ISP Medium No. 7 (Tyrosine Agar) M362

Intended Use:

Recommended for isolation and characterization of *Streptomyces* species as per International Streptomyces Project.

Composition**

Ingredients	Gms / Litre
L-Asparagine	1.000
L-Tyrosine	0.500
Dipotassium hydrogen phosphate	0.500
Magnesium sulphate heptahydrate	0.500
Sodium chloride	0.500
*Trace salt solution (ml)	1.000
Agar	20.000
*Trace salt solution contains	-
Ferrous sulphate heptahydrate	1.360mg
Copper chloride, 2H2O	0.027mg
Cobalt chloride, 6H2O	0.040mg
Sodium molybdate, dihydrate	0.025mg
Zinc chloride	0.020mg
Boric acid	2.850mg
Manganese chloride, tetrahydrate	1.800mg
Sodium tartarate	1.770mg
Final pH (at 25°C)	7.3±0.1

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 23.74 grams (the equivalent weight of dehydrated medium per litre) in 1000 ml purified/distilled water containing 15 ml glycerol. Heat to boiling to dissolvethe 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

Streptomyces and *Nocardia* species appear morphological similar in clinical material and in culture (3,4). Nocardiosis, caused by *Nocardia* species, is a disease of man, most frequently encountered in patients who are severely immunosuppressed and in animals (3). *Streptomyces* species may be differentiated from *Nocardia* species based on tyrosine and asparagine utilization. Clear zones in the medium surrounding colony growth indicate hydrolysis of the substrate present (3,4). International Streptomyces Project Medium No. 7 (Tyrosine Agar) is recommended for the isolation and enumeration of *Streptomyces* species (1). It is used for the differentiation of *Sreptomyces* species based on tyrosine utilization.

The medium contains L-tyrosine, which is utilized by *Streptomyces* species. Zone of clearance around the colony indicates tyrosine hydrolysis. Trace elements provide essential factors for the growth of *Streptomyces* species. Inoculate the medium by streaking the isolate to be tested onto the agar surface with a sterile inoculating loop. The medium may need to be incubated for upto 3 weeks to allow positive hydrolytic reactions to develop. Examine plates at regular intervals for growth and hydrolysis.

Type of specimen

Food samples

Specimen Collection and Handling:

For food samples, follow appropriate techniques for sample collection and processing as per guidelines (5).
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. Further biochemical tests must be carried out for confirmation.

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 2.0% agar gel.

Colour and Clarity of prepared medium

Yellow coloured, clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 2.37% w/v aqueous solution containing 1.5% glycerol at 25°C. pH : 7.3±0.1

pH

7.20-7.40

Cultural Response

Cultural characteristics observed after an incubation at 25-30°C for 48-72 hours.(Tyrosine hydrolysis is observed upto 3 weeks)

Organism	Growth	Tyrosine hydrolysis
Streptomyces achromogenes ATCC 12767	good-luxuriant	positive reaction, clear zones around the colonies
Streptomyces albus subsp. *albus* ATCC 3006	good-luxuriant	positive reaction, clear zones around the colonies
Streptomyces lavendulae ATCC 8664	good-luxuriant	positive reaction, clear zones around the colonies
Streptomyces lividans ATCC 69441	good-luxuriant	positive reaction, clear zones around the colonies
Nocardia asteroides	good	negative reaction, no clear zones

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 20-30°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle inorder 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 (2,3).

Reference

1. Atlas R. M., 1993, Handbook of Microbiological Media, 3rd ed., CRC Press. Inc.

2. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.

3. 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.
4. Larone, 1995, Medically Important Fungi: A Guide to Identification, 3rd Ed., American society for Microbiology, Washington, D.C.
5. Salfinger Y., and Tortorello M.L. Fifth (Ed.), 2015, Compendium of Methods for the Microbiological Examination of Foods, American Public Health Association, Washington, D.C.

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