



YEM Broth

M1824

Intended Use:

Recommended for cultivation of *Agrobacterium* species and other soil microorganisms.

Composition**

Ingredients	Gms / Litre
Yeast extract	1.000
Mannitol	10.000
Dipotassium hydrogen phosphate	0.500
Magnesium sulphate	0.200
Sodium chloride	0.100
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 11.80 grams in 1000 ml 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

YEM broth is widely used for the cultivation of *Agrobacterium* species and other soil microorganisms.

Agrobacterium is a genus of Gram negative bacteria. The *Agrobacterium* genus is quite heterogenous. *Agrobacterium* is well known for its ability to transfer DNA between itself and plants. *Agrobacterium tumefaciens* is a ubiquitous soil borne pathogen responsible for Crown Gall disease, affecting many higher species of plant (4). YEM broth is also used for the cultivation of the symbiotic nitrogen fixing microorganisms like *Rhizobium* species to make it suitable for the production of legume inoculants.

YEM broth which contains mannitol as a carbon source and yeast extract as a source of both nitrogen and growth factors for *Agrobacteria*. It also poses oxidation - reduction potential of medium in the range favourable for *Rhizobia* and serves as hydrogen donor in respiratory process (1). Mannitol is the fermentable sugar alcohol source. Magnesium provides cations essential for the growth of *Agrobacteria*.

Type of specimen

Soil samples

Specimen Collection and Handling

For soil samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards (4). 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 specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations

1. Some strains may show poor growth due to nutritional variations.
2. Further biochemical and serological tests must be carried out for complete identification.

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

Light amber coloured clear solution.

Reaction

Reaction of 1.18% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH

6.80-7.20

Cultural Response

Cultural characteristics observed after an incubation at 25-30°C for upto 5 days.

Organism	Growth
<i>Rhizobium leguminosarum</i> ATCC 10004	luxuriant
<i>Rhizobium meliloti</i> ATCC 9930	luxuriant
<i>Agrobacterium tumefaciens</i> ATCC 33970	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 (2,3).

Reference

1. Allen. E.K. and Allen. O.N., 1950, Bacteriol. Rev., 14:273.
2. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
3. 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.
4. Loper, J. E. and Ishimaru, C. A., in The Rhizosphere and Plant Growth (eds Keister, D. L. and Cregan, P. B.), Kluwer Academic Publishers, 1991, pp. 253–261.

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