Fluid Tetrathionate Medium USP

Intended Use

Fluid Tetrathionate Medium in combination with added iodine and brilliant green is recommended as an enrichment broth for isolation of *Salmonella* from specimens suspected to be contaminated with *Salmonella* in accordance with United States Pharmacopoeia.

Summary

Fluid Tetrathionate Medium was originally described by Mueller and found that the medium selectively inhibits coliforms and permits unrestricted growth of enteric pathogens. The medium is now formulated according to FDA, United States Pharmacopoeia, 2009, Compendium of Microbiological Examination of Foods and Standard Methods for the Examination of Water and Wastewater which specify this medium as enrichment medium for *Salmonella* species. *Salmonella* is the common causative agent of mild gastroenteritis to typhoid. It is common contaminant in food and other biological products. This medium supports the rejuvenation of *Salmonella* cells injured by food processing which are incapable of forming colonies on plate, but on injection can cause infection. This medium is recommended by USP for microbial limit tests for pharmaceutical preparations.

Principle

Bile salts inhibit Gram-positive microorganisms. The selectivity depends on the ability of thiosulphate and tetrathionate (formed by addition of iodine and potassium iodide) in combination to suppress commensal coliform organisms. The microorganism harbouring tetrathionate reductase flourish in this broth. Sodium thiosulphate forms the substrate for enzyme thiosulphate reductase. Sodium thiosulphates are also inactivators of halogens and can minimize its toxicity in the testing sample, if any, during microbial limit tests. Pancreatic digest of casein and peptic digest of animal tissues supplies essential nutrients and vitamins in this medium. Calcium carbonate neutralizes the acidic tetrathionate decomposition products.

Formula*

Ingredients	**g/L**
Pancreatic Digest of Casein	2.5
Peptic Digest of Animal Tissue	2.5
Bile Salts	1.0
Calcium Carbonate	10.0
Sodium Thiosulphate	30.0

*Adjusted to suit performance parameters

Storage and Stability

Store dehydrated medium below 30°C in tightly closed container and the prepared medium at 2ºC-8°C. Avoid freezing and overheating. Use before expiry date on the label. Once opened keep powdered medium closed to avoid hydration.

Specimen Collection and Handling

Ensure that all samples are properly labelled.
Follow appropriate techniques for handling samples as per established guidelines.
Some samples may require special handling, such as immediate refrigeration or protection from light, follow the standard procedure.
The samples must be stored and tested within the permissible time duration.
After use, contaminated materials must be sterilized by autoclaving before discarding.

Directions

1. Suspend 46.00 g of the powder in 1000 mL distilled water.
2. Heat to boiling to dissolve the powder completely. DO NOT AUTOCLAVE.

3. Cool below 45°C and add 20 mL iodine solution (Iodine 6.00 g and potassium iodide-5.00 g in 20 mL distilled water) and 10 mL of 0.1% brilliant green solution.
4. Mix well and dispense in 10 mL quantities. (This complete medium should be used on the same day of preparation. Do not heat after the addition of Iodine solution. Use the medium immediately after addition of Iodine).

Quality Control

Dehydrated Appearance: Cream coloured, homogeneous free flowing powder.
Prepared Appearance: Complete medium with added brilliant green and iodine solution - Light green coloured solution with heavy white precipitate, on standing the precipitate settles down.
Growth Promotion Test: Growth promotion is carried out in accordance with the harmonized method of USP/EP/JP/IP and growth is observed after an incubation at 30°C-35°C for 18 to 24 hours. Subculturing is carried out using MacConkey Agar and after enrichment in Fluid Tetrathionate medium USP at 30-35°C for 18-72 hours.
Growth Promoting Properties: The test results observed are within the specified temperature and shortest period of time specified in the test, inoculating ≤ 100 cfu of appropriate microorganism at 30°C-35°C for 18 hours.
Inhibitory Properties: No growth of the test microorganism occurs for the specified temperature and the longest period of time specified inoculating >100 cfu at 30°C-35°C for ≥ 24 hours.

Organism (ATCC)	Recovery	Colour of colony
Salmonella enterica subsp. serovar *abony* (NCTC 6017)	Good	Colourless
Salmonella enterica subsp. serovar *typhimurium* (14028)	Good	Colourless
Salmonella typhi (6539)	Good	Colourless
Escherichia coli (8739)	Partial Inhibition	Pink with bile precipitate

Note: Inoculum for Good growth is 10 - 100 cfu

Performance and Evaluation

Performance of the product is dependent on following parameters as per product label claim:
1. Directions
2. Storage
3. Expiry

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. Mueller, 1923, Compt. Rend. Sco. Biol., 89:434.
2. Bacteriological Analytical Manual, 8th Edition, Revision A, 1998. AOAC, Washington D.C.
3. The United States Pharmacopoeia, 2009, US Pharmacopoeial Convention, Inc., Rockville, MD
4. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product description	Pack Size
201060070500	Dehydrated Culture Media	500 g