Decarboxylase HiCynth™ Broth Base, Moeller (Moeller
Decarboxylase HiCynth™ Broth Base)

**Intended Use:**
Recommended to differentiate bacteria on the basis of their ability to decarboxylate the amino acids.

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>HiCynth™ Peptone No.1 *</td>
<td>10.000</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>
<tr>
<td>Final pH (at 25°C)</td>
<td>6.0±0.2</td>
</tr>
</tbody>
</table>

**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**

Decarboxylase HiCynth™ Broth Base, Moeller 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 (8). Prior to Moeller’s work, bacterial amino acid decarboxylases were studied by Gale (3) and Gale and Epps (4). 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* (7). Decarboxylase HiCynth™ Broth Base, Moeller is prepared by replacing animal and vegetable peptones with chemically defined peptones to avoid BSE/TSE risks associated with animal peptones. HiCynth™ Peptone No.1 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. Bromocresol 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 with 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**
Clinical samples - Blood; Food and dairy samples; Water samples

Please refer disclaimer Overleaf.
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 (1,9,10).
For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards(2).
After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions
In Vitro diagnostic Use. 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 gudelines 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 directions 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 up to 4 days with addition of appropriate amino acids and overlaying with sterile mineral oil.

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

Store between 10-30°C in a tightly closed container and the prepared medium at 15-25°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle inorder 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).

**Reference**

Disclaimer:

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