Decarboxylase Broth Base, Moeller (Moeller Decarboxylase Broth Base)

Intended Use
Decarboxylase Broth Base, Moeller (Moeller Decarboxylase Broth Base) with the addition of appropriate L-amino acid is used to differentiate bacteria on the basis of their ability to decarboxylate the amino acids.

Summary
A medium used for differentiating Gram-negative enteric Bacilli based on their ability to decarboxylate amino acids. Moeller formulated the Decarboxylase Broth for detecting the production of lysine and ornithine decarboxylase and arginine dihydrolase. Production of ornithine decarboxylase is a helpful criterion in differentiating *Klebsiella* and *Enterobacter* species. *Klebsiella* are non-motile and do not produce ornithine decarboxylase while *Enterobacter* are motile and produce ornithine decarboxylase except *Enterobacter agglomerans*.

Principle
This medium contains beef extract and peptic digest of animal tissue, which provide nitrogenous nutrients for the growth of bacteria. Dextrose is the fermentable carbohydrate and pyridoxal is the co-factor for the decarboxylase enzyme. Bromocresol purple and cresol red are the pH indicators in this medium. When the medium is inoculated with the dextrose fermenting bacteria, the pH is lowered due to acid production, which changes the colour of the indicator from purple to yellow. Acid produced stimulates decarboxylase enzyme. Decarboxylation of lysine yields cadaverine while putrescine is produced due to ornithine decarboxylation. Arginine is first hydrolyzed to ornithine which is then decarboxylated to form putrescine. Formation of these amines increases the pH of the medium, changing the colour of the indicator from yellow to purple. If the organisms do not produce the appropriate enzyme, the medium remains acidic, yellow in colour. Each isolate to be tested should also be inoculated into Moeller Decarboxylase Broth Base medium tube lacking the amino acid.

Formula*
Ingredients	**g/L**
Peptic digest of animal tissue	5.0
Beef extract	5.0
Dextrose	0.5
Bromocresol purple	0.01
Cresol red	0.005
Pyridoxal	0.005
Final pH (at 25°C)	6.0 ± 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 2ºC-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 10.52 g of the powder in 1000 mL purified / distilled water.
2. Add 10 g of L-Lysine L-Arginine, L-Ornithine or other L-amino acids. When using DL-amino acids, use 2% concentration.
3. Heat if necessary, to dissolve the powder completely.
4. When L-Ornithine is added, readjustment of the pH is required.

5. Dispense in 5 mL amount in screw-capped tubes and sterilize by autoclaving at 121°C (15 psi) for 10 minutes as per validated cycle.

Quality Control

Dehydrated Appearance: Light yellow to greenish yellow coloured, homogeneous, free flowing powder.
Prepared Appearance: Reddish purple to purple coloured, clear solution without any precipitate.
Cultural Response: Cultural characteristics observed after an incubation at 35°C-37°C for upto 4 days with addition of appropriate amino acids and overlaying with sterile mineral oil.

Organism (ATCC)	Arginine decarboxylation	Ornithine decarboxylation	Lysine decarboxylation
Citrobacter freundii (8090)	variable reaction	variable reaction	negative reaction, yellow colour
Klebsiella aerogenes (13048)	negative reaction, yellow colour	positive reaction, purple colour,	positive reaction, purple colour
Escherichia coli (25922)	variable reaction	variable reaction	positive reaction, purple colour
Klebsiella pneumoniae (13883)	negative reaction, yellow colour	negative reaction, yellow colour	positive reaction, purple colour
Proteus mirabilis (25933)	negative reaction, yellow colour	positive reaction, purple colour	negative reaction, yellow colour
Salmonella Paratyphi A (9150)	delayed positive/ positive reaction, purple colour	positive reaction, purple colour	negative reaction, yellow colour
Salmonella Typhi (6539)	delayed positive/ negative reaction	negative reaction, yellow colour	positive reaction, purple colour
Serratia marcescens (8100)	negative reaction, yellow colour	positive reaction, purple colour	negative reaction, yellow colour
Shigella dysenteriae (13313)	negative reaction/ delayed positive reaction	negative reaction, yellow colour	negative reaction, yellow colour
Shigella flexneri serotype 2b (12022)	negative reaction/ delayed positive reaction	negative reaction, yellow colour	negative reaction, yellow colour
Shigella sonnei (25931)	variable reaction	positive reaction, purple colour	negative reaction, yellow colour

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. Moeller V., 1955, Acta Pathol. Microbiol. Scand. 36:158
2. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product description	Pack Size
201040020500	Dehydrated Culture Media	500 g