Technical Data

Decarboxylase Broth Base, Moeller

LQ156

Intended use

With the addition of appropriate L-amino acid, it is used to differentiate bacteria on the basis of their ability to decarboxylate the amino acid.

Composition**

Ingredients	g / L
Peptone	5.000
HM peptone B#	5.000
Dextrose (Glucose)	0.500
Bromocresol purple	0.010
Cresol red	0.005
Pyridoxal	0.005
Final pH (at 25°C)	6.0±0.2

**Formula adjusted, standardized to suit performance parameters
Equivalent to Beef extract

Directions

Label the ready to use LQ156 bottle. Inoculate the sample and Incubate at specified temperature and time.

Principle And Interpretation

Moeller Decarboxylase Broth Base is used for differentiating gram-negative enteric bacilli on the basis of their ability to decarboxylate amino acids. Moeller introduced the Decarboxylase Broth 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). Production of ornithine decarboxylase is a helpful criterion in differentiating *Klebsiella* and *Enterobacter* species. *Klebsiella* are nonmotile and do not produce ornithine decarboxylase while *Enterobacter* are motile and produce ornithine decarboxylase except *Enterobacter agglomerans* (4).

This medium contains peptone and HM peptone B which provide nitrogenous and cabonaceous compounds, long chain amino acids and other essential 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 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. 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.

Type of specimen

Pure isolate from clinical and non-clinical samples

Specimen Collection and Handling:

For pure isolate, follow appropriate techniques for sample collection and processing as per guidelines (5,6). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

In Vitro diagnostic use. For professional use only. 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 fastidious organisms may show delayed reaction.
2. Overlaying with mineral oil is essential for appropriate results.

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
Sterile Decarboxylase Broth Base, Moeller in bottle.

Colour
Light brown to greyish purple to light purple coloured clear solution

Quantity of Medium
5 ml of medium in bottle.

pH
5.80- 6.20

Sterility Check
Passes release criteria

Cultural Response
Cultural characteristics observed after an incubation at 35-37°C for upto 4 days with addition of amino acids discs, Lysine HCl discs (DD049), Arginine HCl (DD050) and Ornithine HCl (DD051) and overlaying with sterile mineral oil.

Organism	Inoculum (CFU)	Arginine decarboxylation	Lysine decarboxylation	Ornithine decarboxylation
Citrobacter freundii ATCC 8090	50-100	variable reaction	negative reaction, yellow colour	variable reaction
Klebsiella pneumoniae ATCC 13883 (00097*)	50-100	negative reaction, yellow colour	positive reaction, purple colour	negative reaction, yellow colour
Proteus mirabilis ATCC 25933	50-100	negative reaction, yellow colour	negative reaction, yellow colour	positivereaction purplecolour
Salmonella Paratyphi A ATCC 9150	50-100	delayed positive reaction / positive reaction, purple colour	negative reaction, yellow colour	positivereaction, purple colour
Salmonella Typhi ATCC 6539	50-100	delayed positive reaction / reaction negative	positive reaction, purple colour	negative reaction, yellow colour
Serratia marcescens ATCC 8100	50-100	negative reaction, yellow colour	positive reaction, purple colour	positive reaction, purple colour
# *Klebsiella aerogenes* ATCC 13048 (00175*)	50-100	negative reaction, yellow colour	positive reaction, purple colour	positive reaction, purple colour
Escherichia coli ATCC 25922 (00013*)	50-100	variable reaction	positive reaction purple colour	variable reaction
## *Proteus hauseri* ATCC 13315	50-100	negative reaction, yellow colour	negative reaction, yellow colour	negative reaction, yellow colour
Shigella dysenteriae ATCC 13313	50-100	negative reaction/ delayed positive reaction	negative reaction, yellow colour	negative reaction, yellow colour
Shigella flexneri ATCC 12022 (00126*)	50-100	negative reaction/ delayed positive reaction	negative reaction, yellow colour	negative reaction, yellow colour
Shigella sonnei ATCC 25931	50-100	variable reaction	negative reaction, yellow colour	positive reaction, purple colour

Key : (*) Corresponding WDCM numbers.
Formerly known as *Proteus vulgaris* (#) Formerly known as *Enterobacter aerogenes*

Storage and Shelf Life

Store between 2-8°C. Product performance is best if used within stated expiry period. Use before expiry date on the label.

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 clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (5,6).

Reference

1. Moeller V., 1955, Acta Pathol. Microbiol. Scand, 36:158.
2. Gale G. F., 1940, Biochem. J., 34:392.
3. Gale and Epps, 1943, Nature, 152:327.
4. MacFaddin J., 1980, Biochemical Tests for Identification of Medical Bacteria, 2nd ed., Williams and Wilkins, Baltimore.
5. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
6. 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.

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HiMedia Laboratories Pvt. Limited,
Plot No.C-40, Road No.21Y,
MIDC, Wagle Industrial Area,
Thane (W) -400604, MS, India

IVD ***In vitro* diagnostic medical device**

2°C 8°C **Storage temperature**

EC REP CEpartner4U, Esdoornlaan 13,
3951DB Maarn, NL
www.cepartner4u.eu

CE Marking

Do not use if package is damaged