Fluid Thioglycollate Medium (Sterility Testing Medium)

Intended Use
Fluid Thioglycollate Medium (Sterility Testing Medium) is recommended for the cultivation of aerobes, anaerobes and microaerophiles.

Summary
Falk, Bucca and Simmons showed the advantage of using small quantities of agar in detecting contaminants during sterility testing of biologicals. Brewer demonstrated that in a liquid medium containing 0.05% agar, anaerobes grew equally well in the presence or absence of sodium thioglycollate and therefore formulated Fluid Thioglycollate Medium for rapid cultivation of aerobes as well as anaerobes by adding a reducing agent and a small amount of agar. Fluid Thioglycollate Medium is recommended by APHA and the AOAC International for the examination of food, and for determining the phenol coefficient and sporicidal effect of disinfectants. This medium is also specified for sterility checks on banked blood. It is recommended in the USP for use in sterility testing of articles supposed to be sterile and is also included in the Bacteriological Analytical Manual for food testing.

Principle
Pancreatic digest of casein, yeast extract and L-cystine provide sources of nitrogen, carbon and other growth factors while dextrose is the carbohydrate source. Sodium chloride provides essential ions and maintains the osmotic balance. Sodium thioglycollate is a reducing agent, which prevents the accumulation of peroxides that is lethal to bacterial growth and neutralizes the antibacterial effect of mercurial preservatives. L-cystine is also a reducing agent, since it contains sulphydryl groups that inactivate heavy metal compounds, which exert a bacteriostatic effect in the materials under examination, and also maintains a low redox potential, thereby maintaining anaerobiosis. Resazurin is the oxidation-reduction indicator; increased oxidation raises the Eh, causing resazurin to change colour to red. The small amount of added agar assists in maintaining a low redox potential by stabilizing the medium, thereby maintaining anaerobiosis in the lower depths of the medium.

Formula*

Ingredients	**g/L**
Pancreatic Digest of Casein	15.0
Yeast Extract (Water-Soluble)	5.0
Dextrose Anhydrous	5.0
Sodium Chloride	2.5
L- Cystine	0.5
Sodium Thioglycollate	0.5
Agar	0.75
Resazurin Sodium Solution (1 in 1000) Freshly prepared	1.0 mL
Final pH (at 25°C)	7.1 ± 0.2

*Adjusted to suit performance parameters.

Storage and Stability
1. Store the ready to use Fluid Thioglycollate Medium (Sterility Testing Medium) at 15°C-25°C in a cool, dry place away from light.
2. Stability of the kit is as per expiry date mentioned on the label.

Directions
1. Bring the Fluid Thioglycollate Medium (Sterility Testing Medium) vial to the room temperature 22°C-30°C.
2. Use Fluid Thioglycollate Medium (Sterility Testing Medium) as per required application.

Quality Control

Appearance: Light yellow coloured solution.

Growth Promotion Test: Growth promotion is carried out in accordance with the harmonized method of USP/EP/JP and growth is observed after an incubation at 30°C-35°C for ≤3 days.

Growth Promoting Properties: The test results observed are within the specified temperature and the shortest period of time, inoculating 10-100 cfu (at 30°C- 35°C for ≤ 3 days).

Organism	**Growth**
Staphylococcus aureus subsp. *aureus* (6538)	Good
Pseudomonas aeruginosa (9027)	Good
Kocuria rhizophila Strain PCI 1001 (9341)	Good
Bacteroides vulgatus (8482)	Good
Clostridium sporogenes (11437)	Good
Clostridium sporogenes (19404)	Good

Validation and Growth Promotion

(Growth promotion is carried out after an incubation at 20°C-25°C for ≤3 days for bacteria and ≤5 days for fungi per USP/EP/JP).

Organism (ATCC)	**Growth**
Candida albicans 3147 (10231)	Good
Bacillus spizizenii (6633)	Good
Aspergillus brasiliensis WLRI 034 (120) (16404)	Good

Note: Inoculum cfu for good growth is 10-100.

Remarks

1. Do not use media bottles that exhibit any damage, cracks, microbial contamination, discolouration, drying or any other sign of deterioration.
2. Good laboratory practices and hazard precautions must be observed at all times.
3. After use media containers, sample, sample containers and other contaminated materials must be sterilized or incinerated before discarding.
4. All autoclaved biohazards should be disposed off in accordance with state and local environmental regulations.
5. Only qualified personnel who have been trained in microbiological procedures should handle all infected specimens and inoculated culture media.
6. User should ensure that any machinery or apparatus used and by chance contaminated must be safely disinfected or sterilized. The environment in which microbiological cultures are handled must also be taken into account.

Limitations/ Precautions

1. Some dextrose fermenting organisms, which are able to reduce the pH of the medium to a critical level, may not survive in this medium. Early subculture is required to isolate these organisms.
2. In test samples, the proper surface to volume ratio of the medium must be maintained to avoid oxidation of the medium, which is unsuitable for microaerophilic and anaerobic growth.
3. A slight turbidity or haziness may be present due to the small amount of agar present in the medium. When the medium has been boiled, generally it appears clear.
4. Anaerobes can be overgrown by more rapidly growing facultative organisms. Gram stain and examine broth if plating medium reveals no growth.
5. Some anaerobes may be inhibited by metabolic products or acids produced from more rapidly growing facultative anaerobes.
6. Do not rely on broth cultures exclusively for isolation of anaerobes.
7. Do not reheat the medium more than once as it may give rise to toxicity.
8. If more than upper one third of the medium has acquired a pink colour, the medium may be restored once by reheating in water bath or in free flowing steam until the pink colour disappears.

Warranty

This product is designed to perform as described on the label and package insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose.

Reference

1. Falk, Bucca and Simmons. 1939, J. Bact; 37:121.
2. Brewer, 1940, J. Am. Mad. Assoc; 115:598.
3. Downes and Ito (ed.) 2001, Compendium Of Methods For The Microbiological Examination Of Foods, 4th edition, APHA Washington DC.
4. US Pharmacopeial Convention, Inc. 2001. The United States Pharmacopoeia 25/NF 20-2002. The US Pharmacopeial Convention, Inc; Rockville, Md.
5. Indian Pahrmacopoeia, 2010.
6. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product description	Pack Size
203060180100	Bottle Media	100 mL
203060190100	Bottle Media (Canister)	100 mL
203060190090	Bottle Media (Canister)	90 mL
203060200100	Bottle Media (Screw cap + Septa)	100 mL
203060210100	Bottle Media (Wide Mouth)	100 mL