Technical Information

Arginine Dihydrolase Broth

Product Code: DM 1619

Application: Arginine Dihydrolase Broth is used for detection of arginine dihydrolase producing microorganisms.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	1.000
Sodium chloride	5.000
Dipotassium hydrogen phosphate	0.300
L-Arginine	10.000
Bromo cresol purple	0.016
Agar	3.000
Final pH (at 25°C)	6.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Moeller [1-3] used Arginine Dihydrolase Broth for the first time for detection of arginine dihydrolase producing microorganisms. These type of media are used to differentiate bacteria on the basis of their decarboxylating activity towards the amino acids. Arginine decarboxylase enzyme is also known as Arginine dihydrolase which is produced by various members of enteric bacteria and helps in differentiating bacteria closely related biochemically [4]. Bacteria producing arginine dihydrolase enzyme decarboxylates arginine present in this medium to putrescine. The production of amine, putrescine, increase the pH of the media. Bromo cresol purple is the pH indicator which forms purple colour in alkaline condition. Colour change from purple to yellow and then back to purple is positive reaction.

Peptic digest of animal tissue provide the necessary nutrients to the organisms while L-arginine stimulates the arginine dihydrolase synthesis. Dipotassium phosphate buffers the medium while sodium chloride maintains the osmotic balance. In differentiation of *Enterobacteriaceae,* control tubes without arginine must be used. If the tubes give positive purple reaction the test is considered as negative.

Methodology

Suspend 19.31 grams of powder media in 1000 ml distilled water. Shake well and heat if necessary to dissolve the medium completely and distribute in 13x 100 mm tubes. Sterilize by autoclaving at 115°C for 15 minutes. Allow the tubes to cool in an upright position.

Quality Control

Physical Appearance
Light yellow to grey homogeneous free flowing powder

Gelling
Semisolid, comparable with 0.3% Agar gel.

Colour and Clarity of prepared medium
Purple coloured clear to slightly opalescent gel forms in tubes as butts.

Reaction
Reaction of 1.93% w/v aqueous solution at 25°C. pH : 6.0±0.2
pH Range:-
5.80-6.20
Cultural Response/Characteristics
DM 1619: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Motility	Arginine dihydrolase
Enterobacter aerogenes ATCC 13048	50-100	luxuriant	positive,growth away from stabline causing turbidity	negative reaction, yellow colour or no colour change
Klebsiella pneumoniae ATCC 13883	50-100	Luxuriant	negative,growth along the stabline surrounding medium remains clear	negative reaction, yellow colour or no colour change
Proteus vulgaris ATCC13315	50-100	Luxuriant	Positive growth away from stabline causing turbidity	negative reaction, yellow colour or no colour change
Salmonella Typhi ATCC6539	50-100	Luxuriant	Positive growth away from stabline causing turbidity	Positive reaction purple color
Salmonella Typhimurium ATCC 14028	50-100	Luxuriant	Positive growth away from stabline causing turbidity	Positive reaction purple color
Enterobacter sakazakii ATCC 12868	50-100	Luxuriant	positive,growth away from stabling causing turbidity	Positive reaction purple color

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 Pathol. Microbiol. Scand., 34:102.
2. Moeller, 1954, Acta Pathol. Microbiol. Scand., 34:259.
3. Moeller, 1955, Acta Pathol. Microbiol. Scand., 36:158.
4. Gale and Epps, 1944, Biochem. J., 3 8:250.

Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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