MANNITOL SALT AGAR

INTENDED USE

Mannitol Salt Agar is used for the selective isolation and enumeration of staphylococci from clinical and nonclinical materials.

SUMMARY AND EXPLANATION

Koch, in 1942, reported that only staphylococci grow on agar media containing 7.5% sodium chloride.[1] Chapman further studied this phenomenon in greater detail and concluded that the addition of 7.5% sodium chloride to phenol red mannitol agar results in an improved medium for the isolation of plasma-coagulating staphylococci.[2] Mannitol Salt Agar is listed as one of several media recommended for the enumeration of gram-positive bacteria in cosmetics,[3] clinical specimens,[4] and pharmaceutical products.[5]

PRINCIPLE

Mannitol Salt Agar is a nutritive medium due to its content of peptones and beef extract, which supply essential growth factors, such as nitrogen, carbon, sulfur and trace nutrients. The 7.5% concentration of sodium chloride results in the partial or complete inhibition of bacterial organisms other than staphylococci. Mannitol fermentation, as indicated by a change in the phenol red indicator, aids in the differentiation of staphylococcal species. Agar is a solidifying agent.

REAGENTS (FORMULA)

Pancreatic Digest of Casein	5.0	g
Peptic Digest of Animal Tissue	5.0	g
Beef Extract	1.0	g
Sodium Chloride	75.0	g
D-Mannitol	10.0	g
Phenol Red	25.0	mg
Agar	15.0	g
Deionized Water	1000.0	ml

PROCEDURE

Refer to appropriate standard references for details on test methods to obtain isolated colonies from specimens or samples using Mannitol Salt Agar.[3] Incubate plates at 35 ± 2°C in an aerobic atmosphere for 24-48 hours, or as instructed in the standard reference.[3]

EXPECTED RESULTS

After the recommended incubation period, the plates should show isolated colonies in streaked areas and confluent growth in areas of heavy inoculation. Coagulase-positive staphylococci produce growth of yellow colonies with yellow zones. Coagulase negative staphylococci produce small red colonies with no color change to the medium. *Micrococcus* produce large, white to orange colonies, with no color change to the medium. Most other bacteria will be inhibited.

QUALITY CONTROL

All lot numbers have been tested and have been found to be acceptable. Customers can test products using the following quality control organisms. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, sample results should not be reported.

Organisms	Incubation	Results
Staphylococcus aureus ATCC 25923	35 ± 2°C for 24-48 hours	Growth, Yellow
Staphylococcus epidermidis ATCC 12228	35 ± 2°C for 24-48 hours	Growth, Red

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BIBLIOGRAPHY

1. Koch. 1942. Zentralbl. Bakteriol. Parasitenkd. Abt. I Orig. 149:122.

2. Chapman. 1945. J. Bacteriol. 50:201.

3. U.S. Food and Drug Administration. Bacteriological analytical manual, online. AOAC International, Gaithersburg, Md.

4. Forbes, Sahm and Weissfeld. 2007. Bailey and Scott's diagnostic microbiology, 12th ed. Mosby, Inc., St. Louis, Mo.

5. United States Pharmacopeial Convention, Inc. 2008. The United States pharmacopeia 31/The national formulary 26, Supp. 1, 8-1-08, online. United States Pharmacopeial Convention, Inc., Rockville, Md.

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