# CM 20541 – DECARBOXYLASE BROTH BASE, MOELLER (MOELLER DECARBOXYLASE BROTH BASE) (VEG.)

## INTENDED USE

For differentiation of bacteria on the basis of their ability to decarboxlyate the amino acid.

## PRODUCT SUMMARY AND EXPLANATION

These mediaareusedfor differentiating gram-negative enteric bacilli on the basis of their ability to decarboxylate amino acids. The Decarboxylase Broth was introduced by Moeller for detecting the production of lysine and ornithine decarboxylase and arginine dihydrolase. Prior to Moeller's work, bacterial amino acid decarboxylases were studied by Gale and Gale and Epps. These Veg media are prepared by replacing animal based peptones with vegetable peptones which are BSE/TSE risks free. Production of ornithine decarboxylase is a helpful criterion in differentiating Klebsiella and Enterobacter species. Klebsiella are non-motile and do not produce ornithine decarboxylase while Enterobacter are motile and produce ornithine decarboxylase except Enterobacter agglomerans.

## COMPOSITION

| Ingredients | Gms / Ltr |
|---|---|
| Veg Peptone | 5.000 |
| Veg extract | 5.000 |
| Dextrose | 0.500 |
| Bromocresol purple | 0.010 |
| Cresol red | 0.005 |
| Pyridoxal | 0.005 |

## PRINCIPLE

Themedium consists of Veg Peptone and Veg extract which provides nitrogenous 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.

## INSTRUCTION FOR USE

Dissolve 10.52 gramsin 1000 ml purified/distilled water.
Add 10 grams of L-Lysine, L-Arginine, L-Ornithine or other Lamino 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 psi pressure (121°C) for 10 minutes.

## QUALITY CONTROL SPECIFICATIONS

| | |
|---|---|
| Appearance of Powder | : Greenish yellow coloured, homogeneous, free flowing powder. |
| Appearance of prepared medium | : Purple coloured, clear solution without any precipitate. |
| pH (at 25°C) | : 6.0 ± 0.2 |

INTERPRETATION

Cultural characteristics observed after incubation with addition of appropriate amino acids and overlaying with sterile mineral oil.

| Microorganism | ATCC | Inoculum (CFU/ml) | Arginine decarboxylation | Ornithine decarboxylation | Lysine decarboxylation | Incubation Temperature | Incubation Period |
|---|---|---|---|---|---|---|---|
| Citrobacter freundi | 8090 | 50-100 | Variable reaction | Variable reaction | Negative reaction, yellow or no colour change | 35-37°C | Upto 4 Days |
| Klebsiella aerogenes | 13048 | 50-100 | Negative reaction, yellow or no colour change | Positive reaction, purple colour | Positive reaction, purple colour | 35-37°C | Upto 4 Days |
| Escherichia coli | 25922 | 50-100 | Variable reaction | Variable reaction | Variable reaction | 35-37°C | Upto 4 Days |
| Klebsiella pneumoniae | 13883 | 50-100 | Negative reaction, yellow or no colour change | Negative reaction, yellow or no colour change | Positive reaction, purple colour | 35-37°C | Upto 4 Days |
| Proteus mirabilis | 25933 | 50-100 | Negative reaction, yellow or no colour change | Positive reaction, purple colour | Negative reaction, yellow or no colour change | 35-37°C | Upto 4 Days |
| Proteus vulgaris | 13315 | 50-100 | Negative reaction, yellow or no colour change | Negative reaction, yellow or no colour change | Negative reaction, yellow or no colour change | 35-37°C | Upto 4 Days |
| Salmonella Paratyphi A | 9150 | 50-100 | Delayed positive reaction/ positive reaction, purple colour | Positive reaction, purple colour | Negative reaction, yellow or no colour change | 35-37°C | Upto 4 Days |
| Salmonella Typhi | 6539 | 50-100 | Delayed positive reaction / negative reaction | Negative reaction, yellow or no colour change | Positive reaction, purple colour | 35-37°C | Upto 4 Days |
| Serratia marcescens | 8100 | 50-100 | Negative reaction, yellow or no colour change | Positive reaction, purple colour | Positive reaction, purple colour | 35-37°C | Upto 4 Days |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Shigella dysenteriae | 13313 | 50-100 | Negative reaction/ delayed positive reaction | Negative reaction, yellow or no colour change | Negative reaction, yellow or no colour change | 35-37°C | Upto 4 Days |
| Shigella flexneri | 12022 | 50-100 | Negative reaction/ delayed positive reaction | Negative reaction, yellow or no colour change | Negative reaction, yellow or no colour change | 35-37°C | Upto 4 Days |
| Shigella sonnei | 25931 | 50-100 | Variable reaction | Positive reaction, purple colour | Negative reaction, yellow or no colour change | 35-37°C | Upto 4 Days |

PACKAGING:

Inpacksizeof100 gm and 500 gm bottles.

STORAGE

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 25-30°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.

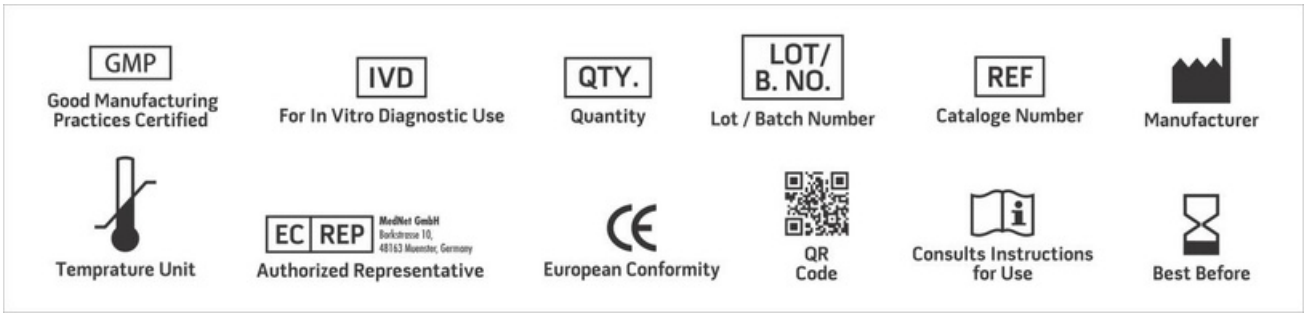
Product Deterioration: Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.

DISPOSAL

Afteruse,prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

REFERENCES

1Moeller V., 1955, Acta Pathol. Microbiol. Scand. 36:158.
2. Gale G. F., 1940, Biochem. J., 34:392.
3. Gale and Epps, 1943, Nature, 152:327.
4. MacFaddin J., 2000, Biochemical Tests for Identification of Medical Bacteria, 3rd ed., Williams and Wilkins, Baltimore.




NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling Practices.

*For LabUse Only