

Listeria Enrichment Medium Base, Modified (UVM Medium), Granulated

GM890M

Listeria Enrichment Medium Base, Modified (UVM Medium), granulated is used for selective isolation and cultivation of *Listeria monocytogenes* from clinical specimens.

Composition**

Ingredients

Gms / Litre

Tryptose	10.000
Meat extract	5.000
Yeast extract	5.000
Sodium chloride	20.000
Potassium dihydrogen phosphate	1.350
Disodium hydrogen phosphate	12.000
Esculin	1.000
Nalidixic acid	0.02
Acriflavine Hydrochloride	0.012
Final pH (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 54.38 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. This is UVM I medium.

For UVM II medium, Cool above medium to 45- 50°C and aseptically add rehydrated contents of 1 vial of Listeria UVM Supplement II (FD137M) to 990 ml of medium. Mix well and dispense in tubes or flasks as desired.

Principle And Interpretation

Listeriosis is caused by *Listeria monocytogenes*, a short gram-positive non-sporulating rod. The bacilli are commonly found in soil and in the intestines of many animals including birds, fish, barnyard animals, dairy cattle and household pets. It is transmitted to humans by foods contaminated with faecal matter, as well as by the consumption of animal foods contaminated with the bacilli (1). Listeria Enrichment Medium Base is used for the selective cultivation and isolation of *L. monocytogenes* from clinical samples. The medium was originally formulated by Donnelly and Baigent (2). It was later modified by decreasing the nalidixic acid concentration in the selective supplements and subsequently increasing the acriflavin concentration (3). University of Vermont Modification Medium (UVM) used a two-step selective enrichment medium resulting in a higher isolation rate of *L. monocytogenes* from meat products within 3-4 days. This UVM Broth is recommended as a primary enrichment broth for recovery of heat-injured *Listeria* (4).

Casein enzymic hydrolysate, proteose peptone, beef extract and yeast extract provide necessary nutrients while esculin offers differential properties to the medium. Nalidixic acid and acriflavin hydrochloride together with higher concentration of phosphate render the medium selective for *Listeria*. Gram-negative and gram-positive organisms are inhibited by nalidixic acid and acriflavin hydrochloride respectively.

The two-step selective enrichment method developed (3) results in a higher detection rate of *L. monocytogenes* from specimens and has the added advantage of only taking 3-4 days. For primary isolation inoculate 25 gm or 25 ml specimen in 225 ml Listeria Enrichment Medium Modified (UVM Medium) M890M. After 24 hours incubation, spread 0.2 ml of this medium on Listeria Selective Agar (M567) plate. Simultaneously transfer 0.1 ml of Enrichment broth to 10 ml of fresh Listeria Enrichment Medium Base with added Listeria UVM Supplement II (FD137M).

For secondary enrichment after 24 hours spread 0.2 ml of this medium on Listeria Selective Agar (M567) plate.

Note: Broth cultures of *Listeria* are more dangerous than colonies on agar plates, so proper precautions should be taken while handling.

Quality Control

Appearance

Cream to light tan coloured granular medium

Colour and Clarity of prepared medium

Medium amber coloured, slightly opalescent solution with a bluish tinge

Reaction

Reaction of 5.43% w/v aqueous solution at 25°C. pH : 7.2±0.2

pH

7.00-7.40

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 24-48 hours .

Cultural Response

Organism	Inoculum (CFU)	Growth on GM890M / & (On addition of FD137M)
Cultural Response		
<i>Escherichia coli</i> ATCC 25922	50-100	none to poor
<i>Listeria monocytogenes</i> ATCC 19111	50-100	good-luxuriant
<i>Listeria monocytogenes</i> ATCC 19112	50-100	good-luxuriant
<i>Listeria monocytogenes</i> ATCC 19117	50-100	good-luxuriant
<i>Listeria monocytogenes</i> ATCC 19118	50-100	good-luxuriant
<i>Staphylococcus aureus</i> ATCC 25923	50-100	none to poor

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

1. Alcamo E. I., 2001, Fundamentals of Microbiology, 6th Edition, Jones and Bartlett publishers
2. Donnelly C. W. and Baigent G. J., 1986, Appl. Environ. Microbiol., 52:689.
3. McClain D. and Lee W. H., 1988, J. Assoc. off Anal. Chem., 71:660.
4. Bailey J. S., Fletcher D. L. and Cox N. A., 1990, J. Food Prot., 53:473.

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