Decarboxylase Broth Base, Moeller

**Intended use**

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

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptone</td>
<td>5.000</td>
</tr>
<tr>
<td>HM peptone B#</td>
<td>5.000</td>
</tr>
<tr>
<td>Dextrose (Glucose)</td>
<td>0.500</td>
</tr>
<tr>
<td>Bromocresol purple</td>
<td>0.010</td>
</tr>
<tr>
<td>Cresol red</td>
<td>0.005</td>
</tr>
<tr>
<td>Pyridoxal</td>
<td>0.005</td>
</tr>
</tbody>
</table>

**Formula adjusted, standardized to suit performance parameters**

**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 (6). Prior to Moellers work, bacterial amino acid decarboxylases were studied by Gale (1) and Gale and Epps (2). 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* (5).

This medium contains peptone and HM peptone B which provide 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 alkalinization at the surface of the medium which makes the test invalid.

**Type of specimen**

Pure isolate

**Specimen Collection and Handling**

For Pure isolate, follow appropriate techniques for sample collection and processing as per guidelines (3,4). After use, contaminated materials must be sterilized by autoclaving before discarding.
Warning and Precautions
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 the recommended temperature.

Quality Control
Appearance
Sterile Decarboxylase Broth Base, Moeller in bottle.

Colour
Purple coloured clear solution

Quantity of Medium
5 ml of medium in bottle.

pH
5.80 - 6.20

Sterility test
Passes release criteria

Cultural Response
Cultural characteristics observed after an incubation at 35-37°C for up to 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.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Inoculum (CFU)</th>
<th>Arginine decarboxylation</th>
<th>Lysine decarboxylation</th>
<th>Ornithine decarboxylation</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Citrobacter freundii</em> ATCC 8090</td>
<td>50-100</td>
<td>variable reaction</td>
<td>negative reaction, yellow colour</td>
<td>variable reaction</td>
</tr>
<tr>
<td><em>Klebsiella pneumoniae</em> ATCC 13883 (00097*)</td>
<td>50-100</td>
<td>negative reaction, yellow colour</td>
<td>positive reaction, purple colour</td>
<td>negative reaction, yellow colour</td>
</tr>
<tr>
<td><em>Proteus mirabilis</em> ATCC 25933</td>
<td>50-100</td>
<td>negative reaction, yellow colour</td>
<td>negative reaction, yellow colour</td>
<td>positive reaction, purple colour</td>
</tr>
<tr>
<td><em>Salmonella Paratyphi A</em> ATCC 9150</td>
<td>50-100</td>
<td>delayed positive reaction / positive reaction, purple colour</td>
<td>negative reaction, yellow colour</td>
<td>positive reaction, purple colour</td>
</tr>
<tr>
<td><em>Salmonella Typhi</em> ATCC 6539</td>
<td>50-100</td>
<td>delayed positive reaction / negative reaction</td>
<td>positive reaction, purple colour</td>
<td>negative reaction, yellow colour</td>
</tr>
<tr>
<td><em>Serratia marcescens</em> ATCC 8100</td>
<td>50-100</td>
<td>negative reaction, yellow colour</td>
<td>positive reaction, purple colour</td>
<td>positive reaction, purple colour</td>
</tr>
<tr>
<td># <em>Klebsiella aerogenes</em> ATCC 13048 (00175*)</td>
<td>50-100</td>
<td>negative reaction, yellow colour</td>
<td>positive reaction, purple colour</td>
<td>positive reaction, purple colour</td>
</tr>
<tr>
<td><em>Escherichia coli</em> ATCC 25922 (00013*)</td>
<td>50-100</td>
<td>variable reaction</td>
<td>positive reaction, purple colour</td>
<td>variable reaction</td>
</tr>
<tr>
<td><em>Proteus vulgaris</em> ATCC 13315</td>
<td>50-100</td>
<td>negative reaction, yellow colour</td>
<td>negative reaction, yellow colour</td>
<td>negative reaction, yellow colour</td>
</tr>
</tbody>
</table>

Please refer disclaimer Overleaf.
### Storage and Shelf Life

Store between 2-8°C. Use before expiry date on the label.

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 (3,4).

### Reference