

Technical Information

Listeria Enrichment Medium Base (UVM Medium)

Product Code: DM 1890A

Application: - Listeria Enrichment Medium Base (UVM Medium) is used for selective isolation and cultivation of *Listeria monocytogenes* from clinical specimens.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	5.000
Proteose peptone	5.000
Beef extract	5.000
Yeast Autolysate	5.000
Sodium chloride	20.000
Monopotassium dihydrogen phosphate	1.350
Disodium hydrogen phosphate	12.000
Esculin	1.000
Final pH (at 25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Listeriosis in human being is caused by *Listeria monocytogenes* which 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 a zoonotic disease transmitted to humans 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⁾. Later it was modified by decreasing the nalidixic acid concentration and increasing the acriflavin concentration in the selective supplements ⁽³⁾. A two-step selective enrichment medium used by University of Vermont Modification Medium (UVM) 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⁾ from different food product.

Casein enzymic hydrolysate, proteose peptone, beef extract and Yeast Autolysate provide necessary nutrients while esculin provides differential properties to the medium. Nalidixic acid and acriflavin hydrochloride together with higher concentration of phosphate make 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 Base with added Listeria UVM Supplement I (MS2136). After 24 hours incubation, spread 0.2 ml of this medium on Listeria Selective Agar (DM1567) plate. Simultaneously transfer 0.1 ml of Enrichment broth to 10 ml of fresh Listeria Enrichment Medium Base with added Listeria UVM Supplement II (MS2137). For secondary enrichment after 24 hours spread 0.2 ml of this medium on Listeria Selective Agar (DM1567) plate.

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

Methodology

Suspend 27.17 grams of powder media in 500 ml distilled water. Shake well & heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 50°C and aseptically add rehydrated contents of 1 vial of Listeria UVM Supplement I (MS2136) for primary enrichment or 1 vial of Listeria UVM Supplement II (MS2137) for secondary enrichment. Mix well and dispense as desired.

Quality Control

Physical Appearance

Cream to light tan homogeneous free flowing powder

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 : 7.4±0.2

pH Range

7.20-7.60

Cultural Response/Characteristics

DM 1890A: Cultural characteristics observed after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth (on addition of MS2136 or MS2137)
<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	5-100	Good-Luxuriant
<i>Staphylococcus aureus</i> ATCC 25923	50-100	None to poor

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

Prepared Media: 2-8° in sealable plastic bags for 2-5 days.

Further Reading

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.

Disclaimer :

User must ensure suitability of the product(s) in their application prior to use.

The product conform solely to the technical information provided in this booklet and to the best of knowledge research and development work carried at CDH is true and accurate

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