Mannitol Salt Agar

Selective medium for isolation and enumeration of staphylococci
from clinical samples and other materials, according to USP/EP/JP.

DESCRIPTION

Mannitol Salt Agar is a selective medium used for isolating pathogenic staphylococci from clinical samples, food and other materials of sanitary importance.

This medium is prepared according to recommendations of the harmonized USP/EP/JP method for the detection of *S. aureus* in non sterile pharmaceutical products.

TYPICAL FORMULA	(g/l)
Pancreatic Digest of Casein	5.0
Peptic Digest of Animal Tissue	5.0
Beef Extract	1.0
D-Mannitol	10.0
Sodium Chloride	75.0
Phenol Red	0.025
Agar	15.0
Final pH 7.4 ± 0.2 at 25°C	

METHOD PRINCIPLE

Pancreatic digest of casein, peptic digest of animal tissue and beef extract provide amino acids, nitrogen, carbon, vitamins and minerals for organisms growth. Mannitol is the fermentable carbohydrate. The high salt content of 7.5% inhibits most bacteria other than staphylococci. Phenol red is the pH indicator. Agar is the solidifying agent.

PREPARATION

Dehydrated medium	Suspend 111 g of the powder in 1 liter of distilled or deionized water. Mix well. Heat to boil for 1 minute shaking frequently until completely dissolved. Sterilize in autoclave at 121°C for 15 minutes.
Medium in bottles	Melt the content of the bottle in a water bath at 100°C (loosing the cap partially removed) until completely dissolved. Then screw the cap and check the homogeneity of the dissolved medium, if it is the case turning the bottle upside down. Cool at 45-50°C, mix well avoiding foam formation and aseptically distribute into Petri dishes.

TEST PROCEDURE

Inoculate plates by the direct streaking of the material to be examined over the agar surface. Incubate aerobically at 35 ± 2°C for 24-48 hours.

Harmonized USP/EP/JP method for microbiological examination of non sterile products recommends to inoculate the sample in Tryptic Soy Broth (ref. 24444). Subculture on a plate of Mannitol Salt Agar and incubate at 30-35°C for 18-72 hours.

INTERPRETING RESULTS

S. *aureus* cultivates with yellow or white colonies surrounded by a yellow zone. Confirm by identification tests*. Coagulase-negative Staphylococci form small colorless to red colonies with no color change to the medium

*Suspect colonies can be subcultured to a moderately selective medium such as Baird Parker RPF Agar (ref. 10521, 402210) for the determination of coagulase activity (ISO 6888-2).

APPEARANCE OF THE MEDIUM

Dehydrated medium: free-flowing, homogeneous, beige-pink.
Prepared medium: slightly opalescent, pinkish-red.

STORAGE

The powder is very hygroscopic, store the powder at 10-30°C, in a dry environment, in its original container tightly closed. Store bottles and prepared plates at 10-25°C away from light. Do not use the product beyond its expiry date on the label or if product shows any evidence of contamination or any sign of deterioration.

Distribué par :
Z.A de Gesvrine – 4 rue Képler – B.P.4125
44241 La Chapelle-sur-Erdre Cedex – France
t. : +33 (0)2 40 93 53 53 | f. : +33 (0)2 40 93 41 00
commercial@humeau.com
Laboratoires Humeau
www.humeau.com

SHELF LIFE

Dehydrated medium: 4 years.
Medium in bottles: 2 years.
Ready-to-use plates: 6 months.

QUALITY CONTROL

Plates are inoculated with the microbial strains indicated in the QC table.
Inoculum for productivity: 10-100 CFU
Inoculum for selectivity: 10^4-10^6 CFU
Incubation conditions: aerobically at 35 ± 2°C for 24-48 hours.
*30-35°C for 18-72 h (USP/EP/JP Growth Promotion Testing).

QC Table.

Microorganism		Growth	Specification
Staphylococcus aureus	ATCC® 25923	Good	Yellow colonies with yellow zone
*Staphylococcus aureus**	ATCC® 6538	Good	Yellow colonies with yellow zone
Staphylococcus epidermidis	ATCC® 12228	Good	Red colonies
Escherichia coli	ATCC® 25922	Inhibited	---
*Escherichia coli**	ATCC® 8739	Inhibited	---

WARNING AND PRECAUTIONS

The product does not contain hazardous substances in concentrations exceeding the limits set by current legislation and therefore is not classified as dangerous. It is nevertheless recommended to consult the safety data sheet for its correct use. The product is intended for *in vitro* diagnostic use and must be used only by properly trained operators.

DISPOSAL OF WASTE

Disposal of waste must be carried out according to national and local regulations in force.

BIBLIOGRAPHY

1. European Pharmacopoeia 6.5 (2009). 2.6.13 Microbiological examination of non-sterile products: Test for specified microorganisms.
2. United States Pharmacopoeia 32 NF 27 (2009). <62> Microbiological examination of non-sterile products: Test for specified microorganisms.
3. Japanese Pharmacopoeia 4.05 (2008). Microbiological examination of non-sterile products: Test for specified microorganisms.
4. ISO 6888-2:1999 + A1:2003. Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) – Part 2: Technique using rabbit plasma fibrinogen agar medium.
5. Kloos, W.E., and T.L. Bannerman (1995) Staphylococcus and Micrococcus. In Manual of clinical microbiology, 6th ed.
6. Chapman, G.H. (1945) The significance of sodium chloride in studies of staphylococci. J. Bacteriol. 50:201-203.

PRESENTATION		Contents	Ref.
Mannitol Salt Agar	90 mm ready-to-use plates	20 plates	10030
Mannitol Salt Agar	90 mm ready-to-use plates	100 plates	10030*
Mannitol Salt Agar	Bottles	6 x 500 ml bottles	470080
Mannitol Salt Agar	Bottles	6 x 200 ml bottles	412290
Mannitol Salt Agar	Bottles	6 x 100 ml bottles	402290
Mannitol Salt Agar	Dehydrated medium	500 g of powder	610029
Mannitol Salt Agar	Dehydrated medium	100 g of powder	620029
Mannitol Salt Agar	Dehydrated medium	5 kg of powder	6100295

TABLE OF SYMBOLS

LOT Batch code	**IVD** *In vitro* Medical Diagnostic Device	Manufacturer	Use by	Fragile, handle with care
REF Catalogue number	Temperature limitation	Contains sufficient for <n> tests	Caution, consult Instruction For Use	Do not reuse

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t. : +33 (0)2 40 93 53 53 | f. : +33 (0)2 40 93 41 00
commercial@humeau.com
www.humeau.com