Technical Information

Malonate Broth

Product Code: DM 1382

Application: - Malonate Broth is recommended for the differentiation of Enterobacter and Escherichia on the basis of malonate utilization.

Composition**

Ingredients	Gms / Litre
Ammonium sulphate	2.000
Dipotassium phosphate	0.600
Monopotassium phosphate	0.400
Sodium chloride	2.000
Sodium malonate	3.000
Bromothymol blue	0.025
Final pH (25°C)	6.7±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

An organism that can simultaneously utilize sodium malonate as its carbon source and ammonium sulfate as its nitrogen source produces alkalinity due to the formation of sodium hydroxide [2]. The alkali changes the color of the bromothymol blue indicator in the medium to light blue and finally to prussian blue. The color of the medium remains unchanged in the presence of an organism that cannot utilize these substances. Also some malonate-positive organisms produce only a slight alkalinity that causes the results to be difficult to interpret. Therefore these tubes should be compared with an un-inoculated malonate tube [2].

Leifson developed a synthetic liquid medium, which differentiated Aerobacter (now Enterobacter) from Escherichia species based on their ability to utilize malonate [1] where Enterobacter utilizes malonate and Escherichia does not.

Methodology

Dissolve 8.02 grams of powder media grams in 1000 ml distilled water. Shake well dispense and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Avoid the addition of carbon and nitrogen from other sources.

Quality Control

Physical Appearance

Light yellow to light green homogeneous free flowing powder

Colour and Clarity of prepared medium

Bluish green coloured clear solution without any precipitate

Reaction

Reactionof 0.8% w/v aqueous solution at 25°C.pH:-6.7±0.2

pH range 6.50-6.90

Cultural Response/ characteristices

DM 1382: Cultural characteristics observed after an incubation at 35-37°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth	Malonate Utilization
Enterobacter aerogenes ATCC 13048	50-100	luxuriant	positive reaction, dark blue colour
Escherichia coli ATCC 25922	50-100	poor-fair	negative reaction
Klebsiella pneumoniae ATCC 13883	50-100	luxuriant	positive reaction, dark blue colour
Salmonella Arizonae ATCC 13314	50-100	luxuriant	positive reaction, dark blue colour

Salmonella Typhimurium ATCC 14028	50-100	fair-good	negative reaction

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^{o} in sealable plastic bags for 2-5 days.

Further Reading

1. Leifson, 1933, J. Bact., 25:329.
2. MacFaddin J., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore

Disclaimer :

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