Fluid Thioglycollate Medium

MU009

Fluid Thioglycollate Medium is used for sterility testing of biologicals and for cultivation of aerobes, anaerobes and microaerophiles in accordance with United States Pharmacopoeia

Composition**

Ingredients	Gms / Litre
Pancreatic digest of casein	15.000
Yeast extract	5.000
Dextrose monohydrate	5.500
Sodium chloride	2.500
L-Cystine	0.500
Sodium thioglycollate	0.500
Resazurin sodium	0.001
Agar	0.750
pH after sterilization	7.1±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 29.25 grams of dehydrated medium in 1000 ml purified/distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 25°C and store in a cool dark place preferably below 25°C.

Note: If more than the upper one-third of the medium has acquired a pink colour, the medium may be restored once by heating in a water bath or in free flowing steam until the pink colour

Principle And Interpretation

Brewer (1) formulated Fluid Thioglycollate Medium for rapid cultivation of aerobes as well as anaerobes by adding a reducing agent and small amount of agar. The USP (2) , BP (3) , EP (4)and AOAC (5) have recommended the media for sterility testing of antibiotics, biologicals and food products and for determining the phenol coefficient and sporicidal effect of disinfectants. However, it is intended for the examination of clear liquid or water-soluble materials.

Dextrose monohydrate, pancreatic digest of casein, yeast extract, L-cystine provide the growth factors necessary for bacterial multiplication. Sodium thioglycollate and L-cystine act as a reducing agent lowering the oxidation-reduction potential by removal of oxygen This condition helps to prevent the accumulation of peroxides which is toxic in nature. The SH group also neutralizes the antibacterial effect of mercurial preservatives and other heavy metal compounds which exert a bacteriostatic effect in the materials under examination. Any increase in the oxygen content is indicated by a colour change of redox indicator-resazurin; to red (6,7,8). The small amount of agar helps in maintaining low redox potential and stabilizes the medium (9).

In sterility checking, it is recommended to dilute the sample containing preservatives, with this broth to reduce the toxicity and enhance the growth of contaminants, if any.

Quality Control

Appearance
Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium
Light straw coloured clear to slightly opalescent solution with upper 10% or less medium pink on standing.

Reaction
After sterilization,reaction of 2.92% w/v aqueous solution. pH : 7.1±0.2

pH
6.90-7.30

Growth Promotion Test
As per United States Pharmacopoeia

Stability test
Light yellow coloured clear solution without any precipitation sedimentation at room temperature for 7 days

Cultural response
Cultural characteristics observed after an incubation at 30-35°C for not more than 3 days.

Cultural Response

Organism	Inoculum (CFU)	Growth
Clostridium sporogenes ATCC 19404	50 -100	luxuriant
Clostridium sporogenes ATCC 11437	50 -100	luxuriant
Clostridium sporogenes NBRC 14293	50 -100	luxuriant
Clostridium perfringens ATCC 13124	50 -100	luxuriant
Bacteroides fragilis ATCC 23745	50 -100	luxuriant
Bacteroides vulgatus ATCC 8482	50 -100	luxuriant
Staphylococcus aureus ATCC25923	50 -100	luxuriant
Staphylococcus aureus ATCC 6538	50 -100	luxuriant
Pseudomonas aeruginosa ATCC 27853	50 -100	luxuriant
Pseudomonas aeruginosa ATCC 9027	50 -100	luxuriant
Micrococcus luteus ATCC 9341	50 -100	luxuriant
Streptococcus pneumoniae ATCC 6305	50 -100	luxuriant
Escherichia coli ATCC 25922	50 -100	luxuriant
Escherichia coli ATCC 8739	50 -100	luxuriant
Escherichia coli NCTC 9002	50 -100	luxuriant
Salmonella Typhimurium ATCC 14028	50 -100	luxuriant
Salmonella Abony NCTC 6017	50 -100	luxuriant
Bacillus subtilis ATCC 6633	50 -100	luxuriant

Storage and Shelf Life
Store below 30°C in tightly closed container and the prepared medium at room temperature and away from light.
Use before expiry date on the label.

Reference
1.Brewer, 1940, J. Am. Med. Assoc., 115:598.
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3.British Pharmacopoeia, 2009, The Stationery office British Pharmacopoeia.
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5.Williams. (Ed.), 2005, Official Methods of Analysis of the Association of Official Analytical Chemists, 19th ed., AOAC, Washington, D.C.
6.Marshall, Gunnison and Luxen, 1940, Proc. Soc. Exp. Biol. Med., 43:672.
7.Nungester, Hood and Warren, 1943, Proc. Soc. Exp. Biol. Med., 52:287.
8.Portwood, 1944, J. Bact., 48:255.
9. MacFaddin J.F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of ,,Medical Bacteria, Vol.1, Williams and Wilkins, Baltimore.

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