LPM AGAR

INTENDED USE
Remel LPM Agar is a solid medium recommended for use in qualitative procedures for selective isolation of *Listeria monocytogenes*.

SUMMARY AND EXPLANATION
Listeria monocytogenes is a common contaminant in the food processing environment.[1,2] Contaminated meat and dairy products have been responsible for outbreaks of potentially life-threatening consumer illness. Successful recovery of *Listeria* from food and environmental sources depends on the ability of the method to promote the growth of potentially injured cells while at the same time inhibiting the growth of non-*Listeria* background organisms.[3] LPM (lithium chloride-phenylethanol-moxalactam) Agar is a modification of McBride Agar developed by Lee and McClain.[4] The selective properties of LPM Agar are enhanced by an increase in the concentration of lithium chloride and the addition of moxalactam. LPM Agar is recommended by the U.S. Department of Agriculture Food Safety Inspection Service and the American Public Health Association (APHA) for testing food and dairy samples for *Listeria*.[5] It is also recommended for isolation of *Lysteria monocytogenes* from clinical specimens, especially those obtained from nonsterile sites.[6]

PRINCIPLE
Peptones and beef extract provide nutrients necessary for growth. Sodium chloride maintains osmotic equilibrium. Glycine anhydride, lithium chloride, and phenylethyl alcohol are selective agents which inhibit growth of gram-positive cocci and gram-negative bacilli. Moxalactam is a broad-spectrum antibiotic which suppresses the growth of background organisms including *Proteus, Pseudomonas,* and *Staphylococcus* spp. Agar is a solidifying agent.

REAGENTS (CLASSICAL FORMULA)*

Glycine Anhydride	10.0	g	Beef Extract	3.0	g
Casein Peptone	5.0	g	Phenylethyl Alcohol	2.5	g
Lithium Chloride	5.0	g	Moxalactam	20.0	mg
Meat Peptone	5.0	g	Agar	15.0	g
Sodium Chloride	5.0	g	Demineralized Water	1000.0	ml

pH 7.3 ± 0.2 @ 25°C

*Adjusted as required to meet performance standards.

PROCEDURE
Methods for detection of *L. monocytogenes* vary with the material under examination. Selective enrichment and cold enrichment have been shown to increase isolation rates, especially when small numbers of bacterial cells are present in the sample (<100 bacteria per gram). Choose an appropriate method based on the type of sample to be tested. Follow established laboratory procedures for sample preparation, media inoculation, and incubation. Consult appropriate references for further instructions.[1-3,5]

INTERPRETATION
On LPM Agar, colonies of *Listeria* are gray to blue in color with a ground glass appearance.

QUALITY CONTROL
All lot numbers of LPM Agar have been tested using the following quality control organisms and have been found to be acceptable. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

CONTROL	INCUBATION	RESULTS
Listeria monocytogenes ATCC® 7646	Ambient, up to 48 h @ 33-37°C	Growth
Escherichia coli ATCC® 25922	Ambient, up to 48 h @ 33-37°C	Inhibition (complete)
Staphylococcus aureus ATCC® 25923	Ambient, up to 48 h @ 33-37°C	Inhibition (complete)

LIMITATIONS
1. *Listeria* spp. other than *L. monocytogenes* may grow on LPM Agar.
2. Enterococci may grow on LPM Agar and exhibit blackening of the agar. Such colonies require differentiation from *Listeria* spp. using additional biochemical characterization following established laboratory procedures.[6]
3. This test is only part of the overall scheme for identification of *L. monocytogenes.* Additional biochemical and serological testing is required for definitive identification of isolate as *L. monocytogenes*. Consult appropriate references for further instructions.[1-3,5,6]

BIBLIOGRAPHY

1. Food and Drug Administration. 2001. Bacteriological Analytical Manual Online. Chapter 10, Revised January 2003. Authors: A.D. Hitchins. AOAC International, Gaithersburg, MD.
2. Wehr, H.M. and J.F. Frank. 2004. Standard Methods for the Examination of Dairy Products. 17th ed. APHA, Washington, D.C.
3. Downes, F.P. and K. Ito. Compendium of Methods for the Microbiological Examination of Foods. 4th ed. APHA, Washington, D.C.
4. Lee, W.H. and D. McClain. 1986. Appl. Environ. Microbiol. 52:1215-1217.
5. U.S. Department of Agriculture Food Safety and Inspection Service. 1998. Microbiology Laboratory Guidebook. 3rd ed. Chap. 8, (revised 8/05). Retrieved October 15, 2007 from http://www.fsis.usda.gov/Science/Microbiological_Lab_Guidebook/.
6. Versalovic, J., K.C. Carroll, G. Funke, J.H. Jorgensen, M.L. Landry, and D.W. Warnock. 2011. Manual of Clinical Microbiology. 10th ed. ASM Press, Washington, D.C.

Refer to the front of Remel *Technical Manual of Microbiological Media* for **General Information** regarding precautions, product storage and deterioration, specimen collection, storage and transportation, materials required, quality control, and limitations.

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