Jensen's Medium

M710

Intended Use:

Recommended for detection and cultivation of nitrogen fixing bacteria.

Composition**

Ingredients	Gms / Litre
Sucrose	20.000
Dipotassium hydrogen phosphate	1.000
Magnesium sulphate	0.500
Sodium chloride	0.500
Ferrous sulphate	0.100
Sodium molybdate	0.005
Calcium carbonate	2.000
Agar	15.000

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 39.1 grams in 1000 ml purified / distilled water. Heat just to boiling. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50C. Mix well and pour into sterile Petri plates.

Note: Due to presence of calcium carbonate, the medium forms opalescent solution with white precipitate.

Principle And Interpretation

Nitrogen-fixing organisms are free-living bacteria, which grow well on a nitrogen-free medium. These bacteria utilize atmospheric nitrogen gas for their cell protein synthesis. This cell protein is then mineralized in soil after the death of the cells thereby contributing towards the nitrogen availability of the crop plants (5). Nitrogen fixing bacteria enter into symbiosis only with leguminous plants, by infecting their roots and forming nodules on them. Jensens Medium is formulated according to Jensen and is recommended for detection and cultivation of nitrogen fixing bacteria (2). Sucrose acts as the energy source. Sodium molybdate in the media increases the fixation of nitrogen (4).Sodium chloride maintains osmotic equilibrium of the media. Calcium stimulates nodulation when present as chloride or sulphate.

Type of specimen

Soil sample

Specimen Collection and Handling

For soil samples follow appropriate techniques for handling specimens as per established 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. Individual organisms differ in their growth requirement and may show variable growth patterns on the 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

White to cream homogeneous free flowing powder

Gelling

Firm,comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Cream coloured, slightly opalescent gel with a slight precipitate forms in Petri plates.

Cultural Response
Cultural characteristics observed after incubation at 30°C for 8 days.

Organism	Growth
Rhizobium leguminosarum ATCC 10004	luxuriant
Rhizobium meliloti ATCC 9930	luxuriant
Rhizobium oryzae ATCC 9363	luxuriant

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 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 (1,3).

Reference

1. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition
2. Jensen. H. L., 1942, Pro Line Soc. N.S.W., 57,205-212.
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. Ranganayaki S., Mohan C., Ally Z., 1981; 21 (8): 607-10.
5. Subba Rao N. S., 1977, In: Soil Microorganisms and Plant Growth, Oxford and IBH Publishing Co., New Delhi, Pages 254-255.

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