Zinc Solubilizing Agar

M2068

Intended use

Zinc Solubilizing agar is recommended for isolation and detection of zinc solubilizing soil microorganisms.

Composition**

Ingredients	Gms / Litre
Dextrose (Glucose)	10.000
Ammonium sulphate	1.000
Potassium chloride	0.200
Dipotassium hydrogen phosphate	0.100
Magnesium sulphate, heptahydrate	0.200
Zinc oxide	1.000
Agar	15.000

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 27.40 grams(the equivalent weight of dehydrated medium per litre) in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C. Mix well and pour into sterile Petri plates.

Principle And Interpretation

Among all micro nurients, Zinc is a rather unique element for plant nutrition. Zinc (Zn) is one of the essential micronutrients required for optimum plant growth. Substantial quantity of applied inorganic zinc in soil is converted into unavailable form. Zinc solubilising bacteria are potential alternates for zinc supplement. Zinc solubilizing bacteria solubilize both the insoluble zinc compounds, though ZnO is more effectively solubilized in comparison to $ZnCO_3$ (1).

Dextrose acts as an energy source. Different salts provides various essential ions required for promoting growth of zinc solubilizers. Colonies of the microorganism produced clear haloes on solid medium incorporating zinc phosphate, but only when dextrose was provided as the carbon source. Solubilization of zinc phosphate occurred by both an increase in the H+ concentration of the medium, probably a consequence of ammonia assimilation, and the production of gluconic acid (2).

Type of specimen

Soil samples

Specimen Collection and Handling:

For soil samples follow appropriate techniques for handling specimens as per established guidelines (1,2).

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 guidleines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations

1. Further biochemical testing must be carried out for further identification.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiryyperiod when stored at recommended temmperature.

Quality Control

Appearance

Cream to white homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium
Creamish white to slightly opalescent gel forms in Petri plate.

Reaction
Reaction of 2.74% w/v aqueous solution at 25°C.

Cultural Response

Cultural characteristics observed after an incubation at 25-30°C for 3-4 days.

Organisms	Inoculum (CFU)	Growth	Zinc solubilization
Pseudomonas fluorescens ATCC 49838	50-100	Luxuriant	Clearing around the colony
Pseudomonas fluorescens ATCC 13525	50-100	Luxuriant	Clearing around the colony
Bacillus cereus ATCC 10876	50-100	Luxuriant	Clearing around the colony

Storage and Shelf Life

Store below 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 inorder 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. Use before expiry date on the label
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 clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (3,4).

Reference

1. Subba Rao, 1977, Soil Microorganisms and Plant Growth, Oxford and IBH Publishing Co., India.
2. Biology and Fertility of Soils November 1998, Volume 28, Issue 1, pp 87–94., C. D. Di Simine, J. A. Sayer, G. M. Gadd
3.Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.
4. 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.

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