Technical Information

Motility Test Medium (Edwards and Ewing)

Product Code: DM 1930

Application: - Motility Test Medium (Edwards and Ewing) is used for testing motility of enteric bacteria.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	10.000
Beef extract	3.000
Sodium chloride	5.000
Agar	4.000
Final pH (25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Bacterial motility can be observed directly on microscopic slide or it can be seen on motility media having agar concentration of 0.4% or less [1]. Use of such semisolid media to detect motility was reported by Tittsler and Sandholzer [2]. Motility Test Medium is the modification of the original formulation ofEdwards and Ewing used for testing motility of *Enterobacteriaceae* [3]. Motility can be visualized as a diffused zone of growth flaring out from the line of inoculation [1, 4, 5].

Peptic digest of animal tissue, beef extract serve as sources of essential growth nutrients required for bacterial metabolism. Sodium chloride maintains the osmotic equilibrium of the medium. Small amount of agar helps to create a semisolid medium.

Bacterial motility can be observed directly by examination of the tubes following incubation. Inoculation is done by stabbing through the centre of the medium. Incubate at appropriate temperature for 18 to 40 hours. Non-motile organisms grow only along the line of inoculation whereas motile organisms grow away from the line of inoculation or may show growth even throughout the medium. All weak or equivocal motility results should be confirmed by flagellum stain or by direct wet microscopy (hanging drop) [6, 7]. To enhance the visibility of bacterial growth 2,3,5 Triphenyl Tetrazolium Chloride (TTC) (MS2057) may be added. Tetrazolium salts are colourless but are converted into insoluble formazan, a red coloured complex by the reducing properties of growing bacteria. In Motility Test Medium containing tetrazolium, the development of this red colour helps to trace the spread of bacteria from the inoculation line. The motility of *Listeria monocytogenes* is best observed in medium without TTC.

Methodology

Suspend 22 grams of powder media in 1000 ml distilled water. Shake well and heat to dissolve the medium completely. Dispense 8 ml amounts in test tubes and sterilize by autoclaving at 15 lbs pressure (12 1°C) for 15 minutes. Cool the tubed medium in an upright position.

Quality Control

Physical Appearance
Cream to yellow homogeneous free flowing powder
Gelling
Semisolid, comparable with 0.4% Agar gel.
Colour and Clarity of prepared medium
Light yellow coloured clear to slightly opalescent gel forms in tubes as butts
Reaction

Reaction of 2.2% w/v aqueous solution at 25°C. pH : 7.4±0.2

pH range 7.20-7.60

Cultural Response/ characteristices

DM 1930: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours .

Organism	Inoculum (CFU)	Growth	Motility
Escherichia coli ATCC 25922	50-100	luxuriant	positive, growth away from stabline causing turbidity
Enterobacter aerogenes ATCC 13048	50-100	luxuriant	positive, growth away from stabline causing turbidity
Klebsiella pneumoniae ATCC 13883	50-100	luxuriant	negative, growth along the stabline, surrounding medium remains clear
Salmonella Enteritidis ATCC 13076	50-100	luxuriant	positive, growth away from stabline causing turbidity
Proteus mirabilis ATCC 25933	50-100	luxuriant	negative, growth along the stabline, surrounding medium remains clear
Vibrio cholerae ATCC 15748	50-100	luxuriant	positive, growth away from stabline causing turbidity
Vibrio parahaemolyticus ATCC 17802	50-100	luxuriant	positive, growth away from stabline causing turbidity

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. Koneman E. W., Allen S. D., Janda W. M., Schreckenberger P. C., Winn W. C. Jr., (Eds.), 1992, Colour Atlas and Textbook of Diagnostic Microbiology, 4th Ed., J. B. Lippinccott Company.
2. Tittsler R. P. and Sandholzer L. A., 1936, J. Bacteriol., 3 1:575.
3. Edward P. R. and Ewing W. H. 1972, Identification of Enterobacteriaceae 3rd Ed., Minneapolis, Burgess.2.,,
4. Howard B. J. and Other (Eds.), 1994, Clinical and Pathogenic Microbiology, The C. V. Mosby. Year Book, Inc.
5. Baron. E. J. and Finegold S. M. (Eds.), 1990, Bailey and Scott's `Diagnostic Microbiology, 8th ed., The C. V. Mosby. Co, St., Louis, Missouri.
6. DAmato R. F., and Tomfohrede K. M., 1981, J. Clin. Microbiol., 14 (3), 347-348.
7. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.

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