Mannitol Salt Agar (MSA) (Chapman Medium)

Cat #: MM-M-N062

For the isolation and enumeration of staphylococci.

Principles and uses:

Mannitol Salt Agar (MSA) (Chapman Medium) is a selective medium prepared according to the recommendations of Chapman for the isolation of staphylococci. Most of the other bacteria are inhibited by the high concentration of Sodium chloride.
The digest of casein, digest of tissue and 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 under study can be used.
The European Pharmacopoeia, USP recommends this media in the paragraph 2.6.13: "Microbiological examination of non-sterile products: Test for specified microorganisms" for the testing of Staphylococcus aureus in products.
The addition of 5% Egg Yolk Emulsion (Cat. MM-M-E152) allows detecting 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.

Formula per Litre:

Bacteriological Agar	15g	D-mannitol	10g
Beef extract	1g	Pancreatic digest of casein	5g
Peptic digest of animal tissue	5g	Phenol red	0.025g
Sodium chloride	75g		

Preparation:

Suspend 111 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Sterilize in autoclave at 121ºC for 15 minutes. Cool to 45-50ºC, mix well and dispense into plates.

Instructions for use:

Test of specified microorganisms (Staphylococcus aureus) according to European Pharmacopoeia:

- Inoculate a suitable amount of Trypticasein Soy Broth (Cat. MM-M-N224) and incubate at 30-35ºC for 18-24 hours.
- Subculture on a plate of MSA and incubate at 30-35 ºC for 18-72 hours.
- The possible presence of S. aureus is indicated by the growth of yellow /white colonies surrounded by a yellow zone. 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. 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.

Quality control:

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
w/o rests	Fine powder	Beige-pink	Red.	7.4 ± 0.2

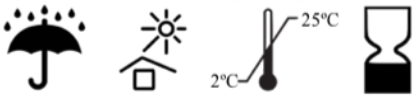
Microbiological test:

According to Pharmacopoeia: Escherichia coli ATCC 8739 and Staphylococcus aureus ATCC 6538:
Incubation conditions: (30-35ºC / 18-72 h).
Inoculation conditions: Productivity (<=100 CFU) / Inhibitory (>=100 CFU).
Rest of strains:
Incubation conditions: (35±2ºC / 18-24 and 48 h).

Microorganisms	Specification	Characteristic reaction
Staphylococcus epidermidis ATCC 12228	Acceptable growth	Red colonies
Staphylococcus epidermidis ATCC 14990	Good growth	Red colonies
Escherichia coli ATCC 25922	Inhibition	
Staphylococcus aureus ATCC 25923	Good rowth	Yellow colonies
Staphylococcus aureus ATCC 6538	Good growth	Yellow colonies
Escherichia coli ATCC 8739	Inhibition	
Staphylococcus epidermidis ATCC 12228	Acceptable growth	Red colonies

Storage:

Once opened keep powdered medium closed to avoid hydration.



Bibliography:

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European Pharmacopoeia.