Technical Information

Kauffman Muller's Tetrathionate Broth Base

Product Code: DM 1876S

Application: - Kauffman Muller's Tetrathionate Broth Base is used as selective enrichment medium for isolation of *Shigella* species from food samples. It is recommended by BIS committee under the specifications IS: 5887(Part I)-1999.

Composition**

Ingredients	Gms / Litre
Peptone	9.000
Meat extract	9.000
Sodium chloride	4.500
Calcium carbonate	50.000
Sodium thiosulphate	50.000
Oxbile	10.000

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Kauffman Muller's Tetrathionate Broth Base is hence used as a selective enrichment for the cultivation of *Salmonella* species that may be present in small numbers and have been injured through various procedures.

Salmonella species cause many types of infections, from mild self-limiting gastroenteritis to life-threatening typhoid fever (1). *Salmonella* present in food samples may also be injured in food-processing procedures, which include exposure to low temperatures, sub-marginal heat, drying, radiation, preservative, and sanitizers (2).

Muller recommended Tetrathionate Broth as a selective medium for the recovery of *Salmonella* and demonstrated the effectiveness of Tetrathionate Broth (3) for enriching typhoid and paratyphoid bacilli while inhibiting coliform organisms. Kauffmann modified this formula to include Ox bile (4, 5) for its selective properties, which supresses coliform bacteria and enhances Gram-positive organisms. Using modified Muller's broth, Kauffmann increased the number of rapid screening of *Salmonella* in food (6, 7). Meat Peptone provides nitrogen, carbon, vitamins, and amino acids. Sodium Chloride helps to maintain the osmotic balance of the medium. Calcium Carbonate neutralizes and absorbs toxic metabolites. Selectivity is accomplished by the combination of Sodium Thiosulfate and tetrathionate, which suppresses commensal intestinal organisms (8). The British Standard Specification specifies Brilliant Green Tetrathionate Broth for isolating *Salmonella*

Methodology

Suspend 132.5 grams of dehydrated media in 1000 ml distilled water. Mix thoroughly & heat just to boiling to disosolve the medium. DO NOT AUTOCLAVE. Cool and just before use aseptically add 20 ml of iodine solution. (4 gram iodine and 5 gram Potassium iodide in 20 ml sterile distilled water) and 10 ml of 0.1 % Brilliant green solution. Mix well before dispensing in the sterile tubes to disperse Calcium carbonate uniformly.

Note: Due to presence of Calcium carbonate the prepared medium forms opalescent solution with white precipitate.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Colour and Clarity

With added brilliant green and iodine solution - Light green coloured opalescent solution forms with heavy white precipitate

Cultural Response

DM 1876S: Cultural characteristics observed, when subcultured on Soyabean Casein digest Agar, after an incubation at 43°C for 18-24 hours

with added iodine and brilliant green solution.

Cultural Response

Organism	Inoculum (CFU)	Recovery
Cultural Response		
Salmonella Typhimurium *ATCC 14028*	50-100	excellent
Salmonella Enteritidis *ATCC 13076*	50-100	excellent
Salmonella Paratyphi A	50-100	excellent
Salmonella Paratyphi B	50-100	excellent
Salmonella Typhi *ATCC 6539*	>=10^3	inhibited
Escherichia coli ATCC 25922	50-100	none-poor
Proteus vulgaris ATCC 13315	50-100	none-poor
Shigella flexneri ATCC 12022	>=10^3	inhibited

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use the freshly prepared medium. Use before expiry date on the label.
Prepared Media: 2-8° in sealable plastic bags for 2-5 days.

Further Reading

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4. Kauffmann, F. 1930. Ein kombiniertes anreicherungsverfahren fur typhus und-paratyphusbacillen. Zentralb. Bakteriol. Parasitenke. Infektionskr. Hyg. Abr. I orig. 113:148.
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6. Jones, F. T., R. C. Axtell, D. V. Rives, S. E. Scheideler, F. R. Tarver, Jr., R. L. Walker, and M. J. Wineland. 1991. A survey of Salmonella contamination in modern broiler production. J. Food Prot. 54:502-507.
7. Eckner, K. F., W. A. Dustman, M. S. Curiale, R. S. Flowers, and B. J. Robison. 1994. Elevated-temperature, colorimetric, monoclonal, enzyme linked immunosorbent assay for rapid screening of Salmonella in foods; collaborative study. J. Assoc. Off. Anal Chem. 77:374-383.
8. Knox, R., P. H. Gell, and M. R. Pollack. 1942. Selective media for organisms of the Salmonella group. J. Pathol. Bacteriol. 54:469-483.
9. International Organization for Standardization (ISO). 1974. ISO/DIS 3565. Geneva, Switzerland.

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