Technical Information

Lysine Decarboxylase Broth

Product Code: DM 1376

Application: Lysine Decarboxylase Broth is used for differentiating Salmonella Arizonae from the Bethesda Ballerup group of *Enterobacteriaceae.*

Composition**

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

**Formula adjusted, standardized to suit performance parameters

Principal & Interpretation

Decarboxylase media were first described by Moeller [1-3] for detecting lysine and ornithine decarboxylase and arginine dihydrolase followed by Falkow who developed a lysine decarboxylase medium for the identification and differentiation of *Salmonella* and *Shigella* [4]. Lysine Decarboxylase Broth is used to study the decarboxylase reactions for members of *Enterobacteriaceae.* Lysine Decarboxylase Broth is also recommended by APHA [5, 6] and other workers [7, 8]. During the early stages of incubation, following inoculation, fermentation of dextrose by the organisms leads to acid production, which causes a colour change of the bromocresol purple indicator to yellow. The acidic condition thus generated stimulates decarboxylase activity, which leads to decarboxylation of lysine to cadavarine. The alkaline conditions generated due to cadaverine production cause the bromocresol purple indicator (changed to yellow) to revert back to purple colour. If the organisms do not produce decarboxylase enzyme, the colour of the medium remains yellow. Dextrose non-utilizers will not show any change in the medium colour. Use light inocula and do not read the tests after 24 hours incubation, as some organisms require longer incubation time of upto 4 days.

Methodology

Suspend 14.02 grams of powder media in 1000 ml distilled water. Shake well & heat, if necessary to dissolve the medium completely.

Dispense 5 ml amount into screw-capped test tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

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

Reaction
Reaction of 1.4% w/v aqueous solution at 25°C. pH : 6.8±0.2

pH range: 6.6-7.0

Cultural Response/Characteristics
DM 1376: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.(Inoculated tubes are overlayed with sterile mineral oil).

Organism	Inoculum (CFU)	Lysine decarboxylation
Citrobacter freundii ATCC 8090	50-100	Variable reaction
Escherichia coli ATCC 25922	50-100	Variable reaction
Enterobacter aerogenes ATCC 13048	50-100	Positive reaction, purple colour
Klebsiella pneumoniae ATCC 13883	50-100	Positive reaction, purple colour
Proteus mirabilis ATCC 25933	50-100	Negative reaction, yellow colour
Proteus vulgaris ATCC 13315	50-100	Negative reaction, yellow colour
Salmonella Arizonae ATCC 13314	50-100	Positive reaction, purple colour
Salmonella Paratyphi A ATCC 9150	50-100	Negative reaction, yellow colour
Salmonella Typhi ATCC 6539	50-100	Positive reaction, purple colour
Serratia marcescens ATCC 8100	50-100	Positive reaction, purple colour
Shigella dysenteriae ATCC 13313	50-100	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: 2-8^0 in sealable plastic bags for 2-5 days.

Further Reading

1. Moeller V., 1954, Acta. Pathol. Microbiol. Scand., 34:102.
2. Moeller V., 1954, Acta. Pathol. Microbiol. Scand., 34:259.
3. Moeller V., 1955, Acta. Pathol. Microbiol. Scand., 36:158.
4. Falkow, 1958, Am. J. Clin. Pathol., 29:598.
5. Eaton A. D., Clesceri L. S., Rice E. W. and Greenberg A. W., (Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st Ed., APHA, Washington, D.C.
6. Downes F. P. and Ito K., (Eds.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., American Public Health Association, Washington, D.C.
7. Isenberg (Ed.), 1992, Clinical Microbiology Procedures Handbook, Vol. 1. American Society for Microbiology, Washington, D.C.
8. FDA Bacteriological Analytical Manual, 2005, 18th Ed., AOAC, Washington, DC.

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