Isolation Medium for Iron Bacteria

Intended Use

Isolation Medium for Iron Bacteria is used for the isolation of iron bacteria, especially those belonging to *Sphaerotilus-Leptothrix* group.

Summary

Sphaerotilus-Leptothrix group are filamentous bacteria that form sheath. The sheathed bacteria have the ability to deposit ferric hydroxide and sometimes manganese dioxide on their sheaths. The specific deposition of ferric ions on the sheath of *S. discophorus* (also *Leptothrix* species) was demonstrated by Rogers and Anderson. 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 utilizing organic radicals to which the iron is attached, or alter environmental conditions to permit the deposition of iron. Isolation Medium for Iron Bacteria is recommended by APHA for the isolation of iron bacteria, especially those belonging to the *Sphaerotilus-Leptothrix* group. The medium has been proven helpful for identifying various groups of filamentous organisms including iron bacteria.

Principle

Magnesium sulphate, ammonium sulphate, potassium chloride and calcium nitrate are sources of ions that stimulate metabolism. Glucose acts as the carbon source. Dipotassium phosphate buffers the medium. The bacteria of both genera, Sphaerotilus and Leptothrix require vitamin B12 as an essential growth factor. A number of Leptothrix strains have been found to require additionally thiamine as growth factor.

Formula*

Ingredients	g/L
Glucose	0.15
Ammonium sulphate	0.5
Calcium nitrate	0.01
Dipotassium phosphate	0.05
Magnesium sulphate	0.05
Potassium chloride	0.05
Calcium carbonate	0.1
Thiamine	0.4 mg
Cyanocobalamin	0.01 mg
Agar	10.0

*Adjusted to suit performance parameters

Storage and Stability

Store dehydrated medium below 30°C in tightly closed container and the prepared medium at 2ºC-8°C. Avoid freezing and overheating. Use before expiry date on the label. Once opened keep powdered medium closed to avoid hydration.

Type of Specimen

Water and Waste water samples

Specimen Collection and Handling

Ensure that all samples are properly labelled.
Follow appropriate techniques for handling samples as per established guidelines.
Some samples may require special handling, such as immediate refrigeration or protection from light, follow the standard procedure.
The samples must be stored and tested within the permissible time duration.
After use, contaminated materials must be sterilized by autoclaving before discarding.

Directions

1. Suspend 10.91 g of the powder in 1000 mL distilled water.
2. Heat just to boiling.
3. Sterilize by autoclaving at 121°C (15 psi) for 15 minutes as per validated cycle.
4. Cool to 45°C-50°C.
5. Mix well and dispense into sterile test tubes.

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

Quality Control

Dehydrated Appearance: Cream to white coloured, homogeneous, free flowing powder
Prepared Appearance: White to off white coloured, opalescent gel forms with slight precipitate in tubes as slants
Cultural Response: Cultural characteristics observed after an incubation at 22°C-25°C up to 5 days.

Organism (ATCC)	Growth
Leptothrix discophora (43182)	Good
Sphaerotilus natans (13338)	Good
Ferrobacillus ferrooxidans	Good

Performance and Evaluation

Performance of the product is dependent on following parameters as per product label claim:

1. Directions
2. Storage
3. Expiry

Warranty

This product is designed to perform as described on the label and package insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose.

Reference

1. Rogers S. R., Anderson J. J., 1976, J. Bacteriol., 126: 257-263.
2. Rogers S. R., Anderson J. J., 1976, J. Bacteriol., 126: 264-271.
3. Eaton A. D., Clesceri L. S., Rice E. W., and Greenberg A. W., (Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st Ed., APHA, Washington, D.C.
4. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product description	Pack Size
201090040100	Dehydrated Culture Media	100 g