Yeast Mannitol Broth

Intended Use
Yeast Mannitol Broth is used for cultivation of *Rhizobium* species.

Summary
Beijerinck was first to isolate and cultivate an aerobic Gram-negative rod-shaped microorganism from the nodules of legume. He named it *Bacillus radicicola*, which was subsequently placed under the genus *Rhizobium*. Bacteria belonging to the genus *Rhizobium* live freely in soil and in the root region of both leguminous and non-leguminous plants. However, they can enter into symbiosis only with leguminous plants by infecting their roots and forming nodules on them. *Rhizobium* present in these root nodules fixes atmospheric nitrogen i.e. gaseous nitrogen from air to organic nitrogen compounds, which is absorbed by plants. Thus, role of *Rhizobium* is noteworthy for their major contributions to soil fertility. Yeast Mannitol Broth is used for the cultivation of the symbiotic nitrogen fixing organisms viz. *Rhizobium* species.

Principle
Yeast extract serves as a good source of readily available amino acids, contain vitamin B complex and accessory growth factors for Rhizobia. It also poises oxidation reduction potential of medium in the range favourable for Rhizobia and serves as hydrogen donor in respiratory process. Mannitol is the fermentable sugar alcohol source. Calcium and magnesium provide cations essential for the growth of Rhizobia.

Formula*

Ingredients	**g/L**
Yeast Extract	1.0
Mannitol	10.0
Dipotassium Phosphate	0.5
Magnesium Sulphate	0.2
Sodium Chloride	0.1
Calcium Carbonate	1.0
Final pH (at 25°C)	6.8 ± 0.2

*Adjusted to suit performance parameters.

Storage and Stability
Store dehydrated medium below 30°C in tightly closed container and the prepared medium at 2°C-8°C. Avoid freezing and overheating. Use before expiry date on the label. Once opened keep powdered medium closed to avoid hydration.

Specimen Collection and Handling
Ensure that all samples are properly labelled. Follow appropriate techniques for handling samples as per established guidelines. Some samples may require special handling, such as immediate refrigeration or protection from light, follow the standard procedure. The samples must be stored and tested within the permissible time duration. After use, contaminated materials must be sterilized by autoclaving before discarding.

Directions
1. Suspend 12.80 g of the powder in 1000 mL purified / distilled water.
2. Mix thoroughly.
3. Heat with frequent agitation to dissolve the powder completely. DO NOT OVERHEAT.
4. Sterilize by autoclaving at 121°C (15 psi) for 15 minutes as per validated cycle.

Quality Control
Dehydrated Appearance: White coloured, homogeneous free flowing powder.
Prepared Appearance: Whitish buff coloured, opalescent solution in tubes.
Cultural Response: Cultural characteristics observed after an incubation at 25°C - 30°C for ≤ 5 days.

Organism (ATCC)	Growth
Rhizobium leguminosarum (10004)	Good
Rhizobium meliloti (9930)	Good

Performance and Evaluation

Performance of the product is dependent on following parameters as per product label claim:

1. Directions
2. Storage
3. Expiry

Warranty

This product is designed to perform as described on the label and package insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose.

Reference

1. Subba Rao N.S., 1977, Soil Microorganisms and Plant Growth, Oxford and IBG Publishing Company.
2. Allen E. K. and Allen O. N., 1950, Bact. Revs., 14:273.
3. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat. No.	Product Description	Pack Size
201250110500	Dehydrated Culture Media	500 g