Technical Information

Selenite F Broth (Twin Pack)

Product Code: DM 1052M

Application: - Selenite F Broth is recommended as an enrichment medium for the isolation of *Salmonella* species from faeces, urine or other pathological materials in accordance with Indian Pharmacopoeia.

Composition**

Ingredients	Gms / Litre
Part A	-
Peptone	5.000
Lactose	4.000
Disodium hydrogen phosphate	10.000
Part B	-
Sodium hydrogen selenite	4.000
Final pH (at 25^{0}C)	7.0±0.2

** Formula adjusted, standaedized suit performance parameters

Principle & Interpretation

Enrichment media are routinely employed for detection of pathogens in faecal specimens as the pathogens are present in a very small number in the intestinal flora. Selenite F Broth is useful for detecting *Salmonella* in the nonacute stages of illness when organisms occur in the test sample in low numbers and for epidemiological studies to enhance the detection of low number of organisms from asymptomatic or convalescent patients [4]. Klett [1] first showed the selective inhibitory effects of selenite which was used by Guth [2] to isolate *Salmonella* Typhi. Leifson fully investigated selenite and formulated the media corresponds to the formulation recommended by the Indian Pharmacopoeia [3] for detection of *Salmonella* in foodstuffs, pharmaceuticals and pathological materials.

Peptone provides nitrogenous substances. Lactose maintains the pH of medium. Selenite is reduced by bacterial growth producing alkalinity. This causes increase in pH which can reduce the toxicity of the selenite and results in overgrowth of other bacteria. The acid produced by bacteria by lactose fermentation counters the high pH and neutralizes the medium. Sodium phosphate maintains a stable pH and also minimizes the toxicity of selenite.

Enriched broth is subcultured on differential plating media such as Bismuth Sulphite Agar (DM1027M), Brilliant Green Agar (DM1016M), XLD Agar (DM1031M) etc. Do not incubate the broth longer than 24 hours as inhibitory effect of selenite decreases after 6 - 12 hours of incubation [5].

Methodology

Suspend 4.0 grams of Part B in 1000 ml purified/ distilled water. Add 19.0 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 30 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 biselenite) is very toxic and corrosive agent and causes teratogenicity. Handle with great care. If there is contact with skin, wash immediately with lot of water.

Quality Control

Physical Appearance

Part A: White to cream homogeneeous free flowing powder.

Part B: White to cream homogeneous free flowing powder.

Colour and Clarity of prepared medium

Cream to yellow clear to slightly opalescent solution.

Reaction:

Reaction of 2.3% w/v aqueous solution at 25^{0}C pH 7.0±0.2

pH Range: 6.80-7.20

Growth Promotion Test

As per Indian Pharmacopoeia

Cultural Response/ characteristics

DM 1052M**:** Cultural characteristics observed when subcultured on MacConkey Agar (DM1081) after an incubation at 35-37^{0}C for 18-24 hours.

Organism	Inoculum (CFU)	Recovery	Colour of colony
Salmonella Choleraesuis ATCC 12011	50-100	good-luxuriant	colourless
Salmonella Typhi ATCC 6539	50-100	good-luxuriant	colourless
Salmonella Typhimurium ATCC 14028	50-100	good-luxuriant	colourless
Escherichia coli ATCC 8739	50-100	none to poor	pink with bile precipitate
Escherichia coli NCTC 9002	50-100	(no increase in numbers) none to poor (no increase in numbers	pink with bile precipitate

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.
Prepared Media: 2-8^o in sealable plastic bags for 2-5 days.

Further Reading

1. Klett A., 1900, Zeitsch Für Hyg. Und. Infekt., 33: 137.
2. Guth F., 1926, Zbl. Bakt. I. Orig., 77:487.
3. The Indian Pharmacopoeia 2007, Govt. of India, The Controller of Publication, Delhi
4. Murray PR, Baren EJ, Jorgensen JH, Pfaller MA, Yolken RH (editors) 2003, Manual of clinical Microbiology, 8th ed., ASM, Washington, D.C.
5. Chattopadhyay W. and Pilford J. N., 1976, Med.Lab. Sci., 33:191.

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