



Dehydrated Culture Media
Bases / Media Supplements

Technical Information

M- Enrichment Broth

Product Code: DM 2109

Application: - M-Enrichment Broth is used as a non-selective medium for enumeration of bacteria by membrane filter technique and for preliminary enrichment of organisms on membrane filter prior to using selective media.

Composition**

Ingredients	Gms / Litre
Proteose peptone	40.000
Yeast extract	6.000
Dipotassium hydrogen phosphate	3.000
Sodium chloride	5.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Membrane filter technique is an alternative to most probable number (MPN) method used in microbiological analysis of water samples. In this technique, fluid sample is passed through organic membrane using a filter funnel under vacuum. Any organism in the sample is trapped on the surface of the membrane. The filter membrane is then placed on surface of nutrient agar plate and colonies can then be counted to determine the number of bacteria originally present ⁽¹⁾ in the sample. Bacteria may under go stresse or injure in water and waste water during filtration. These injured bacteria are incapable of growth and colony formation because of structural or metabolic damage. Resuscitation of stressed or injured organisms is enhanced by inoculating samples and initially culturing them in an enriched, non-inhibitory medium ⁽²⁾. M-Enrichment Broth is used for the preliminary enrichment of organism and also helps to detect even small numbers of organisms, if present.

M-Enrichment Broth is prepared according to the formula described by Clark et al ⁽³⁾. This medium is also recommended for use in conjunction with M-EMB Broth (DM2105) and M-Bismuth Sulphite Broth (DM2101). This medium has been recommended by various authors for enrichment of organisms prior to isolation ⁽⁴⁻⁷⁾. M-Enrichment Broth medium is devoid of any carbohydrate source or indicator. However, these ingredients (or may be other ingredients also) can be added to this nutritive medium to obtain different type of media capable of demonstrating biological characteristics of microorganisms. Proteose peptone and yeast extract supply the nitrogenous nutrients like amino acids, peptides, vitamin B1, trace ingredients etc. to the growing organisms. Dipotassium phosphate buffers the medium while sodium chloride maintains the osmotic balance.

Sterile cotton absorbent pads are saturated with around 2 ml of M-Enrichment Broth. Membrane filter used for filtration procedure is aseptically placed on these saturated absorbent cotton pads containing M-Enrichment Broth. The membrane filters are incubated for 4-6 hours. Following this, the membrane filters are aseptically placed on selective media plates for selective isolation of the desired organisms. However, pre-enrichment for 6 hours, rather than 24 hours, resulted in significantly higher numbers of false-negative results ⁽⁸⁾.

Methodology

Suspend 54 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.



Quality Control

Physical Appearance

Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Light amber coloured clear solution without any precipitate

Reaction

Reaction of 5.4% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH Range 6.80-7.20

Cultural Response/Characteristics

DM 2109: Cultural characteristics after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum	Growth(on membrane filter)
<i>Escherichia coli</i> ATCC 25922	50-100	luxuriant
<i>Salmonella Typhi</i> ATCC 6539	50-100	luxuriant
<i>Staphylococcus aureus</i> ATCC 25923	50-100	luxuriant

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 Ed., Jones and Bartlett Publishers
2. Eaton A. D., Clesceri L. S. and Greenberg A. E., (Ed.), 1998, Standard Methods for the Examination of water and Wastewater, 20th Ed., American Public Health Association, Washington, D.C.
3. Clark H. F., Geldreich E. E., Jeter M. L. and Kabler P. W., 1951, Publ. Hlth. Repts., 66:951.
4. Laubausch E. J., Gelderich E. E., Jeter M. L., 1953, Public Health Rept., 68 :1118
5. Levin G. V. and Laubausch E. J., 1954, Am. J. Pub. Health, 44: 55
6. Kabler P. W., 1954, Am. J. Pub. Health, 44: 379
7. Levine S., 1953, J. Bacteriol., 66:624
8. DAoust J. Y., and Maishment C., 1979, J. Food Prot. 42:153

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