M-Bismuth Sulphite Broth

M1101

M-Bismuth Sulphite Broth is a selective medium used for the detection of Salmonellae by the membrane filter technique.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	20.000
Beef extract	10.000
Dextrose	10.000
Disodium phosphate	8.000
Ferrous sulphate	0.600
Bismuth sulphite indicator	16.000
Brilliant green	0.050
Final pH (at 25°C)	7.7±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 64.65 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Excessive heating destroys the selective properties of the medium. DO NOT AUTOCLAVE. The medium usually contains flocculent precipitate, which should be dispersed evenly by swirling the flask just before use. Cool to 35°C and saturate sterile absorbent cotton pad with 2 ml of the broth. The medium should be used within 24 hours of rehydration.

Principle And Interpretation

Salmonella is a gram-negative, facultatively anaerobic, non-sporulating, non-motile rod in the family *Enterobacteriaceae*. They are widely distributed in animals affecting mainly the stomach and the intestines. These organisms are difficult to differentiate biochemically from *Escherichia coli*. M-Bismuth Sulphite Broth was formulated by Clark et al (1) and is particularly recommended for detection of *Salmonella* Typhi from water and various clinical specimens by the membrane filtration technique. Preliminary enrichment on a non-selective medium is not necessary. M-Bismuth Sulphite Broth has a composition similar to Bismuth Sulphite Agar (M027), except Agar. Also in the broth medium, all the constituents are in double concentration.

Peptic digest of animal tissue, beef extract and dextrose provide essential growth nutrients. Ferrous sulphate and bismuth sulphite indicator together act as H2S indicators. Brilliant green acts as selective agent. Luxuriant growth of *Salmonella* Typhi is obtained after 30 hours incubation at 35°C but metallic sheen and brown-black halo is not developed before 40 hours. The importance of this medium has been repeatedly mentioned for detection of *Salmonella* Typhi by membrane filter technique (2 - 5).

Quality Control

Appearance
Light yellow to greenish yellow homogeneous free flowing powder

Colour and Clarity of prepared medium
Greenish yellow coloured opalescent solution with flocculent precipitate

Reaction
Reaction of 6.4% w/v aqueous solution at 25°C. pH : 7.7±0.2

pH
7.50-7.90

Cultural Response
Cultural characteristics observed in humid atmosphere, after an incubation at 35-37°C for 40-48 hours.

Organism	Inoculum (CFU)	Growth	Colour of colony (on membrane filter)
Escherichia coli ATCC 25922	50-100	none-poor	brown-green, if any
Salmonella Typhi ATCC 6539	50-100	luxuriant	black with metallic sheen
Salmonella Typhimurium ATCC 14028	50-100	luxuriant	black with metallic sheen
Staphylococcus aureus ATCC 25923	>=10^3	inhibited	

Storage and Shelf Life

Store below 30°C in tightly closed container and use freshly prepared medium . Use before expiry date on the label.

Reference

1. Clark H. F., Geldreich E. E., Jeter M. L. and Kabler P. W., 1951, Pub l. Hlth. Reports, 66:951.
2. Goets A. and Tsuneishi N., 1951, J. Am. Water Works Assoc., 43:943.
3. Goets A. and Tsuneishi N., 1952, J. Am. Water Works Assoc., 44:471.
4. Goets A. and Tsuneishi N., 1953, J. Am. Water Works Assoc., 45 and 1196.
5. MacFaddin J. F., 1985, Media for Isolation-Identification-Cultivation-Maintenance of Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore.

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