



IUT Medium Base

M247

IUT Medium Base with added glycerol and egg yolk emulsion is used for cultivation of *Mycobacterium tuberculosis* .

Composition**

Ingredients	Gms / Litre
L-Asparagine	3.600
Monopotassium phosphate	2.460
Magnesium sulphate	0.240
Magnesium citrate	0.600
Malachite green	0.400
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 7.3 grams in 600 ml distilled water containing 12 ml glycerol. Heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 50°C and aseptically add 1 litre of sterile whole egg emulsion, prepared under aseptic conditions. Mix well avoiding the formation of air bubbles and dispense in screw-capped containers. Sterilize by inspissation at 85°C for 1 hour.

Principle And Interpretation

Mycobacterium genus belongs to the family *Mycobacteriaceae* . They are aerobic, non-motile, gram-positive and characteristically acid-alcohol fast bacilli. It grows at temperatures from 30-41°C, optimally at 35-37°C. Although primary isolation may be successful on a variety of media, only Lowenstein Jensen Medium with glycerol i.e. IUT Medium with glycerol has been recommended. This medium is recommended by the International Union against Tuberculosis for the Diagnosis of Mycobacterial Infections (1). It is also commonly known as Lowenstein-Jensen Glycerol Medium (2). It differs from Lowenstein-Jensen Medium since it does not contain potato flour/starch. This medium has been reported to provide higher proportion of tests positives (3). The medium supports rapid and luxuriant growth of primary cultures. The addition of glycerol to the medium improves the growth of *M.tuberculosis* .

Malachite green has an inhibitory effect on the growth of organisms other than Mycobacteria and provides a colour contrast that facilitates the recognition of colonies, which, especially when small, would be difficult to see without the dye. The medium is recommended for the isolation of human type of tubercle bacillus, whose growth is enhanced by glycerol. Colonial morphology allows the differentiation of the human and bovine types of bacillus, but the bovine bacilli may be inhibited by glycerol and so may fail to grow on this medium. L-Asparagine serves as a source of nitrogen for the cultivation of tubercle bacilli. Inorganic salts provide necessary ions for the metabolism of Mycobacteria.

Quality Control

Appearance

Greenish blue to peacock blue homogeneous free flowing powder

Colour and Clarity of prepared medium

Basal medium yields bluish green colour, when basal medium (7.3gm in 600ml distilled water) is mixed with 1000ml whole egg emulsion and inspissated, it coagulates to yield pale blue coloured opaque smooth slants

Reaction

Reaction of aqueous solution (7.3gm in 600ml distilled water) at 25°C. pH : 7.0±0.2

pH

6.80-7.20

Cultural Response

M247: Cultural characteristics observed in presence of 5-10% Carbon dioxide (CO₂) with added whole egg emulsion, after an incubation at 35-37°C for 2-4 weeks.

Organism	Growth
Cultural Response	
<i>Mycobacterium smegmatis</i> ATCC 14468	luxuriant
<i>Mycobacterium tuberculosis</i> H37RV (25618)	luxuriant

Storage and Shelf Life

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

Reference

1. International Tuberculosis Year Book, 1955, Bulletin of the International Union against Tuberculosis, pg. 89.
2. Cruickshank R., Duguid J. P., Marmion, B. P., Swain, R. H. A., (Eds.), 1975, Mackie and McCartney Practical Medical Microbiology, Vol. 2, 12 th Edition, Edinburgh, Churchill Livingstone.
3. La Placa, Bubani and Raspi., 1956, Riv. Patol. Clin. Tuberc., 29:133.

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