

Technical Information

Mannitol Salt Broth

Product Code: DM 1383

Application: - Mannitol Salt Broth is used for the selective isolation of presumptive pathogenic Staphylococci.

Composition**

Ingredients	Gms / Litre
Proteose peptone	10.000
Beef extract	1.000
Sodium chloride	75.000
D-Mannitol	10.000
Phenol red	0.025
Final pH (25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Mannitol Salt Broth is prepared as suggested by Chapman ⁽¹⁾ and is used for the selective isolation of pathogenic Staphylococci. This medium is recommended for the detection and enumeration of coagulase-positive Staphylococci in milk ⁽²⁾ food ⁽³⁾ and other specimens. Mannitol Salt Broth is used for the isolation of presumptive pathogenic staphylococci. Pathogenic staphylococci ferment mannitol and produce a yellow coloured medium. The medium contains beef extract and proteose peptone which makes it very nutritious as they provide essential growth factors and trace nutrients. Many other bacteria except Staphylococci are inhibited by 7.5% sodium chloride. Mannitol is the fermentable carbohydrate source. The differential action of the medium is attributed to D-Mannitol. Staphylococcus aureus ferments mannitol to produce yellow coloured medium. Most coagulase-negative species of Staphylococci and Micrococci do not ferment mannitol and therefore the medium remains red in colour. The colour of the medium is due to the reactivity of phenol red to the pH of the medium; phenol red is red at pH 8.4 and yellow at 6.8. Presumptive Staphylococcus showing yellow coloured medium should be further tested for production of coagulase.

A possible *S. aureus* must be confirmed by the coagulase test. Also the organism should be subcultured to a less inhibitory medium not containing excess salt to avoid the possible interference of salt with coagulase testing or other diagnostic tests (e.g. Nutrient Broth) (DM1002) ⁽⁴⁾. Few strains of *S. aureus* may exhibit delayed mannitol fermentation. Negative results should therefore be re-incubated for an additional 24 hours before being discarded ⁽⁴⁾.

Methodology

Suspend 96.02 grams of media powder 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.

Note: This product contains 7.5% sodium chloride as one of its ingredients. On repeated exposure to air and absorption moisture sodium chloride has tendency to form lumps, therefore we strongly recommend storage in tightly closed containers in dry place away from bright light.

Quality Control

Physical Appearance

Light yellow to pink homogeneous free flowing powder

Colour and Clarity of prepared medium

Red coloured clear solution in tubes

Reaction

Reaction of 9.6% w/v aqueous solution at 25°C. pH: -7.4±0.2

pH range 7.20-7.60

Cultural Response/ characteristics

DM 1383: Cultural characteristics observed after an incubation at 35-37°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth	Colour of Medium
Escherichia coli ATCC 25922	$\geq 10^3$	inhibited	
Staphylococcus aureus ATCC 25923	50-100	good-luxuriant	yellow
Staphylococcus epidermidis ATCC 12228	50-100	fair-good	red

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. Chapman G.H., 1945, J. Bact., 50:201.
2. Marshall R. (Ed.), 1992, Standard Methods for the Examination of Dairy Products, 16th ed., APHA, Washington, D.C.
3. Bacteriological Analytical Manual, 1995, Food and Drug Administration, 8th ed., AOAC, International, U.S.A.
4. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore

Disclaimer :

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