Starch M-Protein Agar

M2054

Intended use

Recommended for isolation and propagation of Actinomycetes from soil and water.

Composition

Ingredients	Gms / Litre
Sodium starch	10.000
M-protein	0.300
Potassium nitrate	2.000
Sodium chloride	2.000
Dipotassium hydrogen phosphate	2.000
Magnesium sulphate, heptahydrate	0.050
Ferrous sulphate, heptahydrate	0.010
Calcium carbonate	0.020
Agar	15.000

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 31.35 grams (the equivalent weight of dehydrated medium per litre) in 1000 ml purified / distilled water containing 5 ml glycerol. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C. Mix well and pour into sterile Petri plates.

Principle And Interpretation

Actinomycetes are gram-positive bacteria, which show marked chemical and morphological diversity but form a distinct evolutionary line of organisms that range from coccoid and pleomorphic forms to branched filaments (2). *Actinomycetes* form an integral part of soil, water and vegetation. *Actinomycetes* development leads to the formation of volatile metabolites (1). Traces of these volatile metabolites are sufficient to impart disagreeable odour to water or a muddy flavour to fish (7). *Actinomycetes* also cause disruptions in wastewater treatment by forming massive growths, which are capable of producing thick foam in the activated sludge process (5,6). This medium is recommended by APHA for the growth of *Actinomycetes* species(7).

M-protein serves as nitrogen source. Starch serves as a carbon source used as a substrate in anaerobic fermentation. Sodium chloride maintains osmotic balance. Dipotassium phosphate provides the buffering system. The sulphate serve as source of sulphur and metallic ions. Glycerol serves as an additional source of carbon.

Type of specimen

Water samples; Soil samples.

Specimen Collection and Handling:

For water samples, follow appropriate techniques for sample collection and processing as per guidelines (7).

For soil samples, follow appropriate techniques for sample collection and processing as per guidelines (2,5,6).

After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions :

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

1. Due to variable nutritional requirements, some strains show poor growth on this medium.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Yellow to light amber coloured opalescent gel forms in Petri plates

Cultural Response

Cultural characteristics observed after an incubation at 26-30°C for 6-7 days

Organism	Growth
Nocardia asteroides ATCC 19427	good-luxuriant
Streptomyces albus subsp. *albus ATCC 3004*	good-luxuriant
Streptomyces lavendulae ATCC 19247	good-luxuriant

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (3,4).

Reference

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3. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
4. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
5. Lechevalier H. A., 1975, Environ. Protection Technol. Ser., EPA-600/ 2-75-031, U. S. Environmental Protection Agency,Cincinnati, Ohio.
6. Lechevalier M. P., and Lechevalier H. A., 1974, Int. J. Syst.Bacteriol., 24:278.
7. Rice E.W., Baird R.B., Eaton A. D., and Clesceri L. S. (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23nd Ed., APHA, Washington, D.C.

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