Technical Information

M-EMB Broth

Product Code: DM 2105

Application: - M-EMB Broth is a selective differential medium for the detection of members of the coliform group by the membrane filter technique.

Composition**

Ingredients	Gms / Litre
Proteose peptone	40.000
Yeast extract	6.000
Lactose	20.000
Bile salts mixture	1.000
Sodium chloride	5.000
Dipotassium phosphate	7.000
Eosin - Y	4.000
Methylene blue	1.330
Final pH (25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

The membrane filter technique is very useful in monitoring quantity of water samples. With respect to the membrane filter technique, the coliform group is defined as facultative anaerobic, gram-negative, non-spore-forming, rod-shaped bacteria that develop red colonies with a metallic sheen within 24 hours at 35-37°C on an Endo-type medium containing lactose [(1)]. M-EMB Broth is a selective & differential medium which is formulated as per Clark et al [(2)].

Proteose peptone and yeast extract serve as sources of carbonaceous and nitrogenous growth nutrients. Lactose is the fermentable carbohydrate and energy source. Bile salts mixture helps to inhibit the accompanying non-coliforms. Sodium chloride maintains the osmotic equilibrium of the medium while dipotassium phosphate buffers the medium. Eosin-Y and methylene blue serve as the indicator system in the medium. The two dyes combine to form a precipitate at acidic pH, due to lactose fermentation. Eosin Y also serves as an inhibitor [(3)].

Membrane filters through which the test water sample has been passed are initially enriched for 2 hours by incubating the filter on M-Enrichment Broth (DM2109). These enriched cultures (filters) are then transferred onto sterile absorbent cotton pads saturated with 2 ml of M-EMB Broth (DM2105). Incubation is done at 35-37°C for 18-24 hours. Lactose fermenting coliforms produce pink coloured colonies while non-lactose fermenting coliforms will form colourless colonies.

Methodology

Suspend 84.33 grams of powder media in 1000 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. Autoclave sterilization is not required if the medium is used the same day of preparation.

Quality Control

Physical Appearance
Pinkish purple to purple homogeneous free flowing powder
Colour and Clarity of prepared medium
Green with orange cast opalescent solution with a flocculent precipitate.
Reaction
Reaction of 8.43% w/v aqueous solution at 25°C. pH : 7.2±0.2
pH range 7.00-7.40
Cultural Response/ characteristices
DM 2105: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Colour of Colony (on Membrane filter)
Escherichia coli ATCC 25922	50-100	luxuriant	purple with green metallic sheen, dark centre
Enterobacter aerogenes ATCC 13048	50-100	good	pink, no sheen
Klebsiella pneumoniae ATCC 13883	50-100	good	purple
Proteus mirabilis ATCC 25933		luxuriant	colourless
Salmonella Typhi ATCC 6539	50-100	luxuriant	colourless
Staphylococcus aureus ATCC 25923	>=10^3	inhibited	-

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. Eaton A. D., Clesceri L. S. and Greenberg A. E., (Eds.), 1998, Standard Methods for the Examination of water and Waste water, 20th Ed., American Public Health Association, Washington, D.C.
2. Clark H. F., Geldreich E. E., Jeter M. L. and Kabler P. W., Public Health Rep., 66, 951
3. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.

Disclaimer :

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