Motility Sulphide Medium

M515

Motility Sulphide Medium is used for detection of motility and hydrogen sulphide production by pure cultures

Composition**

Ingredients	Gms / Litre
Proteose peptone	10.000
Beef extract	3.000
L-Cystine	0.200
Ferric ammonium citrate	0.200
Sodium citrate	2.000
Sodium chloride	5.000
Gelatin	80.000
Agar	4.000
Final pH (at 25°C)	7.3±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 10.44 grams in 100 ml warm distilled water. Heat to boiling with constant agitation to dissolve the medium completely. Dispense in tubes in 4 ml amounts and sterilize by autoclaving at 115°C(10 lbs pressure) for 15 minutes. Allow the tubed medium to cool in an upright position.

Principle And Interpretation

Motility Sulphide Medium was originally formulated by Edwards and Bruner (1) and further modified by Hajna (2) for the determination of motility and hydrogen sulphide production. The medium is also used for indirect evidence of motility by non-fermenting gram-negative bacilli.

Proteose peptone and beef extract provide nitrogen compounds, carbon, sulphur and trace elements essential for bacterial growth. L-cystine and ferric ammonium citrate are the H2S indicators. Ferric ammonium citrate also provides extra nutrients for citrate-utilizing bacteria. Agar and gelatin preserve an intact stab line. Motile organisms grow away from stab line showing diffused growth while non-motile organisms grow along the stab line. Hydrogen sulphide production is indicated by the blackening of the medium. Due to the free L-cystine, generally negative organisms may give a positive reaction (3). After observing motility and H2S production, same medium can be utilized to detect urea hydrolysis. The culture in the medium is overlaid with 1 ml of Urea Broth (M111A) and incubated at 35°C for upto 6 hours. A urease positive reaction is observed as a reddish-purple colour formation in the Urea Broth.

Quality Control

Appearance
Cream to yellow homogeneous coarse powder

Gelling
Semisolid,comparable with 0.4% Agar gel and 8.0% Gelatin gel.

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

Reaction
Reaction of 10.44% w/v aqueous solution at 25°C. pH : 7.3±0.2

pH
7.10-7.50

Cultural Response
M515: Cultural characteristics observed after an incubation at 35 - 37°C fo r 18 - 24 hours .

Organism	Inoculum (CFU)	Growth	Motility	H2S	Urease
Escherichia coli ATCC 8739	50-100	luxuriant	Positive, growth away from stabline causing turbidity	Negative,no blackening of medium	Negative reaction,no change
Enterobacter aerogenes ATCC 13048	50-100	luxuriant	positive, growth away from stabline causing turbidity	Negative,no blackening of medium	Negative reaction,no change
Proteus mirabilis ATCC 25933	50-100	luxuriant	motility is temperature dependent. It is more pronounced at 20°C and almost absent at 35°C	Positive, blackening of medium	Positive reaction, cerise colour
Salmonella Typhimurium ATCC14028	50-100	luxuriant	Positive,growth away from stabline causing turbidity	Positive, blackening of medium	Negative reaction,no change
Shigella sonnei ATCC 25931	50-100	luxuriant	negative, growth along the stabline, surrounding medium remains clear	Negative,no blackening of medium	Negative reaction,no change
Staphylococcus aureus ATCC 25923	50-100	luxuriant	negative, growth along the stabline, surrounding medium remains clear	Negative,no blackening of medium	Negative reaction,no change

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. .

Reference

1. Edwards P. R. and Brunner D. W., 1942, Circulation of the Kentucky Agricultural Experimental Station, No. 54.
2. Hajna A. A., 1950, Public Health Lab., 8:36.
3. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.

Revision : 2 / 2015