

Technical Information

M-Broth

Product Code: DM 1846

Application: - M-Broth is used for detecting Salmonellae in foods and feeds by the accelerated enrichment serology procedures.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	12.500
Yeast extract	5.000
D-Mannose	2.000
Sodium chloride	5.000
Sodium citrate	5.000
Dipotassium phosphate	5.000
Manganese chloride	0.140
Magnesium sulphate	0.800
Ferrous sulphate	0.040
Polysorbate 80	0.750
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Salmonella are facultatively anaerobic gram-negative bacilli that are oxidase negative, lactose negative, H₂S positive and produce gas. They are found in nature and in the intestinal tract of both wild and domestic animal. In human *Salmonella* species cause diseases called Salmonellosis, which includes diarrheal and bacteremic leading to enteric fever. The severity of the diarrheal diseases depends on the virulence of the strain and the condition of the human host. Serological procedures that confirm the identification of an organism are usually based on slide/tube agglutination test.

M-Broth was developed by Sperber and Diebel ⁽¹⁾ to facilitate the detection of Salmonellae. The accelerated 50 hour detection procedure consists of an 18 hours pre-enrichment, a 24 hours selective enrichment, a 6 to 8 hours selective enrichment and 2 hours serological testing. In the selective enrichment step, to avoid nonspecific agglutination, Sperber and Diebel modified APT Broth by replacing dextrose with mannose. Fantasia et al ⁽²⁾ found that enrichment serology method is rapid and less complicated to perform than the method described in the Bacteriological Analytical Manual ⁽³⁾ by maintaining the accuracy and sensitivity of the method. M-Broth also conforms to standards recommended by APHA ⁽⁴⁾ for isolation and identification of foodborne Salmonella. M-Broth contains all the nutrients necessary for good growth and flagella development of *Salmonella*.

Casein enzymic hydrolysate and yeast extract in the medium provide organic nitrogen, carbon, sulphur, vitamins and trace elements essential for the growth of *Salmonella* species. Mannose is both fermentable sugar and source of energy. It prevents fimbrial agglutination of *Salmonella* ⁽¹⁾. Sodium chloride helps to maintain osmotic equilibrium. Dipotassium phosphate acts as a buffer. The inorganic salts stimulate bacterial growth while polysorbate 80 supplies fatty acids.

10% suspension of sample is prepared in sterile Lactose Broth (DM1026) and incubated at 35±2°C for 18 to 24 hours. 1 ml of this pre-enriched culture is added to 9 ml of Selenite Cystine Broth (DM1025) and Tetrathionate Broth (DM1032) and incubated at 3 5±2°C for 24 hours. This enriched culture is subsequently inoculated in M-Broth and incubated at 3 5±2°C for 6-8 hours following, which H-agglutination test is performed as per standard procedures.

Methodology

Suspend 36.23 grams of powder media in 1000 ml distilled water. Shake well & heat to dissolve the medium completely. Dispense as desired and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.



Dehydrated Culture Media
Bases / Media Supplements

Quality Control

Physical Appearance

Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Light amber coloured clear to slightly opalescent solution with a slight precipitate.

Reaction

Reaction of 3.62% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH range 6.80-7.20

Cultural Response/Characteristics

DM 1846: Cultural characteristics observed after an incubation at 35-37°C for 6-8 hours.

Organism	Inoculum (CFU)	Growth
<i>Salmonella Paratyphi A ATCC 9150</i>	50-100	Luxuriant
<i>Salmonella Paratyphi B ATCC 8759</i>	50-100	Luxuriant
<i>Salmonella Choleraesuis ATCC 12011</i>	50-100	Luxuriant
<i>Salmonella Enteritidis ATCC 13076</i>	50-100	Luxuriant
<i>Salmonella Typhi ATCC 6539</i>	50-100	Luxuriant
<i>Salmonella Typhimurium ATCC 14028</i>	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^o in sealable plastic bags for 2-5 days.

Further Reading

1. Sperber W. H. and Deibel R. H., 1969, Appl. Microbiol., 17:533.
2. Fantasia L. D., Sperber W. H. and Deibel R. H., 1969, Appl. Microbiol., 17:540.
3. FDA Bacteriological Analytical Manual, 2005, 18th ed., AOAC, Washington, DC.
4. Downes F. P. and Ito K. (Ed.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., APHA, Washington, D.C.

Disclaimer :

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