



Decarboxylase Test Medium Base (Falkow)

M912

Intended Use:

Recommended for testing amino acid decarboxylase activity.

Composition**

Ingredients	g/ L
Peptone	5.000
Yeast extract	3.000
Dextrose (Glucose)	1.000
Bromocresol purple	0.020
Final pH (at 25°C)	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 9.02 grams in 1000 ml purified / distilled water. 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 alkalization at the surface of medium it is recommended to add liquid paraffin to a height of about 5mm before sterilization.

Principle And 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). Moellers work was based on the experiments done by Gale (2) and Gale and Epps (3) on bacterial amino acid decarboxylases. Moeller observed that production of lysine, arginine, ornithine decarboxylase by various members of *Enterobacteriaceae* offered an important parameter to 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 on Falkow (5) was the one who emphasized and developed the lysine decarboxylase medium for differentiating *Salmonellae* and *Shigella* by the valid and reliable results.

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 alkalization at the surface of the medium. Control tubes of basal media should be inoculated. Biochemical testing should be attempted on pure culture isolation only and subsequent to differential determinations. 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.

Type of specimen

Food samples - Pure isolates, clinical samples

Specimen Collection and Handling:

For clinical samples follow appropriate techniques for handling specimens as per established guidelines (7,8).

For food samples, follow appropriate techniques for sample collection and processing as per guidelines (6). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions :

In Vitro diagnostic use. For professional use only. 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. This medium is general purpose medium and may not support the growth of fastidious organisms.

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 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 0.9% w/v aqueous solution at 25°C. pH : 6.8±0.2

pH

6.60-7.00

Cultural Response

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>Klebsiella aerogenes</i> ATCC 13048 (00175*)	50-100	negative reaction, yellow colour	positive reaction, purple colour	positive reaction, purple colour
<i>Escherichia coli</i> ATCC 25922 (00013*)	50-100	variable reaction	variable reaction	positive reaction, purple colour
<i>Klebsiella pneumoniae</i> ATCC 13883 (00097*)	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 hauseri</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 (00126*)	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
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Key : (*) Corresponding WDCM numbers.

(#) Formerly known as *Enterobacter aerogenes*

Formerly known as *Proteus vulgaris*

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 in order 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 sample must be decontaminated and disposed of in accordance with current laboratory techniques (7,8).

Reference

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.
6. Salfinger Y., and Tortorello M.L. Fifth (Ed.), 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.
7. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
8. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

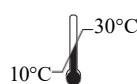
Revision : 03/ 2024



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