Dehydrated Culture Media
Bases / Media Supplements

# Technical Information

## Decarboxylase Test Medium Base (Falkow)

## Product Code: DM 1912

**Application: -** Decarboxylase Test Medium Base (Falkow) is used for testing decarboxylase activity.

## Composition**

| Ingredients | Gms / Litre |
|---|---|
| Peptic digest of animal tissue | 5.000 |
| Yeast extract | 3.000 |
| Dextrose | 1.000 |
| Bromocresol purple | 0.020 |
| Final pH ( at 25°C) | 6.8±0.2 |

**Formula adjusted, standardized to suit performance parameters

## Principle & Interpretation

Decarboxylase Test Medium Base is used for differentiating bacteria on their ability to decarboxylate the amino acids. First practical application of amino acid decarboxylase test was reported by Moeller for distinguishing various microorganisms [(1).] His work was based on the experiments done by Gale [(2)] and Gale and Epps [(3)] Moeller observed that production of lysine, arginine, ornithine decarboxylase by various members of Enterobacteriaceae provide an important parameter along with other biochemical tests for differentiating bacteria within closely related groups. Further, to differentiate *Salmonella* serotype Arizonae from *Citrobacter,* Calquist [(4)] developed a medium utilizing the lysine decarboxylase reaction. Later Falkow [(5)] developed the lysine decarboxylase medium He was able to different *Salmonellae* and *Shigellae* by the valid and reliable results obtained using this media

Dextrose is fermented by the enteric bacteria resulting in acidic pH. Bacteria which produce lysine or ornithine or arginine decarboxylase will produce alkaline products and increase the pH. The resulting reaction after 24-96 hours will indicate an alkaline reaction seen as purple colour for decarboxylase producing bacteria and an acid pH (yellow) by the bacteria not producing decarboxylase. Inoculated tubes must be protected from air (by overlaying the medium with sterile mineral oil) to avoid false alkalinization at the surface of the medium. Control tubes of basal media should be inoculated.

The decarboxylase reactions can be considered indicative of a given genus or species but conclusive and final identification of these organisms cannot be made solely on the basis of the decarboxylase reactions and biochemical testing should be attempted on pure culture for final identification of the micro organism

## Methodology

Suspend 9.02 grams of powder media in 1000 ml distilled water. Shake well & heat, if necessary to dissolve the medium completely. Divide into four equal parts. One part is tubed without addition of any amino acid. To the remaining three parts, add separately 3 amino acids, L-lysine hydrochloride, L-arginine hydrochloride and L-ornithine hydrochloride to a final concentration of 0.5%. Dispense in 3-4 ml quantities in screw capped tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. To avoid false alkalinization at the surface of medium it is recommended to add liquid paraffin to a height of about 5mm before sterilization.

# Quality Control

**Physical 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 0.9% w/v aqueous solution at 25°C. pH : 6.8±0.2
**PH range**
6.60-7.00
**Cultural Response/ characteristics**
**DM 1912**: 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 |
|---|---|---|---|---|
| *Citrobacter freundii ATCC* 8090 | 50-100 | variable reaction | variable reaction | negative reaction, yellow colour |
| *Enterobacter aerogenes* ATCC 13048 | 50-100 | negative reaction, yellow colour | positive reaction, purple colour | positive reaction, purple colou |
| *Escherichia coli ATCC 25922* | 50-100 | variable reaction | variable reaction | positive reaction, purple colou |
| *Klebsiella pneumoniae* ATCC 13883 | 50-100 | negative reaction, yellow colour | negative reaction, yellow colour | positive reaction, purple colou |
| *Proteus mirabilis ATCC 25933* | 50-100 | negative reaction, yellow colour | positive reaction, purple colou | negative reaction, yellow colour |
| *Proteus vulgaris ATCC 13315* | 50-100 | negative reaction, yellow colour | negative reaction, yellow colour | negative reaction, yellow colour |
| *Salmonella Paratyphi A ATCC 9150* | 50-100 | delayed positive reaction/ positive reaction,purple colour | positive reaction, purple colou | negative reaction, yellow colour |
| *Salmonella Typhi ATCC 6539* | 50-100 | delayed positive reaction/ positive reaction,purple colour | negative reaction, yellow colour | positive reaction, purple colou |
| *Serratia marcescens ATCC 8100* | 50-100 | negative reaction, yellow colour | positive reaction, purple colou | positive reaction, purple colou |
| *Shigella dysenteriae ATCC 13313* | 50-100 | negative reaction/ delayed positive reaction | negative reaction, yellow colour | negative reaction, yellow colour |
| *Shigella flexneri ATCC 12022* | 50-100 | negative reaction/ delayed positive reaction | negative reaction, yellow colour | negative reaction, yellow colour |
| *Shigella sonnei ATCC 25931* | 50-100 | variable reaction | positive reaction, purple colou | 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, 1954, Acta Path. Micro. Scand., 34:102.
2. Gale, 1940, Biochem. J., 34:392, 583, 846.
3. Gale and Epps, 1943, Nature, 152:327.
4. Calquist, 1956, J. Bact., 71:339.
5. Falkow, 1958, Am. J. Clin. Path., 29:598.

## Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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