

Mannitol Salt agar (i23108)

For the selective isolation, cultivation, and enumeration of *staphylococci* from clinical and nonclinical specimens. Mannitol-utilizing organisms turn the medium yellow.

Industry: Clinical / Pharmaceutical/Veterinary / Quality Control / Antimicrobial susceptibility testing

Principles & Uses

Staphylococci are commonly found on the skin, mucous membranes, and in various environmental sources. *Staphylococcus aureus* is a well-known human opportunistic pathogen, identified through its ability to clot plasma. These bacteria can thrive in high-salt environments, which is used as a criterion for their isolation. Mannitol Salt Agar, with 7.5% NaCl, is recommended for isolating coagulase-positive *staphylococci* from various samples. This medium also detects lipase activity in *S. aureus*, seen as yellow opaque zones around colonies.

The components include peptones for bacterial growth, sodium chloride to inhibit non-*staphylococcal* bacteria, mannitol as a fermentable carbohydrate, and phenol red as a pH indicator. *S. aureus* ferments mannitol, forming yellow colonies with yellow zones, while coagulase-negative strains produce pink to red colonies. Presumptive *S. aureus* colonies should undergo a coagulase test for confirmation.

Mannitol Salt Agar is selective due to its high salt concentration, enabling the growth of *S. aureus*. Some other salt-tolerant microorganisms can also thrive on this medium. This medium is essential for detecting pathogenic *Staphylococcus aureus* and is used in various product testing procedures. Additionally, the addition of Egg Yolk Emulsion allows for the detection of lipase activity, confirming pathogenic *Staphylococcus* species. This medium is crucial for various microbiological examinations, particularly for the identification of *S. aureus* in products.

Composition (gr/L)

Pancreatic digest of Casein 5, Peptic digest of Animal Tissue 5, Beef Extract 1, Sodium Chloride 75, D-Mannitol 10, Phenol Red 0.025, Agar 12.

Final pH at 25°C 7.4 ± 0.2

Preparation from dehydrated Powder

Suspend 108 g of the medium in one Liter of purified water. Autoclave at 121°C for 15 minutes.

Quality Control

Dehydrated Appearance: Beige Fine, homogeneous, free of extraneous material and may contain many light to dark red flecks.

Prepared Appearance: Light to medium rose red, trace orange; clear to hazy.

Reaction of 10.8% Solution at 25°C: pH 7.4 ± 0.2

Cultural Response

Inoculate and incubate at 35 ± 2°C for 42-48 hours. Incubate plates with *Staphylococcus aureus* ATCC 6538 and *E. coli* ATCC 8739 at 30-35°C for 18-72 hours.

Organism (ATCC*)	Recovery	Color of media around colony
<i>Proteus mirabilis</i> (12453)	Partial to complete inhibition	-
<i>Escherichia coli</i> (8739)	No Growth	-
<i>Staphylococcus aureus</i> (25923)	Good	Yellow
<i>Staphylococcus epidermidis</i> (12228)	Good	Red
<i>Staphylococcus aureus</i> (6538)	Good	Yellow

*ATCC is a registered trade mark of the American Type Culture Collection.



On the left, the culture media appears in a red-rose color. In the middle, *Staphylococcus aureus* is depicted with yellow culture media surrounding its colonies. On the right, *Staphylococcus epidermidis* shows red culture media around its colonies.

Storage

Keep the container at 15-30 °C. Store prepared medium at 2-8 °C.