PRODUCT SPECIFICATION SHEET

Moeller Decarboxylase Broth w/ Lysine HCl (DM557)

Intended Use
Moeller Decarboxylase Broth w/ Lysine HCl (DM557) is recommended for differentiation of bacteria on the basis of their ability to decarboxylate L-Lysine hydrochloride.

Product Summary and Explanation
In 1955, Moeller formulated the decarboxylase media for detecting the production of lysine and ornithine decarboxylase and arginine dihydrolase.[1] Prior to Moellers work, bacterial amino acid decarboxylases were studied by Gale [2] and Gale and Epps. [3] 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.[1] Decarboxylase media are also useful adjunct to other biochemical tests for the speciation and identification of the *Enterobacteriaceae* and other gram-negative bacilli. [4-6] Moeller Decarboxylase Broth with lysine hydrochloride is used for differentiating bacteria on their ability to decarboxylate lysine hydrochloride.

Principles of the Procedure
Moeller Decarboxylase broth medium contains beef extract and peptic digest of animal tissue which provide nitrogenous nutrients necessary 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. The amino acid L-lysine hydrochloride is added to the basal medium to detect the production of the enzyme specific for these substrates. When the medium is inoculated with the dextrose fermenting bacteria, acid is produced which lowers the pH which changes the colour of the indicator from purple to yellow. Acid production further stimulates decarboxylase enzyme. Decarboxylation of lysine yields a corresponding amine cadaverine, which elevates 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. To obtain the appropriate reactions, the 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 / Liter

Ingredients	Gms / Liter
Peptic digest of animal tissue	5.00
Beef extract	5.00
Dextrose	0.50
Bromocresol purple	0.01
Cresol red	0.005
Pyridoxal	0.005
L-Lysine hydrochloride	10.00
Final pH: 6.0 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

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Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 20.52 grams of the medium in one liter of distilled water.
2. Heat if necessary, to dissolve the medium completely.
3. Mix well and dispense 5ml into final containers.
4. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
5. Cool the tubed medium in an upright position.
6. Inoculate the tubes and overlay with 2-3 ml of sterile mineral oil.

Quality Control Specifications

Dehydrated Appearance	Light yellow to greenish yellow homogeneous free flowing powder
Prepared Medium	Purple coloured clear solution without any precipitate
Reaction of 2.05% Solution	pH : 6.0 ± 0.2 at 25°C
Gel Strength	Not Applicable

Expected Cultural Response: Cultural characteristics observed after an incubation at 35-37°C for upto 4 days (Inoculated tubes are overlaid with sterile mineral oil).

Sr. No.	Organisms	Results to be achieved	
		Inoculum (CFU)	Lysine Decarboxylation
1.	*Citrobacter freundii ATCC 8090*	50 - 100	negative reaction, yellow colour
2.	*Enterobacter aerogenes ATCC 13048*	50 - 100	positive reaction, purple colour
3.	*Escherichia coli ATCC 25922*	50 - 100	variable reaction
4.	*Klebsiella pneumonia ATCC 13883*	50 - 100	positive reaction, purple colour
5.	*Proteus mirabilis ATCC 25933*	50 - 100	negative reaction, yellow colour
6.	*Proteus vulgaris ATCC 13315*	50 - 100	negative reaction, yellow colour
7.	*Pseudomonas aeruginosa ATCC 9027*	50 - 100	negative reaction, yellow colour
8.	*Salmonella Paratyphi A ATCC 9150*	50 - 100	negative reaction, yellow colour
9.	*Salmonella Typhi ATCC 6539*	50 - 100	positive reaction, purple colour
10.	*Serratia marcescens ATCC 8100*	50 - 100	positive reaction, purple colour
11.	*Shigella dysenteriae ATCC 13313*	50 - 100	negative reaction, yellow colour
12.	*Shigella flexneri ATCC 12022*	50 - 100	negative reaction, yellow colour
13.	*Shigella sonnei ATCC 25931*	50 - 100	negative reaction, yellow colour

The organisms listed are the minimum that should be used for quality control testing.

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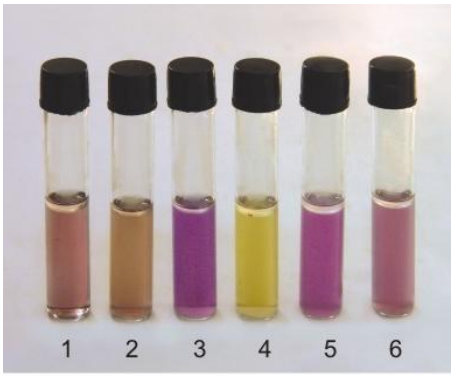

Moeller Decarboxylase Broth w/Lysine HCl (DM557)
1. Control
2. *Citrobacter freundii ATCC 8090*
3. *Escherichia coli ATCC 25922*
4. *Proteus vulgaris ATCC 13315*
5. *Enterobacter aerogenes ATCC 13048*
6. *Klebsiella pneumonia ATCC 13883*

Test Procedure
Refer to appropriate references for specific procedures.

Results
1. Lysine decarboxylation is observed as change in color of the indicator from purple to yellow.
2. Dextrose fermenting bacteria produces acid which lowers the pH changing the color of the indicator from purple to yellow.
3. After incubation, a decarboxylase test may show two layers of different colours, yellow and purple. Shake the tube gently before interpreting the results. If this tube becomes alkaline, the test is invalid.

Storage
Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration
Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure
1. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
2. Consult appropriate texts for detailed information and recommended procedures.

Packaging
Product Name : Moeller Decarboxylase Broth w/ Lysine HCl (DM557).
Product Code : DM557
Available Pack sizes : 100gm

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References

1. Moeller, V. 1955. Simplified tests for some amino acid decarboxylases and for the arginine dihydrolase system. Acta. Pathol. Microbiol. Scand. *36*:158-172.
2. Gale G. F., 1940, Biochem. J., 34:392.
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5. Forbes, B.A., D.F. Sahm, and A.S. Weissfeld. 2002. Bailey & Scott's diagnostic microbiology, 11th ed. Mosby, Inc., St. Louis.
6. Farmer, J.J., III. 1999. *Enterobacteriaceae*: introduction and identification, p. 442-458. *In* P.R. Murray, E.J. Baron, M.A. Pfaller, F.C. Tenover, and R.H. Yolken (ed.), Manual of clinical microbiology, 7th ed. American Society for Microbiology, Washington, D.C.

Further Information

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