

CHAPMAN - MANNITOL SALT AGAR

REF 53647 - 63844 - 64134

Isolation and Differentiation Medium For Staphylococci



1- INTENDED USE

Chapman - Mannitol Salt Agar is a selective medium for the isolation and enumeration of Staphylococci. It is also used to differentiate mannitol fermenting and mannitol non-fermenting species.

2- PRINCIPLE

The selectivity of this medium is based on the presence of sodium chloride which inhibits the growth of most Gram (+) and Gram (-) bacteria.

Differentiation of Staphylococci is based on their capacity to ferment mannitol. Fermentation of mannitol induces acidification, which turns the medium yellow in the presence of phenol red (pH indicator).

3- HOW SUPPLIED

- Ready to use medium:
 - box of 20 Petri dishes (90 mm) (**MSA**) code 63844
- Ready to use medium (to be dispensed)
 - 6 x 200 ml bottles (**MSA**) code 53647
- Dehydrated medium
 - bottle of 500 g code 64134

4- THEORETICAL COMPOSITION (g/l of distilled water)

Chapman - Mannitol Salt Agar medium is prepared according to the formula described by Chapman (1).

- Peptone 10
- Beef extract 1
- Sodium chloride 75
- Mannitol 10
- Phenol red 0.025
- Agar 15
- Final pH: 7.4 ± 0.2

Preparation of the medium:

Homogenize the powder contained in the bottle.

Add 111 grams of dehydrated medium to one litre of sterile distilled water. Mix until a homogeneous suspension is obtained. Heat gently, shaking frequently, then heat to boiling until complete dissolution. Sterilize in the autoclave at 121°C for 15 minutes. Dispense into Petri dishes or bottles.

5- STORAGE

- Ready to use medium (Petri dishes): at +2-20°C.
- Ready to use medium (tubes and bottle): at +2-8°C.
- Dehydrated medium: tightly closed bottle in a dry place at +15-25°C.

The expiry date and batch number are indicated on the packaging.

6- INSTRUCTIONS

Material:

- Material provided: Chapman - Mannitol Salt Agar medium

Inoculation:

Inoculate by streaking directly from the specimen to be examined. Refer to current recommendations for storage of biological specimens (2).

Incubation:

Incubate for 24 to 48 hours at 37°C.

Reading:

- Mannitol (+): **yellow** colour of the medium.
- Mannitol (-): no colour.

Strains of *Staphylococcus aureus* produce their own pigment. Colonies become surrounded by a **yellow** halo, in 24 to 48 hours, due to fermentation of mannitol. Strains of *Staphylococcus epidermidis* and other *Micrococcaceae* form small colonies, which, in the majority of cases, grow without modifying the colour of the medium. However, a considerable minority of *S. epidermidis* strains are able to ferment mannitol.

7- PERFORMANCE/QUALITY CONTROL OF THE TEST

- Appearance of the ready to use medium: clear **red** agar.
- Appearance of the dehydrated medium: **pink** powder.
- The growth performances of Chapman - Mannitol Salt Agar medium are verified with the following strains:

STRAINS	CULTURE RESULT AFTER 24 to 48 hours at 37°C
<i>Staphylococcus aureus</i> ATCC 25923	Yellow colonies
<i>Staphylococcus saprophyticus</i> ATCC 15305	Yellow colonies
<i>Staphylococcus epidermidis</i> ATCC 12228	Pink colonies
<i>Proteus mirabilis</i> ATCC 25933	Partial inhibition
<i>Escherichia coli</i> ATCC 25922	Inhibition

8- QUALITY CONTROL OF THE MANUFACTURER

All manufactured reagents are prepared according to our Quality System, starting from reception of raw material to the final commercialization of the product. Each lot is submitted to quality control assessments and is only released to the market, after conforming to pre-defined acceptance criteria. The records relating to production and control of each single lot are kept within Bio-Rad.

9- LIMITS OF USE

- Complementary tests must be performed to identify the species of the strain isolated.
- Enterococci and Group D Streptococci can grow on this medium and present slight fermentation of mannitol. However, these colonies are small and can be easily distinguished from Staphylococci by Gram stain or by the catalase test.

10- REFERENCES

1. CHAPMAN, G.H., The significance of sodium chloride in studies of staphylococci, J. Bact. 1945. **50** : 201-203.
2. Basic Laboratory Procedures in Clinical Bacteriology. World Health Organization. Geneva.1991. 1st edition.



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