



Decarboxylase Broth Base, Moeller (Moeller Decarboxylase Broth Base)

M393

Intended Use:

Recommended to differentiate bacteria from clinical and non-clinical samples 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

Directions

Suspend 10.52 grams in 1000 ml purified / distilled water. Add 10 gm. of L-Lysine, L-Arginine, L-Ornithine or other L-amino acids. When using DL-amino acids, use 2% concentration. Heat if necessary to dissolve the medium completely. When L-Ornithine is added, readjustment of the pH is required. Dispense in 5 ml amount in screw-capped tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 10 minutes.

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 HM peptone B and peptone which provides nitrogenous and carbonaceous 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 alkalization at the surface of the medium which makes the test invalid.

Type of specimen

Clinical samples - Blood ; Food and dairy samples; Water samples

Specimen Collection and Handling:

For clinical samples follow appropriate techniques for handling specimens as per established guidelines (5,6).

For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (7,8,9).

For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.

(10) 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 clinical 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

Light yellow to greenish yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Purple coloured, clear solution without any precipitate in tubes

Reaction

Reaction of 1.05% w/v aqueous solution at 25°C. pH : 6.0±0.2

pH

5.80-6.20

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for upto 4 days with addition of appropriate amino acids and overlaying with sterile mineral oil.

Organism	Arginine decarboxylation	Ornithine decarboxylation	Lysine decarboxylation
<i>Citrobacter freundii</i> ATCC 8090	variable reaction	variable reaction	negative reaction, yellow colour
# <i>Klebsiella aerogenes</i> ATCC 13048 (00175*)	negative reaction, yellow colour	positive reaction, purple colour	positive reaction, purple colour
<i>Escherichia coli</i> ATCC 25922 (00013*)	variable reaction	variable reaction	positive reaction, purple colour
<i>Klebsiella pneumoniae</i> ATCC 13883 (00097*)	negative reaction, yellow colour	negative reaction, yellow colour	positive reaction, purple colour
<i>Proteus mirabilis</i> ATCC 25933	negative reaction, yellow colour	positive reaction, purple colour	negative reaction, yellow colour
## <i>Proteus hauseri</i> ATCC 13315	negative reaction, yellow colour	negative reaction, yellow colour	negative reaction, yellow colour
<i>Salmonella Paratyphi A</i> ATCC 9150	delayed positive reaction/positive reaction, purple colour	positive reaction, purple colour	negative reaction, yellow colour

<i>Salmonella</i> Typhi ATCC 6539	delayed positive reaction / negative reaction	negative reaction, yellow colour	positive reaction, purple colour
<i>Serratia marcescens</i> ATCC 8100	negative reaction, yellow colour	positive reaction, purple colour	positive reaction, purple colour
<i>Shigella dysenteriae</i> ATCC 13313	negative reaction/ delayed positive reaction	negative reaction, yellow colour	negative reaction, yellow colour
<i>Shigella flexneri</i> ATCC 12022 (00126*)	negative reaction/ delayed positive reaction	negative reaction, yellow colour	negative reaction, yellow colour
<i>Shigella sonnei</i> ATCC 25931	variable reaction	positive reaction, purple colour	negative reaction, yellow colour

Key : (*) Corresponding WDCM numbers.

(#) Formerly known as *Enterobacter aerogenes*

Formerly known as *Proteus vulgaris*

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 15-30°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

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).

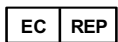
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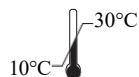
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