

# TECHNICAL DATA SHEET

Article No. 8743

Mannitol Salt Agar

## SYNONYMS

Chapman Agar

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## SPECIFICATION

Selective medium for the isolation of pathogenic staphylococci, according to the Pharmacopoeial Harmonized Methodology and the ISO standard.

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## FORMULA\* IN G/L

Beef extract	1.000
Pancreatic digest of casein	5.000
Peptic digest of meat	5.000
Sodium chloride	75.000
D-Mannitol	10.000
Phenol red	0.025
Agar	15.000

Final pH 7.4 ±0.2 at 25 °C

\*Adjusted and/or supplemented as required to meet performance criteria.

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## DIRECTIONS

Suspend 111 g of powder in 1 l of distilled water and heat to boiling. Dispense in tubes or flasks and sterilize by autoclaving at 121 °C for 15 minutes.

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## DESCRIPTION

Mannitol Salt Agar is a classical medium for the detection and enumeration of staphylococci. It was described by Chapman and has been adopted by many official organisations. Several modifications have been developed, all formulations resulting in media with similar efficiency.

This medium takes advantage of the high saline tolerance of staphylococci, and uses sodium chloride as a selective agent. Only staphylococci and halophilic enterobacteria are able to grow freely at the concentration of

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salt employed in this medium, while other bacteria are inhibited. It also exploits the correlation between the pathogenicity of staphylococci and their ability to ferment mannitol.

Mannitol fermentation results in an accumulation of acid products, indicated by the phenol red indicator turning yellow. A yellow halo surrounds the presumptive pathogenic colonies, while the rest of the medium remains red/orange in colour.

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## TECHNIQUE

Inoculate the plates and incubate at 37 °C for 36 hours or at 32 °C for 3 days.

The typical appearance of the colonies after the correct incubation is as follows:

- Presumptive pathogenic staphylococci (coagulase +) are mannitol positive and produce large colonies with a yellow halo.
- Non-pathogenic staphylococci (coagulase -) are usually mannitol negative and produce small colonies without a halo or change in colour.

Coagulase presence must be tested by the classical technique in order to establish its true pathogenic potential.

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## CAUTIONS AND LIMITATIONS

Incubation times longer than those mentioned above or different incubation temperatures may be required depending on the methodology.

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## QUALITY CONTROL

- Incubation temperature: 30-35 °C
- Incubation time: 24-48-72 h
- Inoculum: Practical range 100 ±20 CFU. Min. 50 CFU (productivity)/10<sup>4</sup>-10<sup>6</sup> CFU (selectivity)/10<sup>3</sup>-10<sup>4</sup> CFU (specificity), according to ISO 11133:2014 and Ph. Eur.

Microorganism	Growth	Remarks
<i>Escherichia coli</i> ATCC® 8739	Inhibited	Selectivity
<i>Staphylococcus epidermidis</i> ATCC® 12228	Poor to good (specificity)	White-Pink colonies; Red medium Man (-)
<i>Staphylococcus aureus</i> ATCC® 25923	Productivity >0.50	White colonies; Yellow medium Man (+)
<i>Staphylococcus aureus</i> ATCC® 6538	Productivity >0.50	White colonies; Yellow medium Man (+)

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## REFERENCES

- ATLAS, R.M. & L.C.PARKS (1993) Handbook of Microbiological Media. CRC Press. Boca Raton. Fla. USA.
- CHAPMAN (1945) The significance of sodium chloride in studies of staphylococci. J. Bact 50:201.
- DOWNES, F.P. & K. ITO (2001) Compendium of Methods for the Microbiological Examination of Foods. 4th ed. APHA. Washington. DC. USA.
- EUROPEAN PHARMACOPOEIA 8.0 (2014) 8th ed. § 2.6.13. Microbiological examination of non-sterile products: Test for specified microorganisms. Harmonised Method. EDQM. Council of Europe. Strasbourg.
- FDA (Food and Drug Administrations) (1995) Bacteriological Analytical Manual. 8th ed. Revision A. AOAC International Inc. Gaithersburg. MD. USA.
- ISO 11133:2014. Microbiology of food, animal feed and water. Preparation, production, storage and performance testing of culture media.
- ISO 22718:2006 Standard. Cosmetics - Detection of Staphylococcus aureus.
- USP 33 - NF 28 (2011) <62> Microbiological examination of non-sterile products: Test for specified microorganisms. Harmonised Method. USP Corp. Inc. Rockville. MD. USA.

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## STORAGE

Keep tightly closed, away from light, in a dry place (4-30 °C).

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## SHELF LIFE

4 years from date of production.

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