Tetrathionate Broth Base

Cat. 1114

For the selective enrichment of Salmonella species from foods, water, feces, urine and other materials of sanitary interest.

Practical information

Aplications	Categories
Selective enrichment	Salmonella

Industry: Clinical / Food

Regulations: USP / BAM

Principles and uses

Tetrathionate Broth Base, with iodine-iodide solution, is used as a selective enrichment for the cultivation of Salmonella species that may be present in low numbers or have been injured during food processing, and compete with other microorganisms and intestinal flora. Even though cells which have been injured might not form colonies on selective media, they can cause disease if ingested. This formulation conforms to the United States Pharmacopoeia (USP).

Tetrathionate is formed by the iodine reaction with Sodium thiosulfate. This combination (Sodium thiosulfate and Tetrathionate) suppresses commensal intestinal organisms. The organisms which have the enzyme tetrathionate reductase, such as Salmonella, proliferate in this medium. However, Proteus also contains this enzyme, but its growth can be minimized by adding 4 mg /l of novobiocin before adding the iodine solution. Peptone provides nitrogen, vitamins, minerals and amino acids essential for growth. Bile salts are inhibitors of other Gram-positive organisms. Calcium carbonate neutralizes and absorbs toxic metabolites.

Formula in g/L

Bile salts	1	Calcium carbonate	10
Peptone mixture	5	Sodium thiosulfate	30

Preparation

Suspend 46 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. AVOID OVERHEATING. DO NOT AUTOCLAVE. Cool to 45-50 ºC and aseptically add 20 ml per liter of an iodine solution to the medium on the same day of its use. Homogenize gently and dispense into sterile containers. Prepare the solution iodine-iodide by dissolving 6 g of Iodine crystals and 5 g of potassium iodide in 20 ml of distilled water. Dispense 10 ml into tubes, continually swirling the flask to maintain homogeneity.

Instructions for use

- Inoculate each 10 ml tube with 1-2 g of the sample (feces, wastewater, etc.) and incubate at 35±2 ºC for 18-24 hours.
- Growth is indicated by turbidity in the medium.
- After incubation, subculture onto selective plated media for Salmonella, such as MacConkey Agar (Cat. 1052), Bismuth Sulfite Agar (Cat. 1011), Desoxycholate Agar (Cat. 1020), Brilliant Green Agar (Cat. 1078), XLD Agar (Cat. 1274) or Hektoen Enteric Agar (Cat. 1030), and incubate at 35±2 ºC for 18-24 hours.

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
Almost clear with a white dense precipitate	Fine powder	Toasted	Milky white	8,4 ± 0,2

Microbiological test

Incubation conditions: (35±2 ºC / 18-24 h)

Microorganisms	Specification	Characteristic reaction
Salmonella typhimurium ATCC 14028 +Escherichia coli ATCC 8739 +Pseudomonas aeruginosa ATCC 27853	> 10 colonies on XLD or other medium of	Colonies with black centre and a light transparent zone of reddish colour due to the colour change of the medium
Salmonella enteriditis ATCC 13076 +Escherichia coli ATCC 8739 +Pseudomonas aeruginosa ATCC 27853	> 10 colonies on XLD or other medium of	Colonies with black centre and a light transparent zone of reddish colour due to the colour change of the medium
Enterococcus faecalis ATCC 29212	< 10 colonies on TSA	
Escherichia coli ATCC 8739	Partial inhibition <100 colonies on TSA	

Storage

Temp. Min.:2 ºC
Temp. Max.:25 ºC

Bibliography

American Public Health Association Recommended Methods for the Microbiological Examination of Foods, APHA, Inc. New York, 1958. American Public Health Association Standard Methods for the Examination of Dairy products. Eleventh Edition, APHA, Inc. New York, 1960.
Kauffmann 1930 Zentrabl.Bacteriol.Parsitenkd. inpektionskt.Hyg-Abt.orig 113-148
United States Pharmacopeial Convention, Inc. 2001. The United States pharmacopeia 25/The national formulary 20 – 2002. United States Pharmaceopeial Convention, Inc., Rockville, Md.