

Technical Information

Selenite Broth Base w/o Selenite

Product Code: DM 1970

Application: - Selenite Broth Base w/o selenite is recommended for the enrichment of *Salmonellae* species from food, dairy products and pathological specimens, on addition of selenite.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	5.000
Lactose	4.000
Sodium phosphate	10.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Enrichment media are routinely used for detection of pathogens in faecal specimens as the pathogens are present in a very small number in the intestinal flora. Klett ⁽¹⁾ was the first to demonstrate the selective inhibitory effects of selenite and Guth ⁽²⁾ used it to isolate *Salmonella typhi*. Leifson fully investigated selenite and formulated the selenite media. Selenite Broth is useful for detecting *Salmonella* in the nonacute stages of illness when organisms occur in the faeces in low numbers and for epidemiological studies to enhance the detection of low number of organisms from asymptomatic or convalescent patients ⁽³⁾.

Casein enzymic hydrolysate provides nitrogenous substances. Lactose maintains the pH of medium. Selenite is reduced by bacterial growth and alkali is produced. An increase in pH reduces 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 reduces the toxicity of selenite. Enriched broth is subcultured on differential plating media such as Bismuth Sulphite Agar (DM1027), Brilliant Green Agar (DM1016), XLD Agar (DM1031) etc. Do not incubate the broth longer than 24 hours as inhibitory effect of selenite decreases after 6 - 12 hours of incubation ⁽⁴⁾.

Methodology

Suspend 4 grams of sodium hydrogen selenite (030161) in 1000 ml distilled water. Add 19 grams of DM1970. 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 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

Cream to light yellow homogeneous free flowing powder

Colour and Clarity of Prepared Medium

Cream to yellow coloured clear solution without any precipitate

Reaction

Reaction of 1.9% w/v of medium along with 0.4% w/v selenite aqueous solution at 25°C. pH : 7.0±0.2

pH range 6.80-7.20

Cultural Response/Characteristics

DM 1970: Cultural characteristics observed with added sodium hydrogen Selenite (030161) when subcultured on MacConkey Agar (DM1081) after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Recovery	Colour of colony
<i>Escherichia coli</i> ATCC 25922	50-100	good-luxuriant	pink with bile precipitate
<i>Salmonella Choleraesuis</i> ATCC 12011	50-100	good-luxuriant	Colourless
<i>Salmonella Typhi</i> ATCC 6539	50-100	good-luxuriant	Colourless
<i>Salmonella Typhimurium</i> ATCC 14028	50-100	good-luxuriant	colourless

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: 2-8⁰ 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. Kelly, Brenner and Farmer, 1985, Manual of Clinical Microbiology, 4th ed., Lennett and others (Eds.), ASM, Washington, D.C.
4. Chattopadhyay W. and Pilford J. N., 1976, Med. Lab. Sci., 33:191.

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