

## Technical Information

### Decarboxylase Agar Base

#### Product Code: DM 1501

**Application:** - Decarboxylase Agar Base is used to differentiate bacteria on the basis of their ability to decarboxylate the amino acid added to the medium.

#### Composition\*\*

Ingredients	Gms / Litre
Peptic digest of animal tissue	5.000
Yeast extract	3.000
Dextrose	1.000
Bromocresol purple	0.020
Agar	15.000
Final pH ( at 25°C)	6.5±0.2

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

#### Principle & Interpretation

Moeller formulated decarboxylase Agar Base is to differentiate bacteria on the basis of their ability to decarboxylate the amino acids. The medium is useful for the identification of the, member of family *Enterobacteriaceae* and other gram-negative bacilli<sup>(2, 3)</sup>. Production of ornithine decarboxylase is especially useful for differentiating *Enterobacter* and *Klebsiella* species as the former produces this enzyme and are motile while latter are nonmotile and do not synthesize this enzyme.

Peptic digest of animal tissue and yeast extract supply nitrogenous nutrients for the bacterial growth. Dextrose is the fermentable carbohydrate. Bromo cresol purple is the pH indicator which changes colour from purple to yellow in acidic condition. Decarboxylase activity is stimulated by acidic pH and hence the amino acids are decarboxylated or degraded to form corresponding amine. Production of these amines increases the pH of the medium changing the colour from yellow to purple violet.

Each isolate must be inoculated into a tube of the basal medium without amino acid. If this tube becomes alkaline then the test is invalid. Exposure of the medium to air may cause alkalinization so the inoculated tubes if covered with a layer of sterile mineral oil will give best results<sup>(4)</sup>.

#### Methodology

Suspend 24.02 grams of powder media in 1000 ml distilled water. Shake well & heat to dissolve the medium completely. Add 5 grams of desired L-Amino acid (L-Lysine, L-Arginine, L-Ornithine) in hydrochloride form per litre of the medium. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Dispense into sterile test tubes and cool in a slanted position. When L-Ornithine hydrochloride is used, readjustment of pH is necessary.

#### Quality Control

##### Physical Appearance

Light yellow to greenish yellow homogeneous free flowing powder

##### Gelling

Firm, comparable with 1.5% Agar gel

**Colour and Clarity of prepared medium** Purple coloured, clear gel forms in tubes as slants

##### Reaction

Reaction of 2.4% w/v aqueous solution at 25°C. pH : 6.5±0.2

**pH range** 6.30-6.70

##### Cultural Response/ characteristics

DM 1501 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	Inoculum (CFU)	Arginine decarboxylation	Ornithine decarboxylation	Lysine decarboxylation
<i>Citrobacter freundii</i> ATCC 8090	50-100	variable reaction	variable reaction	negative reaction, yellow colour
<i>Enterobacter aerogenes</i> ATCC 13048	50-100	negative reaction, yellow colour	positive reaction, purple colour	positive reaction, purple colour
<i>Escherichia coli</i> ATCC 25922	50-100	variable reaction	variable reaction	positive reaction, purple colour
<i>Klebsiella pneumoniae</i> ATCC 13883	50-100	negative reaction, yellow colour	negative reaction, yellow colour	positive reaction, purple colour
<i>Proteus mirabilis</i> ATCC 25933	50-100	negative reaction, yellow colour	positive reaction, purple colour	negative reaction, yellow colour
<i>Proteus vulgaris</i> ATCC 13315	50-100	negative reaction, yellow colour	negative reaction, yellow colour	negative reaction, yellow colour
<i>Salmonella Paratyphi A</i> ATCC 9150	50-100	delayed positive reaction/ positive reaction, purple colour	positive reaction, purple colour	negative reaction, yellow colour
<i>Salmonella Typhi</i> ATCC 6539	50-100	delayed positive reaction/ positive reaction, purple colour	negative reaction, yellow colour	positive reaction, purple colour
<i>Serratia marcescens</i> ATCC 8100	50-100	negative reaction, yellow colour	positive reaction, purple colour	positive reaction, purple colour
<i>Shigella dysenteriae</i> ATCC 13313	50-100	negative reaction / delayed positive reaction	negative reaction, yellow colour	negative reaction, yellow colour
<i>Shigella flexneri</i> ATCC 12022	50-100	negative reaction/ delayed positive reaction	negative reaction, yellow colour	negative reaction, yellow colour
<i>Shigella sonnei</i> ATCC 25931	50-100	variable reaction	positive reaction, purple colour	negative reaction, yellow colour
<i>Pseudomonas aeruginosa</i> ATCC 27853	50-100	positive reaction, purple colour	negative reaction, yellow colour	negative reaction, yellow colour

## Storage and Shelf Life

**Dried Media:** Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

**Prepared Media:** 2-8° in sealable plastic bags for 2-5 days.

## Further Reading

1. Moeller, 1955, Acta. Pathol. Microbiol. Scand., 36:158.
2. MacFaddin J., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.
3. Kelly, Brenner and Farmer, 1985, In Manual of Clinical Microbiology, Lennette, Balows, Hausler and Shadomy (Eds.), 4th ed., ASM, Washington, D.C.
4. MacFaddin J., 1980, Biochemical Tests for Identification of Medical Bacteria, 2nd ed., Williams and Wilkins, Baltimore.

## Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
- The product conform solely to the technical information provided in this booklet and to the best of knowledge research and development work carried at **CDH** is true and accurate
- **Central Drug House Pvt. Ltd.** reserves the right to make changes to specifications and information related to the products at any time.
- Products are not intended for human or animal diagnostic or therapeutic use but for laboratory, research or further manufacturing of diagnostic reagents extra.
- Statements contained herein should not be considered as a warranty of any kind, expressed or implied, and no liability is accepted for infringement of any patents.
- Do not use the products if it fails to meet specifications for identity and performs parameters.