



Aleksandrow Broth

M1997

Intended Use:

Recommended for isolation and detection of Potassium solubilizing bacteria from soil samples.

Composition**

Ingredients	Gms / Litre
Magnesium sulphate	0.500
Calcium carbonate	0.100
Potassium alumino silicate	2.000
Dextrose (Glucose)	5.000
Ferric chloride	0.005
Calcium phosphate	2.000
Final pH (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 9.60 grams in 1000ml of purified / distilled water. Heat if necessary to dissolve the medium completely. Dispense into tubes or flasks as desired. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Principle And Interpretation

Soil potassium supplementation relies heavily on the use of chemical fertilizer, which has a considerable negative impact on the environment. Potassium-solubilizing bacteria convert insoluble potassium in the soil into a form that plants can access. A wide range of bacteria namely *Pseudomonas*, *Burkholderia*, *Acidithiobacillus ferrooxidans*, *Bacillus mucilaginosus*, *Bacillus edaphicus*, *B.circulans* and *Paenibacillus* sp. has been reported to release potassium in accessible form from potassium-bearing minerals in soils (6). Potassium-solubilizing bacteria have been reported to exert beneficial effects on growth of cotton, pepper and cucumber (3), sorghum (1), wheat (7) and Sudan grass (2). Therefore potassium solubilizing bacteria are extensively used as biofertilizers.

Salts present in the medium support the growth of potassium solubilizing bacteria by providing the essential nutrients. The source of potassium salts is potassium alumino silicates.

Type of specimen

Soil sample.

Specimen Collection and Handling

For soil samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.(8)

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

Limitations :

1. Further biochemical identification of organisms is required for confirmation.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Cream to light yellow coloured solution with white precipitate forms in tubes

Reaction

Reaction of 0.96% w/v aqueous solution at 25°C. pH : 7.2±0.2

pH

7.00-7.40

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth
<i>Potassium solubilizing isolate</i>	50-100	good-luxuriant

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 15-25°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order 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. 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 sample must be decontaminated and disposed of in accordance with current laboratory techniques (4,5).

Reference

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2. Basak, B.B. and Biswas, D.R., 2008, Influence of potassium solubilizing microorganism (*Bacillus mucilaginosus*) and waste mica on potassium uptake dynamics by sudan grass (*Sorghum vulgare Pers*) grown under two Alfisols. Plant Soil, 317, 235-255
3. Han, H.S., Supanjani and Lee, K.D., 2006, Effect of co-inoculation with phosphate and potassium solubilizing bacteria on mineral uptake and growth of pepper and cucumber. Plant Soil and Environment, 52, 130-136.
4. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
5. 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.
6. Sheng, X.F., 2005, Growth promotion and increased potassium uptake of cotton and rape by a potassium releasing strain of *Bacillus edaphicus* . Soil Biology and Biochemistry, 37, 1918-1922
7. Sheng, X.F. and He, L.Y., 2006, Solubilization of potassium bearing minerals by a wild type strain of *Bacillus edaphicus* and its mutants and increased potassium uptake by wheat. Canadian Journal of Microbiology, 52, 66-72.
8. Subba Rao, 1977, Soil Microorganisms and Plant Growth, Oxford and IBH Publishing Co., India.

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