

TECHNICAL DATA SHEET

Isolation Medium For Iron Bacteria

Principle

This medium is used for isolation of iron bacteria like *Sphaerotilus-Leptothrix* group. *SphaerotilusLeptothrix* is filamentous bacteria, form sheath deposited with ferric hydroxide and manganese dioxide. The specific deposition of ferric ions on the sheath of *S. discophorus* was demonstrated by Rogers and Anderson (1976). Iron bacteria obtain energy by the oxidation of iron from the ferrous to ferric state. Some bacteria that do not oxidize ferrous ions may dissolve or deposit it indirectly. During their growth, they either liberate iron by consuming organic radicals to which the iron is attached, or adjust environmental conditions to permit the deposition of iron. Isolation Medium for Iron Bacteria is recommended by APHA (1976) for the isolation of iron bacteria, especially those belonging to the *Sphaerotilus-Leptothrix* group. The medium is composed of Dextrose, ammonium sulphate, calcium nitrate, dipotassium hydrogen phosphate, magnesium sulphate, potassium chloride, calcium carbonate, cyanocobalamin, thiamine and agar. The dextrose is the source of carbon. Magnesium sulphate, ammonium sulphate, potassium chloride and calcium nitrate are sources of ions that stimulate metabolism. Dipotassium phosphate buffers the medium. The bacteria of both genera, *Sphaerotilus* and *Leptothrix* require Cyanocobalamin as an essential growth factor. While some *Leptothrix* strains require additionally thiamine as growth factor.

Use: For isolation of iron bacteria, especially those from *Sphaerotilus-Leptothrix* group.

Contents*

Ingredients	Gram/Litre
Dextrose	0.150
Ammonium sulphate	0.500
Calcium Nitrate	0.010
Dipotassium hydrogen phosphate	0.050
Magnesium sulphate	0.050
Potassium chloride	0.50
Calcium carbonate	0.100
Cyanocobalamin	0.00001
Thiamine	0.0004
Agar	10.000

* Formula adjusted for optimum performance and parameters

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Directions: Dissolve 11.00 grams in 1000 ml distilled water. Heat just to boil and transfer in desired. Sterilize by autoclaving at 15 lbs pressure (121 °C) for 15 min, cool it to 42-45 °C and inoculate test sample aseptically.

Specimens' types analyzed
Agricultural isolates etc.

Precautions to be taken

These microbial media are intended for the in-vitro use only. All the handling, experiments, storage, and discarding should be performed with the help of skilled and knowledgeable technicians and as per the established guidelines. The material should be disposed only after proper sterilization by autoclaving. Please go through the MSDS of the media to avoid any accidents or in emergency.

Performance and Evaluation

The expected performance of the medium is liable to use as per the direction on the label when stored at optimum conditions and within expiry date.

Quality Control

Appearance	Light beige colored free flowing, homogeneous powder
Gelling	Firm comparable with 1.0% agar gel
Color and clarity of ready medium	Light yellow to colorless opalescent gel
Negative control	Performed using sterile distilled water

Different Microbial Response

Organism	ATCC	Inoculum	Growth	Incubation Temperature	Incubation period
<i>Sphaerotilus natans</i>	13338	50-100	Luxurious	22-25 °C	3 to7 days
<i>Leptothrix discophora</i>	43182	50-100	Luxurious	22-25 °C	3 to7 days

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Storage and Shelf Life: The product is highly hygroscopic; keep the container tightly closed at all times and store it properly as per the conditions mentioned on the label. The declared expiry is valid only when stored as per the conditions mentioned on the label.

Note: Sterilize media immediately after reconstitution.

Disposal: To avoid the contamination or propagation of any hazardous microbes the used, unusable or modified preparation of this product must be disposed after autoclaving after completion of task.

Reference

1. Atlas, R. M. (2005). *Handbook of media for environmental microbiology*. CRC press.
2. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), (2015), *Standard Methods for the Examination of Water and Wastewater*, 23rd Ed., APHA, Washington, D.C.
3. *Difco Manual* (1998). 11th Edition. Difco Laboratories., Division of Becton Dickinson and Company, Sparks, Maryland, USA.
4. Rand, M. C., Arnold E. Greenberg, and Michael J. Taras, (1976), *Standard methods for the examination of water and wastewater*. Prepared and published jointly by American Public Health Association, American Water Works Association, and Water Pollution Control Federation.
5. Rogers S. R., Anderson J. J., (1976), *J. Bacteriol.*, 126: 257-263.
6. Rogers S. R., Anderson J. J., (1976), *J. Bacteriol.*, 126: 264-271.

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