Technical Data

Sodium Biselenite

M1079B

Intended use

Sodium Biselenite (Sodium hydrogen selenite), Bacteriological grade is recommended to be added for preparing complete Selenite medium i.e Selenite Cystine Broth Base w/o Biselenite (M1079) and Selenite Broth Base w/o Biselenite (M970). The complete medium is recommended for selective enrichment of *Salmonella* species from various samples.

Composition**

Ingredients	Gms/litre
Sodium Biselenite(Sodium hydrogen selenite)	4.0

**Formula adjusted, standardized to suit performance parameters

Directions

0.4% w/v solution is desirable to be added to Selenite Cystine Broth Base w/o Biselenite (M1079) and Selenite Broth Base w/o Biselenite (M970) when used as a base. For preparing 0.4% w/v sodium selenite solution, suspend 4 grams in 1000 ml distilled water Ensure for complete dissolution. Suspend 19 grams of M970 or 19.01 grams of M1079 respectively to prepared 0.4% M1079B solution. 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).

Principle And Interpretation

Selenite Cystine Broths are selective enrichment medias useful for detecting *Salmonella* in various samples from food, dairy products and pathological materials. Addition of Sodium biselenite (Sodium hydrogen selenite) to the Selenite Cystine Broth Base w/o selenite (M1079 / M790) favours selective enrichment of the *Salmonella* species. Klett (1) first demonstrated the selective inhibitory effects of selenite and Guth (2) used it to isolate *Salmonella* Typhi. Leifson (3) fully investigated selenite and formulated the media.Selenite Cystine Medium is a modification of Leifsons formula with added cystine(4). Modification of original composition of Selenite broths and similar medias are recommended by AOAC, APHA, USP etc (3-5).The Selenite Broth Base (M1079 / M970) contains nitrogeneous substances as casein enzyme hydrolysate supporting growth of organisms and lactose as fermentable carbohydrate. In complete medium with selenite, 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. Sodium phosphate maintains a stable pH and also lessens the toxicity of selenite. L-Cystine improves recovery of Salmonella. Enriched broth can be subcultured on differential plating media such as Bismuth Sulphite Agar (M027), Brilliant Green Agar (M016), XLD Agar (M031), MacConkey Agar (M081) etc. Do not incubate the broth longer than 24 hours as inhibitory effect of selenite decreases after 6 - 12 hours of incubation (6).

Type of specimen

Refer M1079 and M970 .

Specimen Collection and Handling

Refer M1079 and M970 . To be added to Selenite Cystine Broth Base w/o Biselenite (M1079) and Selenite Broth Base w/o Biselenite (M970) when used as a base.

Warning and Precautions :

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidleines should be followed while handling specimens. Saftey guidelines may be referred in individual safety data sheets.

Limitations

Due to nutritional variation certain strains may show poor growth.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance

White to cream homogeneous free flowing powder

Colour and Clarity of prepared medium

0.4% w/v solution of M1079B is colourless clear solution without any precipitate.

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours when added in M1079 Selenite Cystine Broth Base w/ o biselenite and sub cultured on MacConkey Agar (M081).

Cultural Response

Organism	Inoculum (CFU)	Recovery	Colour of Colony
Cultural Response			
Escherichia coli ATCC 25922 (00013*)	50-100	little-none(no increase in numbers)	pink with bile precipitate
Salmonella Choleraesuis ATCC 12011	50-100	luxuriant	colourless
Salmonella Typhimurium ATCC 14028 (00031*)	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 (00012*)	50-100	little-none (no increase in numbers)	pink with bile precipitate

* Corresponding WDCM numbers

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.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (7,8).

Reference

1. Klett A., 1900, Zeitsch Für Hyg. Und. Infekt., 33: 137.
2. Guth F., 1926, Zbl. Bakt. I. Orig., 77:487.
3. Leifson E., 1936, Am. J. Hyg., 24(2) : 423.
4. North W.R. and Bartran M.T., 1953, Appl. Microbiol., 1:130.
5. AOAC, 1978, Bacteriological Analytic Manual, 5th ed., AOAC, Washington, DC
6. Kelly, Brenner and Farmer, 1985, Manual of Clinical Microbiology, 4th ed., Lennett and others (Eds.), ASM, Washington, D.C.
7. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.
8. Jorgensen,J.H., Pfaller , M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015)

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