Fluid Selenite Cystine Medium (Twin Pack)

Intended Use
Fluid Selenite Cystine Medium (Twin pack) is a selective enrichment medium used for isolation of Salmonellae from faeces, foods pharmaceutical articles, water and other materials of sanitary importance.

Summary
Selective inhibitory effects of selenite were first demonstrated by Klett. Guth used it to isolate *Salmonella typhi*. Leifson studied selenite and formulated a medium. Fluid Selenite Cystine Medium is a modification of Leifson's formula with added cystine by North and Bartram. The formulation corresponds to that of recommended by the AOAC for the detection of Salmonellae in foodstuff particularly egg products. It is included by APHA, USP. Selenite Cystine Broth is useful for detecting *Salmonella* in the non-acute stages of illness when organisms occur in low numbers in test samples and for epidemiological studies to enhance the detection of low numbers of organisms from asymptomatic or convalescent patients.

Principle
Tryptone provides nitrogen and amino acids. Lactose is the fermentable source of carbohydrate and also maintains the pH in medium as selenite is reduced by bacterial growth and alkali is produced. An increase in pH lessens the toxicity of the selenite and results in overgrowth of other bacteria. The acid produced by bacteria due to lactose fermentation that maintain a neutral pH counters this. Disodium phosphate too maintains a stable pH and is a good buffering agent. L-cystine imparts ambient redox potential, which enhances and improves recovery of Salmonellae and few *Shigella* sp. which may be in small numbers in products to be tested. This medium to some extent prevents the growth of coliforms.

Formula*

Ingredients	**g/L**
Part A	
Disodium Phosphate	10.0
Tryptone	5.0
Lactose	4.0
L-Cystine	0.01
Part B	
Sodium Hydrogen Selenite	4.0
Final pH (at 25°C)	7.0 ± 0.2

*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.

Type of specimen
Pharmaceutical sample; Clinical samples – faeces; Food and dairy samples; Water samples

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 4.00 g of the powder of Part B in 1000 mL purified / distilled water and add 19.01 g of the powder of Part A. Mix thoroughly.
2. Warm or just boil to dissolve the powder completely and dispense in tubes as required. AVOID OVERHEATING. DO NOT AUTOCLAVE.
3. Sterilize in a boiling water bath or free flowing steam for 10 minutes.
4. Discard if large amount of selenite is reduced which is indicated by a red precipitate at the bottom of the tube.

Caution: Sodium acid selenite (Sodium bi-selenite) is very toxic, corrosive agent and causes teratogenicity. Handle with great care. Upon contact with skin, wash immediately with a lot of water.

Quality Control

Dehydrated Appearance: Part A: Off-white to yellow coloured, homogeneous, free flowing powder.
Part B: White to cream coloured, homogeneous, free flowing powder.
Prepared Appearance: Light yellow coloured, clear to very slightly opalescent solution, without precipitate.
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 18-24 hours. Subculturing is carried out using MacConkey Agar after enrichment in Fluid Selenite Cystine Medium (Twin Pack) at 30°C-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,

Organism (ATCC)	**Growth**
Salmonella enterica subsp. *enterica* serovar *Typhimurium* (14028)	Good
Salmonella enterica subsp. *enterica* serovar *Choleraesuis* (12011)	Good
Escherichia coli (8739)	Partial Inhibition
Escherichia coli (25922)	Partial Inhibition

Note: Inoculum for Good growth is 10 - 100 cfu

Interpretation of Results

1. After incubation, there must be an increase in the number of pathogens that the medium is designed to select for and enrich.
2. Subculture onto any combination of greater and lesser inhibitory, selective and differential media for *Enterobacteriaceae* e.g. MacConkey Agar, XLD Agar, etc. to isolate pathogens for identification.

Performance and Evaluation

Performance of the product is dependent on following parameters as per product label claim:

1. Directions
2. Storage
3. Expiry

Precautions/Limitations

1. Discard the prepared medium if large amounts of reduced selenite cab be seen as a red precipitate at the bottom of the tube.
2. Do not incubate for longer than 24 hours because the inhibitory effect of selenite is reduced after 6-12 hours incubation and coliforms may overgrow the pathogens.
3. Take subcultures from the upper third of the broth column, which should be at least 5 cm in depth.
4. Enrichment broths should not be used as the sole isolation medium. Use in conjunction with selective and non-selective plating media to increase the chances of isolating pathogens, particularly when they may be present in small numbers.

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. Klett A., 1900, Zeitsch Fer Hyg. Und. Infekt, 33: 137.
2. Guth F., 1916, Zbl. Bakt. I. Orig., 77:487.
3. Leifson E., 1936, Am. J. Hyg., 24(2): 423.
4. North W.R. and Bartram M.T., 1953, Appl. Microbiol., 1:130.
5. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product description	Pack Size
201060040100	Dehydrated Culture Media	100 g
201060040500	Dehydrated Culture Media	500 g