Lysine Decarboxylase Broth is used for distinguishing Salmonella M376

Lysine Decarboxylase Broth eptone are 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

Directions

Suspend 14.02 grams in 1000 ml distilled water. 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.

Principle And Interpretation

Decarboxylase tests are based on the ability of some bacteria to decarboxylate an amino acid to the corresponding amine with the liberation of carbon dioxide (1). Decarboxylase media were first described by Moeller (2-4) for detecting lysine and ornithinedecarboxylase and arginine dihydrolase. Falkow developed a lysine decarboxylase medium for the identification and differentiation of *Salmonella* and *Shigella* (5). Lysine Decarboxylase Broth is especially suited to study the decarboxylase reactions for members of *Enterobacteriaceae* . Lysine Decarboxylase Broth is also recommended by APHA (6,7) and other standard methods (8,9).

During the initial stages of incubation, following inoculation, fermentation of dextrose by the organisms leads to acid production, which causes a subsequent 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 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 upto 4 days.

Quality Control

Appearance

Light yellow to greenish yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Purple colouref clear solution without any precipitate

Reaction

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

Cultural Response

M376: 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	negative reaction, yellow colour				
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 ATCC13314	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				

Reference

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4.Moeller V., 1955, Acta. Pathol. Microbiol. Scand., 36:158.
5.Falkow, 1958, Am. J. Clin. Pathol., 29:598.
6.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.
7.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.
8.Isenberg (Ed.), 1992, Clinical Microbiology Procedures Handbook, Vol. 1. American Society for Microbiology, Washington, D.C.
9.FDA Bacteriological Analytical Manual, 2005, 18th Ed., AOAC, Washington, DC.

Storage and Shelf Life

Store below 30°C and prepared medium at 2-8°C. Use before expiry period on the label.