M-Endo Agar LES plate

Intended Use
M-Endo Agar LES plate is used for enumerating coliforms in water by membrane filtration.

Summary
The filtration technique enables fairly large volumes of water to pass rapidly under pressure, but prevents the passage of any bacteria present. These bacteria are retained on the surface of the membrane which is then brought into contact with suitable liquid nutrients. These nutrients diffuse upwards through the pores thereby inducing the organisms to grow as surface colonies which can be counted.
Endo Medium was first developed by Endo to differentiate between lactose-fermenters and non-fermenters. This medium employed sodium sulphite and basic fuchsin instead of bile salts to achieve inhibition of Gram-positive bacteria. M-Endo Agar, LES is a modification of the original medium and is formulated as per McCarthy *et al*., of Lawrence Experimental Station (LES) for testing coliforms in water using a two-step membrane filter procedure, wherein Lauryl Sulphate Broth is used as the primary enrichment medium. This medium is recommended by APHA for testing coliforms in drinking and in bottled water.

Principle
Casein enzymic hydrolysate, tryptose, peptic digest of animal tissue and yeast extract provide essential nutrients especially nitrogenous for the coliforms. Lactose is the fermentable carbohydrate. Sodium sulphite, sodium deoxycholate and basic fuchsin inhibit the growth of Gram-positive organisms. Phosphates buffers the medium. Coliforms ferment lactose and the resulting acetaldehyde reacts with sodium sulphite and basic fuchsin to form red colonies and similar colouration of the medium. Lactose non-fermenters form pink - colourless colonies.

Formula*

Ingredients	**g/L**
Casein Enzymic Hydrolysate	3.7
Peptic Digest of Animal Tissue	3.7
Tryptose	7.5
Yeast Extract	1.2
Lactose	9.4
Dipotassium Phosphate	3.3
Monopotassium Phosphate	1.0
Sodium Chloride	3.7
Sodium Deoxycholate	0.1
Sodium Lauryl Sulphate	0.05
Sodium Sulphite	1.6
Basic Fuchsin	0.8
Agar	15.0

*Adjusted to suit performance parameters.

Additional Material Required
Bacteriological Incubator.

Instructions for use
1. Open the sterile pack and remove M-Endo Agar LES plate aseptically.
2. Inoculate the plate as per standard procedure.
3. Incubate the plates without inverting as per standard Guidelines.

Reading and interpretation
1. After incubation, observe the microbial growth and count the colonies.
2. Interpretation is assured by user.

Quality Control

Appearance: Gel with smooth and even surface, without any cracks, bubbles and drying or shrinking of media.
Colour of Medium: Rose coloured slightly opalescent.
Quantity of Medium: 26 ± 2 g in 90 mm petriplate.
pH at 25°C ± 2°C: 7.2 ± 0.2
Growth Promotion Test: Growth promotion is carried out in accordance with the harmonized method of USP/EP/JP and growth is observed after an incubation at 30°C-35°C for 20-24 hours.
Growth Promoting Properties: The test results observed are within the specified temperature and shortest period of time specified in the test, inoculating ≤ 100 cfu of appropriate microorganism.
Indicative Properties: The test results observed are within the specified temperature and time, inoculating <100 cfu of appropriate microorganism.
Inhibitory Properties: No growth of the test microorganism occurs for the specified temperature and not less than the longest period of the time specified, inoculating > 100 cfu of the appropriate microorganism.

Growth Promoting + Indicative Organism (ATCC)	**Growth**	**Colour of Colony**	**Incubation Temperature**	**Incubation Period**
Escherichia coli (25922)	Good	Red with sheen	30°C-35°C	20 Hours
Salmonella enterica subsp. *enterica* serovar *Typhimurium* (14028)	Good	Colourless	30°C-35°C	20 Hours
Inhibitory				
Staphylococcus aureus subsp. *aureus* (25923)	Inhibited	--	30°C-35°C	24 Hours

Note:
For Good growth, growth obtained on test media should not differ by a factor greater than 2 from calculated value for a standardized inoculum.

Storage and Shelf Life

1. Store between 15°C-25°C to avoid water condensation. Condensation can be prevented by avoiding quick temperature shifts and mechanical stress.
2. Under optimal conditions, the medium has a shelf life of 3 months. Use before expiry mentioned on the label.

Reference

1. Cruickshank R., Duguid J. P., Marmion B. P., Swain R. H. A., (Eds.), Medical Microbiology, 1975, 12th Ed. Vol. II, Churchill Livingstone
2. Endo S., 1904, Zentralbl. Bakteriol., Abt. 1, Orig.35:109-110.
3. McCarthy J. A., Delaney J. E. and Grasso R., 1961, Water and Sewage Works, 108:238.
4. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	**Product**	**Pack Size**
205130890100	M-Endo Agar LES plate	100 Plates