moxalactam	0.01	g
*Adjusted and/or supplemented as required to meet performance criteria.		

Directions for Preparation from Dehydrated Product

Difco[™] LPM Agar Base

- 1. Suspend 50.5 g of the powder in 1 L of purified water. Mix thoroughly.
- 2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
- 3. Autoclave at 121°C for 15 minutes.
- 4. Cool medium to 45-50°C.
- 5. Aseptically add 2.0 mL of the reconstituted Listeria Selective Supplement to 1 L of medium. Mix well.
- 6. Test samples of the finished product for performance using stable, typical control cultures.

BBL[™] Listeria Selective Supplement

- 1. Reconstitute each lyophilized vial by aseptically adding 2.0 mL of sterile purified water with a sterile syringe and needle.
- 2. Invert the vial several times to assure complete solution.

Procedure

Clinical specimens obtained from nonsterile sites should be selectively enriched for Listeria spp. before being plated. Refer to appropriate references for the procedure to use with clinical specimens.¹⁰ For a procedure for isolating Listeria from milk, milk products and food samples, refer to an appropriate reference.7,11,12

Expected Results

Observe colonies under oblique transmitted light. Listeria colonies display a gray to blue color with a ground glass appearance.

References

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- Ryser and Donnelly. 2001. In Downes and Ito (ed.), Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
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Availability

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g

g

Difco[™] LPM Agar Base

AOAC BAM CCAM COMPF SMD

222120 Dehydrated - 500 g* Cat. No. 222110 Dehydrated – 2 kg³

BBL[™] Listeria Selective Supplement

AOAC BAM CCAM COMPF SMD

Cat. No. 212402 Vial - 10 × 2 mL* *Store at 2-8°C