Technical Information

Decarboxylase Test MiVeg Medium Base (Falkow)

Product Code : VM1912

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

Composition

Ingredients	Gms / Litre
MiVeg peptone	5.0
Yeast extract	3.0
Dextrose	1.0
Bromo cresol purple	0.02
Final pH (at 25°C)	6.8±0.2

** Formula adjusted, standardized to suit performance parameters.

Principle & Interpretation

Decarboxylase Test MiVeg Medium Base (Falkow) is prepared by using vegetable peptones in place of animal based peptones thereby making the medium BSE/TSE risks free. This medium is the modification of Decarboxylase Test Medium Base which 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). Moeller 's 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 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 *Salmonella*e and *Shigellae* by the valid and reliable results. It can also be used for detection of dihydrolase and decarboxylase activity of *Vibrio cholerae* and other *Vibrios*. The enteric bacteria ferments the dextrose which makes the pH acidic. 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. Cover the inoculated tubes 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. Biochemical testing should be done of pure culture isolates 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. So further identification test should be performed.

Methodology

Suspend 9 grams of powder media in 1000 ml distilled water. Mix thoroughly. Heat to boiling to dissolve the medium completely. Divide into four equal parts. One part is dispensed without addition of any amino acid. To the remaining 3 parts add seperately three L-amino acids - Lysine Hydrochloride, Arginine Hydrochloride and Ornithine Hydrochloride to a finalconcentration 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.

Note :- Cover the inoculated tubes by overlaying the medium with sterile mineral oil to avoid false alkalinization at the surface of the medium.

Quality Control

Physical Appearance

Yellow coloured, may have slightly greenish tinge,homogeneous, free flowing powder.

Colour and Clarity of prepared medium

Purple coloured, clear solution without any precipitate forms in tubes.

Reaction

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

pH range

6.6-7.0

Cultural Response/Characteristics

Cultural characteristics observed after an incubation at 35-37°C for 4 days after the addition of the amino acids L-Lysine, L-Arginine and L-Ornithine and overlaying with sterile mineral oil.

Organisms (ATCC)	Inoculum (CFU)	Lysine*	Arginine*	Ornithine*
Enterobacter aerogenes(13048)	10^2-2 X 10^2	+	-	+
Escherichia coli (25922)	10^2-2 X 10^2	±	±	±
Klebsiella pneumonia (13883)	10^2-2 X 10^2	+	-	-
Proteus vulgaris (13315)	10^2-2 X 10^2	-	-	-
Pseudomonas aeruginosa (27853)	10^2-2 X 10^2	-	+	-
Salmonella serotype Typhi (6539)	10^2-2 X 10^2	+	(+)or-	-
Serratia marcescens (8100)	10^2-2 X 10^2	+	-	+
Shigella flexneri (12022)	10^2-2 X 10^2	-	- or(+)	-

Key : + = positive reaction, purple colour
- = negative reaction, yellow colour
± = variable reaction
(+) = delayed positive reaction
* = Innoculated tubes are overlayed with mineral oil.

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, 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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