



M-Endo Broth

M1107

Intended Use

Recommended for estimation of coliforms in water samples using membrane filtration technique.

Composition**

Ingredients	Gms / Litre
Peptone	20.000
Yeast extract	6.000
Lactose	25.000
Dipotassium hydrogen phosphate	7.000
Basic fuchsin	1.000
Sodium sulphite	2.500
Final pH (at 25°C)	7.5±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 61.5 grams in 1000 ml purified / distilled water. Heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 5 minutes. Cool to 45 - 50°C and use as required in membrane filtration technique. The medium should be used on the same day of its rehydration.

Caution : Basic fuchsin is a potential carcinogen and care should be taken to avoid inhalation of the powdered dye and contamination of the skin.

Principle And Interpretation

It is possible to remove bacteria from fluids by passing them through filters with such small pore size that bacteria are arrested. This filtration technique enables fairly large volumes of water to pass rapidly under pressure, but prevents the passage of any bacteria present. These nutrients are retained on the surface of the membrane which is then brought into contact with suitable liquid nutrients. These diffuse upwards through the pores thereby inducing the organisms to grow as surface colonies which can be counted (1).

M-Endo Broth was used for studying milk lines of milk handling equipment (2) and for examination of swimming pool waters (3) using membrane filter technique. This medium gives higher counts and is most satisfactory of the many media used, since coliform colonies develop rapidly (4), preliminary enrichment and saturated relative humidity are not necessary and results are in good agreement with the Standard Methods MPN Test.

Peptone and yeast extract provide essential nutrients especially nitrogenous and carbonaceous compounds, long chain amino acids and other essential nutrients for the coliforms. Lactose is the fermentable carbohydrate. Sodium sulphite and basic fuchsin inhibit the growth of gram-positive organisms. Phosphates buffer 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 colourless colonies.

Type of specimen

Water samples

Specimen Collection and Handling

For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards (2).

After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets

Limitations

Quality Control

Appearance

Light pink to purple homogeneous free flowing powder

Colour and Clarity of prepared medium

Pinkish orange coloured opalescent solution in tubes

Reaction

Reaction of 6.15% w/v aqueous solution at 25°C. pH : 7.5±0.2

pH

7.30-7.70

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth	Colour of colony (on membrane filter)
<i>Escherichia coli</i> ATCC 25922	50-100	good-luxuriant	pink with metallic sheen
<i>Enterobacter aerogenes</i> ATCC 13048	50-100	good-luxuriant	pink to red (may have sheen)
<i>Salmonella Typhi</i> ATCC 6539	50-100	luxuriant	colourless to very light pink
<i>Staphylococcus aureus</i> ATCC 25923	>=10 ⁴	inhibited	
<i>Klebsiella pneumoniae</i> ATCC 13883	50-100	good-luxuriant	pink to red
<i>Salmonella Typhimurium</i> ATCC 14028	50-100	luxuriant	colourless to very light pink

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. Olson, Brown and Mickle, 1960, J., Milk and Food Tech., 23:86.
3. Shipe E. L. and Fields A., 1955, Public Health Lab., 13:44.
4. Slanetz L. W. and Bartley C. H., 1955, Applied Microbiol., 3:46.

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