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M1996

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
Glucose	5.000
Ferric chloride	0.005
Calcium phosphate	2.000
Agar	20.000
Final pH (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 29.60 grams in 1000ml of 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

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*, *Acidothiobacillus 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 (1). Potassium-solubilizing bacteria have been reported to exert beneficial effects on growth of cotton, pepper and cucumber(2),sorghum(3), wheat(4) and Sudan grass(5). Therefore potassium solubilizing bacteria are extensively used as biofertilizers.

Salts present in the medium support the growth of potassium solubililizing bacteria by providing the essential nutrients. The source of potassium salts is potassium alumino silicates. Potassium solubilizing bacteria will grow on this medium and form a clear zone around the colony, formed due to potassium solubilization in the vicinity of the colony.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 2.0% Agar gel

Colour and Clarity of prepared medium

Cream to light yellow coloured opaque gel with white precipitate forms in Petri plates

Reaction

Reaction of 2.96% 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.

Cultural Response

Organism	Inoculum (CFU)	Growth	Potassium solubilization
Cultural Response			
Potassium solubilizing isolate	50-100	good-luxuriant	positive reaction, clear zone surrounding the colony

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

Reference

1.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

2.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.

3. Badr, M .A., Shafei, A.M . and Sharaf, S.H. El-Deen, 2006, The dissolution of K and phosphorus bearing minerals by silicate dissolving bacteria and their effect on sorghum growth. Research Journal of Agriculture and Biological Sciences, 2, 5-11.

4. 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.

5. Basak, B.B. and Biswas, D.R., 2008, Influence of potassium solubilizing microorganism (Bacillus mucilaginous) and waste mica on potassium uptake dynamics by sudan grass(*Sorghum vulgare Pers*) grown under two Alfisols. Plant Soil, 317, 235-255

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