Moeller Decarboxylase Broth with Lysine

Intended Use
Moeller Decarboxylase Broth with Lysine is used to differentiate bacteria on the basis of their ability to decarboxylate L-Lysine.

Summary
Many species of bacteria possess enzymes capable of decarboxylating specific amino acids in the test medium releasing alkaline-reacting amines and carbon dioxide as byproducts. The decarboxylase activity of *Enterobacteriaceae* is most commonly measured with Moeller Decarboxylase Broth. This medium was formulated by Moeller for detecting the production of lysine and ornithine decarboxylase and arginine dihydrolase. Prior to Moeller's work, bacterial amino acid decarboxylases were studied by Gale, and Gale and Epps. Decarboxylase media are also recommended by standard methods for identification of bacteria. Moeller Decarboxylase Broth with lysine hydrochloride is used for differentiating bacteria on their ability to decarboxylate lysine.

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. Bromo cresol 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. Formation of the amine cadaverine 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 the basal medium tube lacking the amino acid. After incubation, a decarboxylase test may show two layers of different colours, yellow and purple. Shake the tube gently before interpreting the results. Inoculated tubes must be protected from air with a layer of sterile mineral oil. Exposure to air may cause alkalinization at the surface of the medium which makes the test invalid.

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
L-Lysine	10.0
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 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 20.52 g of the powder in 1000 mL purified / distilled water.
2. Heat if necessary, to dissolve the powder completely.
3. 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.
4. Cool the tubed medium in an upright position.
5. Inoculate the tubes and overlay with 2-3 mL of sterile mineral oil.

Quality Control

Dehydrated Appearance: Light yellow to light green homogeneous free flowing powder.
Prepared Appearance: Purple coloured, clear solution without any precipitate.
Cultural Response: Cultural characteristics observed after an incubation at 35°C-37°C for upto 4 days (Inoculated tubes are overlaid with sterile mineral oil).

Organism (ATCC)	Growth	Lysine Decarboxylation
Escherichia coli (25922)	Good	±
Klebsiella aerogenes (13048)	Good	+
Klebsiella pneumoniae (13883)	Good	+
Proteus mirabilis (25933)	Good	-
Shigella flexneri serotype 2b (12022)	Good	-
Salmonella Typhi (6539)	Good	+
Citrobacter freundii (8090)	Good	-
Proteus hauseri (13315)	Good	-
Pseudomonas aeruginosa (9027)	Good	-
Salmonella Paratyphi A (9150)	Good	-
Serratia marcescens (8100)	Good	+
Shigella dysenteriae (13313)	Good	-
Shigella sonnei (25931)	Good	-

Key: + = Positive reaction, purple colour - = Negative reaction, yellow colour
± = Variable (purple / 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. Koneman E. W., Allen S. D., Janda W.M., Schreckenberger P. C., Winn W. C. Jr., 1992, Colour Atlas and Textbook of Diagnostic Microbiology, 4th Ed., J. B. Lippinccott Company
2. Moeller V., 1955, Acta Pathol. Microbiol. Scand. 36:158.
3. Gale G. F., 1940, Biochem. J., 34:392.
4. Gale and Epps, 1943, Nature, 152:327
5. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product description	Pack Size
201130620100	Dehydrated Culture Media	100 g