

CM 21159 - MANNITOL SALT AGAR (as per USP/BP/EP/JP/IP)

INTENDED USE

For selective isolation and enumeration of *Staphylococcus* species.

PRODUCT SUMMARY AND EXPLANATION

Staphylococci have the unique ability of growing on a high salt containing media. Isolation of coagulase-positive staphylococci on Phenol Red Mannitol Agar supplemented with 7.5% NaCl was studied by Chapman. The resulting Mannitol Salt Agar Base is recommended for the isolation of coagulase-positive staphylococci from cosmetics, milk, food and other specimens. It is also used in the performance of microbial limit tests for the selective isolation of *Staphylococcus*. The formulation is in accordance with the harmonization of USP/EP/BP/JP/IP.

COMPOSITION

Ingredients	Gms / Ltr
Sodium chloride	75.000
Agar	15.000
D-Mannitol	10.000
Peptic digest of animal tissue	5.000
Pancreatic digest of casein	5.000
Beef extract	1.000
Phenol red	0.025

PRINCIPLE

The medium contains Beef extract, Pancreatic digest of casein and Peptic digest of animal tissue which makes it very nutritious as they provide carbon, nitrogen compounds, long chain amino acids, vitamins and other essential growth factors and trace nutrients. Bacteria that grow in the presence of a high salt concentration and ferment mannitol produce acid products, turning the phenol red pH indicator from red to yellow. Mannitol is the fermentable carbohydrate which leads to acid production, detected by Phenol red indicator. *Staphylococcus aureus* ferment mannitol and produce yellow coloured colonies surrounded by yellow zones. The lipase activity can be visualized as yellow opaque zones around the colonies. Coagulase negative strains of *Staphylococcus aureus* are usually mannitol non-fermenters and therefore produce pink to red colonies surrounded by red-purple zones. Presumptive coagulase-positive yellow colonies of *Staphylococcus aureus* should be confirmed by performing the coagulase test. Agar is the solidifying agent. The additional property of lipase activity of *Staphylococcus aureus* can be detected by the addition of the Egg Yolk Emulsion (TS 002). The lipase activity can be visualized as yellow opaque zones around the colonies.

INSTRUCTION FOR USE

Dissolve 111.02 grams of the medium in 1000 ml distilled water.

Gently heat to boiling with gentle swirling and dissolve the medium completely.

Sterilize by autoclaving at 15 psi (121°C) for 15 minutes.

Cool to 45 - 50°C.

If desired, add 5% v/v Egg Yolk Emulsion (TS 002).

Mix well and pour into sterile Petri plates



QUALITY CONTROL SPECIFICATIONS

Appearance of Dehydrated powder	:	Light yellow to pink colour, homogeneous free flowing powder
Appearance of Prepared medium	:	Red colour, clear to slightly opalescent gel
pH (at 25°C)	:	7.4±0.2

INTERPRETATION

Culture characteristics observed after incubation.

Microorganism	ATCC	Inoculum (CFU/ml)	Growth	Colour of colony	Recovery	Incubation Temperature	Incubation Period
<i>Staphylococcus aureus</i>	25923	50-100	Good-Luxuriant	Yellow	≥50%	30 - 35°C.	18-72 hours
<i>Staphylococcus aureus</i>	6538	50-100	Good-Luxuriant	Yellow	≥50%	30 - 35°C.	18-72 hours
<i>Staphylococcus epidermidis</i>	12228	50-100	Fair	Red	30-40%	30 - 35°C.	18-72 hours
<i>Proteus mirabilis</i>	12453	50-100	None to poor	Red	≤10%	30 - 35°C.	18-72 hours
<i>Escherichia coli</i>	25922	≥1000	Inhibited	-	0%	30 - 35°C.	=> 72 Hours
<i>Escherichia coli</i>	8739	≥1000	Inhibited	-	0%	30 - 35°C.	=> 72 Hours

PACKAGING

In 100&500gm packaging size.

STORAGE

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers below 25°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.

Product Deterioration: Do not use, if powder show evidence of microbial contamination, discoloration, drying, or other signs of deterioration.

DISPOSAL

After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

REFERENCES

1. American Public Health Association, 1966, Recommended Methods for the Microbiological Examination of Foods, 2nd Ed, APHA, New York.
2. British Pharmacopoeia, 2016, The Stationery office British Pharmacopoeia
3. Chapman G. H., 1945, J. Bacteriol., 50:201.
4. Davis J. G., 1959, Milk testing, 2nd Ed., Dairy Industries Ltd, London.
5. European Pharmacopoeia, 2017, EDQM.
6. Hitchins A. D., Tran T. and McCarron J. E., 1995, FDA Bacteriological Analytical Manual, 8th Ed., AOAC International, Gaithersburg, Md.
7. Japanese Pharmacopoeia, 2016.
8. Koch P. K., 1942, Zentralbl. Bakteriologie. Parasitenkunde. Abt. I Orig. 149:122.
9. Murray P. R., Baron J. H., Pfaller M. A., Tenover J. C. and Tenover F. C., (Eds.), 2003, Manual of Clinical Microbiology, 8th Ed., American Society for Microbiology, Washington, D.C.
10. Silvertown R. E. and Anderson M. J., 1961, Handbook of Medical Laboratory Formulae, Butterworths, London.
11. The United States Pharmacopoeia, 2019, The United States Pharmacopoeial Convention, Rockville, MD.

