



PRODUCT SPECIFICATION SHEET

Pikovskaya's Broth (Medium) (DM1841)

Intended Use

Pikovskaya's Broth (Medium) (DM1841) is recommended for detection of phosphate solubilizing microorganisms.

Product Summary and Explanation

In soil phosphate exists in both organic as well as inorganic forms. Organic matter derived from dead and decaying plant debris is rich in organic sources of phosphorus. However, plants are able to utilize phosphorus from soil only in the free available form. Soil phosphates are rendered available either by plant roots or by soil microorganisms. Therefore, phosphate-dissolving soil organisms play a part in correcting phosphorus deficiency of crop plants.⁽¹⁾ Many naturally occurring soil fungi and bacteria are phosphate solubilizers and they play an important role in maintaining phosphorus balance of crop plants. This fact is exploited in culturing phosphate solubilizers which are able to solubilize bound phosphates. Phosphate solubilizing bacteria (PSB) are a group of beneficial bacteria capable of hydrolysing organic and inorganic phosphorus from insoluble compounds.⁽²⁾ It is generally accepted that the mechanism of mineral phosphate solubilization by PSB strains is associated with the release of low molecular weight organic acids, through which their hydroxyl and carboxyl groups chelate the cations bound to phosphate, thereby converting it into soluble forms. In addition, some PSB produce phosphatase like phytase that hydrolyse organic forms of phosphate compounds efficiently. Pikovskaya's Broth is a modification of Pikovskaya's agar medium originally modified by Sundara Rao and Sinha⁽³⁾ for culturing phosphate solubilizing microorganisms.

Principles of the Procedure

Pikovskaya's Agar contains yeast extract which provides nitrogen and other nutrients necessary to support bacterial growth. Dextrose acts as a source of energy. Phosphate as calcium phosphate is present in the medium. Different salts and yeast extract supports the growth of organisms.

Formula / Liter

Ingredients	Gms / Liter
Yeast extract	0.50
Dextrose	10.00
Calcium phosphate	5.00
Ammonium sulphate	0.50
Potassium chloride	0.20
Magnesium sulphate	0.10
Manganese sulphate	0.0001
Ferrous sulphate	0.0001

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 16.3 grams in one liter distilled water.
2. Heat if necessary to dissolve the medium completely.
3. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle. Dispense as desired.





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Quality Control Specifications

Dehydrated Appearance	White to light yellow homogeneous free flowing powder
Prepared Medium	Whitish with flocculant precipitate opaque solution forms in tubes
Reaction of % Solution	Not Applicable
Gel Strength	Not Applicable

Expected Cultural Response: Cultural characteristics observed after an incubation at 35-37°C for 48 hours (by spot inoculation on Pikovskaya's Agar).

Sr. No.	Organisms	Results to be achieved	
		Growth	Phosphate Solubilization
1.	<i>Aspergillus brasiliensis</i> ATCC 16404	good-luxuriant	positive reaction, clear zone surrounding the colony
2.	<i>Bacillus subtilis</i> ATCC 6633	good	moderate clear zone surrounding the colony
3.	<i>Penicillium notatum</i> ATCC 10108	good-luxuriant	positive reaction, clear zone surrounding the colony
4.	<i>Pseudomonas aeruginosa</i> ATCC 27853	good-luxuriant	positive reaction, clear zone surrounding the colony

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

Test Procedure

Refer to appropriate references for standard test procedures.

Results

The growth obtained in Pikovskaya's broth (DM1841) may be detected for phosphate solubilization by subculturing or spot inoculation on Pikovskaya's agar (DM561). Phosphate solubilization is indicated as clearance around growth or colony. Refer to 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.





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2. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : Pikovskaya's Broth (Medium)

Product Code : DM1841

Available Pack sizes : 500gm

References

1. Subba Rao N. S., 1977, Soil Microorganisms and Plant Growth, Oxford and IBH Publishing Co., New Delhi.
2. Y.P. Chen, P.D. Rekha, A.B. Arun, F.T. Shen, W.-A. Lai and C.C. Young (2006). "Phosphate solubilizing bacteria from subtropical soil and their tricalcium phosphate solubilizing abilities". Applied Soil Ecology 34 (1): 33-41.
3. Sundara Rao W. V. B. and Sinha M. K., 1963, Ind. J., Agric. Sci., 33:272.

Further Information

For further information please contact your local MICROMASTER Representative.



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