MANNITOL SALT AGAR (MSA)  
(Chapman Medium)

For the isolation and enumeration of pathogenic staphylococci from clinical samples and other materials

Product Description

Name : MSA (European Pharmacopoeia)
Catalog Number : JH992A, 20 x 20 ml in Petri plates
Formula in g/l:
- Sodium Chloride : 75.00
- Beef Extract : 1.00
- D-Mannitol : 10.00
- Phenol Red : 0.025
- Pancreatic Digest of Casein : 5.00
- Bacteriological Agar : 15.00
- Peptic Digest of Animal Tissue : 5.00
Final pH : 7.4 ± 0.2 at 25°C

Storage: 2-8°C (8 weeks). Protect from light.

Application

- Isolation / Enumeration
- STAPHYLOCOCCUS

Directions for use

MANNITOL SALT AGAR (MSA) is a selective medium prepared according to the recommendations of Chapman for the isolation of presumptive pathogenic staphylococci. Most of the other bacteria are inhibited by the high concentration of Sodium chloride.

The Peptone mixture and Beef extract provide nitrogen, vitamins, minerals and amino acids essential for growth. Mannitol is the carbohydrate energy source and Phenol red is the pH indicator. Sodium chloride supplies essential electrolytes for transport and osmotic balance. Bacteriological agar is the solidifying agent.

The degradation of mannitol by bacteria produces acidic products that change the color of the medium from pink to yellow. Due to its high content of sodium chloride, a heavy inoculum of the material in study can be used. The European Pharmacopoeia recommends in the Paragraph 2.6.13 “Microbiological examination of non – sterile products: Test for specified micro-organisms”. After incubation in Casein Soya Bean Digest Broth at 30-35°C for 18-24 hours, subculture on a plate of Mannitol Salt Agar (MSA), the incubation of the plates at 30-35°C for 18-72 hours for growing promotion test and also to inoculate and incubate Escherichia coli ATCC 8739 as negative control. The mannitol fermenting pathogenic staphylococci are large and are surrounded by a yellow zone, colonies of non-pathogenic staphylococci appear as small colonies surrounded by a red or purple zone.

The addition of 5% Egg Yolk Emulsion allows to detect the lipase activity of staphylococci, as well as mannitol fermentation. The high concentration of salt in the medium clears the egg yolk emulsion, and lipase production is detected as a yellow opaque zone around the colonies of staphylococci producing this enzyme. This phenomenon, together with a positive coagulase test, confirms the organism as a pathogenic Staphylococcus. Incubate and incubate at 35 ± 2°C and observe after 18-24 hours and after 48 hours.

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Interpretation: The possible presence of S. aureus is indicated by the growth of yellow/white colonies surrounded by a yellow zone. This is confirmed by identification test.

The product complies with the test if colonies of the types described are not present or if the confirmatory identification tests are negative.

**Microbiological test**

The following results were obtained in the performance of the medium from type cultures after incubation at a temperature of 35±2°C and observed after 18-24 hours and after 48 hours.

<table>
<thead>
<tr>
<th>Microorganisms</th>
<th>Growth</th>
<th>Colony Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escherichia coli ATCC 25922</td>
<td>Inhibited</td>
<td>Yellow</td>
</tr>
<tr>
<td>*Escherichia coli ATCC 8739</td>
<td>Inhibited</td>
<td>Yellow</td>
</tr>
<tr>
<td>Enterobacter aerogenes ATCC 13048</td>
<td>Inhibited</td>
<td>Red</td>
</tr>
<tr>
<td>Staphylococcus aureus ATCC 25923</td>
<td>Good</td>
<td>Red</td>
</tr>
<tr>
<td>*Staphylococcus aureus ATCC 6538</td>
<td>Good</td>
<td>Red</td>
</tr>
<tr>
<td>Staphylococcus epidermidis ATCC 12228</td>
<td>Acceptable</td>
<td>Red</td>
</tr>
<tr>
<td>Staphylococcus epidermidis ATCC 14990</td>
<td>Good</td>
<td>Red</td>
</tr>
</tbody>
</table>

*According to European Pharmacopeia 7.0 incubate at 30-35°C during 18-72 hours*

**References**

- Chapman, G.H. J. Bact. 50:201-203 (1945)
- Velilla, Faber, and Pelzar Am. J. Vet. Research, 8:275. (1947)
- European Pharmacopeia. 7.0

**Ordering information**

Catalog size quantities and prices may be found at [http://www.interchim.com](http://www.interchim.com).

Please inquire for higher quantities (availability, shipment conditions).

For any information, please ask: Uptima / Interchim; Hotline : +33(0)4 70 03 73 06

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