Fluid Selenite Cystine- Medium (Twin Pack)

MM025

Fluid Selenite Cystine Medium is used as an enrichment medium for isolation of Salmonellae in foods,dairy products and materials of sanitary importance and clinical specimens in accordance with Indian Pharmacopoeia, 2007.

Composition**

Ingredients	Gms / Litre
Part A	-
Pancreatic digest of casein	5.000
Lactose	4.000
Sodium phosphate	10.000
L-Cystine	0.010
Part B	-
Sodium hydrogen selenite	4.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 4.0 grams of Part B in 1000 ml purified/ distilled water. Add 19.01 grams of Part A. Mix well. Warm to dissolve the medium completely. Distribute in sterile test tubes. Sterilize in a boiling water bath or free flowing steam for 10 minutes. DO NOT AUTOCLAVE. Excessive heating is detrimental. Discard the prepared medium if large amount of selenite is reduced (indicated by red precipitate at the bottom of tube / bottle).

Caution : Sodium hydrogen 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 .

Principle And Interpretation

Selective inhibitory effects of selenite were first demonstrated by Klett (1). Guth (2) used it to isolate *Salmonella* Typhi. Leifson studied selenite and formulated a medium. Fluid Selenite Cystine Medium is a modification of Leifsons (3) formula with added cystine by North and Bartram (4). It is employed for the detection of Salmonellae in foodstuff, particularly egg products. It is included by APHA (5,6), IP (7). 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 (8).

Pancreatic digest of casein provide nitrogenous substances. Lactose 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 serves to maintain a neutral pH. Phosphate maintains a stable pH and also lessens the toxicity of selenite. L-cystine improves recovery of Salmonellae. Enriched broth is subcultured on solid medium.

Do not incubate the broth longer than 24 hours as inhibitory effect of selenite reduces after 6 - 12 hours of incubation (9).

Quality Control

Appearance

Part A : White to cream homogeneous free flowing powder Part B : White to cream Crystalline powder

Colour and Clarity of prepared medium

Light yellow coloured, clear to slightly opalescent solution of complete medium

Reaction

Reaction of medium [(1.9% w/v) Part A and (0.4% w/v) Part B] at 25°C. pH : 7.0±0.2

pH

6.80-7.20

Growth Promotion Test
In accordance with the harmonized method of IP.

Cultural Response
Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours when sub cultured on MacConkey Agar (M081).

Cultural Response

Organism	Inoculum (CFU)	Recovery	Colour of Colony
Growth Promotion Test Cultural Response			
Escherichia coli ATCC 25922	50-100	little-none(no increase in numbers)	pink with bile precipitate
Salmonella Choleraesuis ATCC 12011	50-100	luxuriant	colourless
Salmonella Typhimurium ATCC 14028	50-100	luxuriant	colourless
Salmonella Typhi ATCC 6539	50-100	luxuriant	colourless
Escherichia coli NCTC 9002	50-100	little-none (no increase in numbers)	pink with bile precipitate
Escherichia coli ATCC 8739	50-100	little-none (no increase in numbers)	pink with bile precipitate

Storage and Shelf Life
Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

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. Downes F P and Ito K(Eds.), 2001, Compendium of Methods For The Microbiological Examination of Foods, 4th ed., APHA, Washington, D.C.
6. Wehr H M and Frank J H., 2004, Standard Methods for the Examination of Dairy Products, 17th ed., APHA Inc., Washington, D.C.
7. Indian Pharmacopoeia, 2007. Government of India Ministry of Health of family Welfare, Published by the Controller of Publications, Delhi.
8. Murray PR, Baren EJ, Jorgensen JH, Pfaller MA, Yolken RH (editors) 2003, Manual of clinical Microbiology, 8th ed., ASM, Washington, D.C.
9. Chattopadhyay W. and Pilford J. N., 1976, Med. Lab. Sci., 33:191.

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