Fluid Thioglycollate Medium (Thioglycollate Medium Fluid)

Intended Use

Recommended for sterility testing of biologicals and for cultivation of anaerobes, aerobes and microaerophiles from pharmaceutical and clinical samples.

Typical Composition (g/litre)

Tryptone 15.0; Yeast extract 5.0; Dextrose (Glucose) 5.50; Sodium chloride 2.5; L-Cystine 0.5; Sodium thioglycollate 0.5; Resazurin sodium 0.001; Agar 0.75

Mode of Action

Fluid Thioglycollate Medium for rapid cultivation of aerobes as well as anaerobes including microaerophiles by adding a reducing agent and small amount of agar. The USP, BP, EP and AOAC have recommended the media for sterility testing of antibiotics, biologicals and foods 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.

The reducing agents thioglycollate and L-cystine ensure an anaerobiosis, which is adequate even for strict anaerobes. The sulfhydryl groups of these substances also inactivate arsenic, mercury and other heavy metal compounds.

Glucose, pancreatic digest of casein, L-cystine, yeast extract and sodium chloride provide the growth factors and essential ions. The small amount of agar assists in the maintenance of a low redox potential by stabilizing the medium against convection currents, thereby maintain anaerobiosis in the lower depths of the medium.

The higher viscosity of the Fluid Thioglycollate Medium prevents rapid uptake of oxygen. Any increase in the oxygen content is indicated by the redox indicator sodium resazurin, which changes its colour to red when oxidized.

Preparation

Suspend 29.75 grams in 1 liter distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. The prepared media are clear or almost clear and yellowish. The medium shall be de-aerated before use.

pH 6.90 - 7.30

Storage

Store between 10-30°C in a tightly closed container and the prepared medium at 15-25°C. Use before expiry date on the label. Do not use the medium for a longer storage period than has been validated.

Experimental Procedure and Evaluation

Depends on the purpose for which the medium is used. Inoculate the culture medium with the sample material taking care that the sample reaches the bottom of the tubes. In order to ensure anaerobiosis, the medium can then be overlayed with 1 cm of sterile liquid paraffin or agar solution. Incubate the inoculated containers at 30-35 °C. Anaerobes grow in the lower part of the culture.

Quality Control

Organism	Inoculum	Growth
Clostridium sporogenes ATCC 19404	50 - 100	Luxuriant
Clostridium sporogenes ATCC 11437	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 ATCC 25923	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 subsp. spizizenii ATCC 6633	50 - 100	Luxuriant

Reference

1. British Pharmacopoeia, 2017 The Stationery office British Pharmacopeia
2. European Pharmacopoeia, 2019, European Dept. for the quality of Medicines.
3. The United States Pharmacopoeia, 2019, The United States Pharmacopoeial Convention, Rockville, MD
4. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition
5. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock, D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.