Block 5, Street 9 inside The Ismailia free zone. Ismailia- Egypt
Post Code-41511
Tel.-Fax: +202 21813500/ +202 21813600
Mob.: +2 0121550942/ +2 01119225860
E-mail: sales@arenabioscientific.com
Website: www.arenabioscien.com

Mannitol Salt Phenol Red Agar

selective media for the isolation of pathogenic Staphylococci

REF: BS.1/MD01.100.0100	100	REF: BS.1/MD01.250.0250	250 Gram
Gram REF: BS.1/MD01.500.0500	500 Gram		

CLINICAL SIGNIFICANCE

Staphylococci are widely distributed in nature and are commonly associated with the skin, sebaceous glands, and mucous membranes of mammals and birds. Among them, Staphylococcus aureus, a coagulase-positive species, is recognized as an important opportunistic human pathogen. The production of coagulase, which enables clotting of plasma, remains the most reliable and widely accepted criterion for identifying pathogenic staphylococci involved in acute infections (1). A characteristic feature of staphylococci is their ability to tolerate and grow in media containing high concentrations of sodium chloride (2). Chapman investigated the isolation of coagulase-positive staphylococci using Phenol Red Mannitol Agar supplemented with 7.5% NaCl (3). Based on this work, Mannitol Salt Agar Base was developed and is now recommended for the selective isolation of coagulase-positive staphylococci from cosmetics, milk, food products, and other specimens (1,4,5,6,7). The medium can also be used to demonstrate the lipase activity of Staphylococcus aureus when supplemented with Egg Yolk Emulsion (FD045). Lipase production is indicated by the formation of yellow opaque zones surrounding the colonies (8). HM Peptone B and proteose peptone provide essential nutrients, growth factors, and trace elements required for bacterial growth. Sodium chloride acts as the selective agent by inhibiting the growth of most organisms other than staphylococci. Mannitol serves as the fermentable carbohydrate source, while phenol red functions as the pH indicator. Fermentation of mannitol results in acid production, causing a color change in the medium. Staphylococcus aureus typically ferments mannitol, producing yellow colonies surrounded by yellow zones. In contrast, coagulase-negative strains are generally unable to ferment mannitol and therefore form pink to red colonies with surrounding red-purple zones. Presumptive coagulase-positive colonies exhibiting yellow coloration should be confirmed by performing either the tube or slide coagulase test (1). Likewise, lipase activity can be further demonstrated by incorporating egg yolk emulsion into the medium. Confirmation of suspected S. aureus isolates should always be carried out using the coagulase test. Prior to testing, isolates should be subcultured onto a less inhibitory medium lacking excessive salt concentrations, such as Nutrient Broth, to prevent possible interference of salt with coagulase or other diagnostic procedures (9). Since some strains of S. aureus may exhibit delayed mannitol fermentation, negative cultures should be incubated for an additional 24 hours before being considered negative and discarded (9).

METHOD PRINCIPLE

Peptic digest of animal tissue, beef extract and yeast extract provide essential nutrients for the growth of Salmonella. Mannitol is the fermentable carbohydrate in the medium while L-lysine is the amino acid. Salmonellae grow as large purple-black colonies with black centres due to hydrogen sulphide production. Mannitol is fermented by organisms and the resulting acid stimulates lysine decarboxylation. This elevates the pH due to production of amines and promotes blackening. Sodium thiosulphate and ferric ammonium citrate help in H2S production. Mannitol Lysine Medium should be used in conjunction with Brilliant Green Agar, Modified or Bismuth Sulphite Agar. Mannitol Lysine Medium can be directly inoculated with the specimen, or the specimen can be first enriched in Modified Semisolid RV Medium Base. Atypical Salmonella strains that produce little or no hydrogen sulphide grow as mauve-grey colonies and may develop a central black `bulls eye'.To assist the detection of these atypical strains Brilliant Green Agar (modified) or Bismuth Sulphite Agar should also be used. Salmonella colonies will form purple black colonies. Presumptive Salmonella should be confirmed by biochemical tests.

MEDIA COMPOSITION

Item	Formula in g/L
Beef extract	1
Casein Peptone	5
Meat peptone	5
Sodium chloride	75
Mannitol	10
Phenol red	0.025
Agar	15

pH 6.8 ± 0.2 at 25°C

PRECAUTIONS AND WARNINGS

Media to be handled by entitled and professionally educated people.

Good Laboratories practices using appropriate precautions should be followed in:

- Wearing personnel protective equipment (overall, gloves, glasses,..).
- Do not pipette by mouth.
- In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice immediately.
- Handle specimens and inoculated culture bottles as though capable of transmitting infectious agents. All inoculated culture bottles, specimen collection needles, and blood drawing devices should be decontaminated according to country requirement for waste disposal.

S56: dispose of this material and its container at hazardous or special waste collection point.

S57: use appropriate container to avoid environmental contamination.

S61: avoid release in environment.

For further information, refer to the Mannitol Salt Phenol Red Agar material safety data sheet.

MEDIA PREPARATION, STORAGE AND STABILITY

STORAGE AND STABILITY

BioScien Mannitol Salt Phenol Red Agar Mannitol Salt Phenol Red Agar should be stored between 10-30°C in a firmly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to avoid lump development due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in a dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within the stated expiry period.

PROCEDURE

Dissolve 111 g in 1 litre distilled water. Sterilize by autoclaving at 121°C for 15 minutes. Pour plates.

Deterioration

BioScien Mannitol Salt Phenol Red Agar is Cream to yellow homogeneous free flowing powder. Prepared medium is Light amber coloured, opalescent gel with flocculent precipitate forms in tubes as slants. should not be used if there are any signs of deterioration (shrinking, cracking, or discoloration), and contaminations

SPECIMEN COLLECTION AND PRESERVATION

For clinical samples follow appropriate techniques for handling specimens as per established guidelines (11,12). For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (9,10,13). After use, contaminated materials must be sterilized by autoclaving before discarding.

TYPE OF SPECIMEN

Clinical samples
Food and Dairy samples
Environmental samples

EQUIPMENT REQUIRED NOT PROVIDED

- Sterile cups
- Sterile plates
- Autoclave
- Incubator

QUALITY CONTROL

To ensure adequate quality control, it is recommended that positive and negative control included in each run. If control values are found outside the defined range, check the system performance. If control still out of range please contact the technical support.

PERFORMANCE CHARACTERISTICS

The following organisms are used by us as part of the quality assurance of the product. The total inoculum challenge for each test organism per bottle is 10 to 50 colony forming units (CFU's).

Test Organisms	Growth	Colony color
Escherichia coli (25922)	Inhibited	-
Staphylococcus aureus subsp. aureus (25923)	Good-luxuriant	Yellow
Staphylococcus aureus subsp. aureus (00034)	Good-fair	red

REFERENCES

1. Chapman, G. H., (1945). J. Bact., 50,201.
2. Standard Methods for the Examination of Dairy Products. (1992). Marshall, R. ed. 16th Edition. APHA. Washington, D.C.
3. The United States Pharmacopeia, (1985). 21st
4. Revision. U.S. Pharmacopeial Convention, Inc. Rockville, Maryland.
5. American Type Culture Collection, Manassas, Va., U.S.A.

SYMBOLS IN PRODUCT LABELLING	
IVD For in-vitro diagnostic use	Number of <n> test in the pack
LOT Batch Code/Lot number	Caution
REF Catalogue Number	Do not use if package is damaged
Temperature Limitation	Consult Instruction for use
Expiration Date	
Manufactured by	