



PRODUCT SPECIFICATION SHEET

Citrate Agar (DM937)

Intended Use

Citrate Agar (DM937) is recommended for cultivation of iron bacteria from soil samples.

Product Summary and Explanation

Iron bacteria are bacteria that derive the energy they need to live and multiply by oxidizing dissolved ferrous iron (or the less frequently available manganese). The iron bacteria oxidize ferrous iron to ferric state, which precipitate as ferric hydroxide around cells. These bacteria are usually non-filamentous and spherical or rod shaped. Certain algae also transform ferrous salts to ferric state and deposit the precipitation around the colonies. The ferric hydroxide deposits give a brown or rust red colour to these organisms. Iron bacteria colonize the transition zone where de-oxygenated water from an anaerobic environment flows into an aerobic environment. Groundwater containing dissolved organic material may be de-oxygenated by microorganisms feeding on that dissolved organic material. Where concentrations of organic material exceed the concentration of dissolved oxygen required for complete oxidation, microbial populations with specialized enzymes can reduce insoluble ferric oxide in aquifer soils to soluble ferrous hydroxide and use the oxygen released by that change to oxidize some of the remaining organic material.⁽¹⁾

Citrate Agar is recommended by Subba Rao⁽²⁾ for the isolation and detection of iron bacteria. A modification of the original formulation of Subba Rao is recommended by APHA⁽³⁾ for the isolation of heterotrophic iron-precipitating bacteria.⁽⁴⁾

Principles of the Procedure

Citrate Agar contains dipotassium phosphate which provides buffering to the medium. Magnesium sulphate, ammonium sulphate and calcium chloride are sources of ions that stimulate metabolism. Ferric ammonium citrate is used as a source of carbon and sodium nitrate acts as a source of nitrogen.

Formula / Liter

Ingredients	Gms / Liter
Ammonium sulphate	0.50
Sodium nitrate	0.50
Magnesium sulphate	0.50
Dipotassium phosphate	0.50
Calcium chloride	0.20
Ferric ammonium citrate	10.00
Agar	15.00
Final pH: 6.7 ± 0.1 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 27.2 grams of the medium in one liter of distilled water.
2. Heat to boiling to dissolve the medium completely.
3. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
4. Mix well and pour into sterile Petri plates.





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Quality Control Specifications

Dehydrated Appearance	Cream to greenish yellow homogeneous free flowing powder
Prepared Medium	Light amber coloured, clear to slightly opalescent gel forms in Petri plates
Reaction of 2.72% Solution	pH : 6.7±0.1 at 25°C
Gel Strength	Firm, comparable with 1.5% Agar gel

Expected Cultural Response: Cultural characteristics observed after an incubation at 35-37°C for upto 7 days.

Sr. No.	Organisms	Results to be achieved
		Growth
1.	<i>Escherichia coli</i> ATCC 25922	inhibited
2.	<i>Sphaerotilus natans</i> ATCC 13338	good-luxuriant

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

Refer appropriate references for standard test procedures.

Results

Refer appropriate references and procedures for interpretation of results.

Storage

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

1. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
2. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : Citrate Agar

Product Code : DM937

Available Pack sizes : 100gm/500gm

References

1. Sawyer, Clair N. and McCarty, Perry L. "Chemistry for Sanitary Engineers" McGraw-Hill (1967) ISBN 0-07-054970-2 pp.446-447.
2. Subba Rao N. S., 1977, Soil Microorganisms and Plant Growth, Oxfordand IBH Publishing Co., New Delhi.
3. Greenberg A. E., Eaton A. D., and Clesceri L. S., (Eds.), 1998, Standard Methods for the Examination of Water and Wastewater, 20th Ed., APHA, Washington, D.C.
4. Clark F. M., Scott R. M. and Bone E., 1967, Heterotrophic, iron-precipitating bacteria, J. Am. Water Works Assoc., 59: 1036.

Further Information

For further information please contact your local MICROMASTER Representative.





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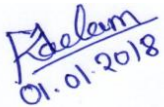
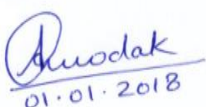

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