



## Kauffman Muller's Tetrathionate Broth Base

M876S

Kauffman Muller's Tetrathionate Broth Base is recommended 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
Ox bile	10.000

\*\*Formula adjusted, standardized to suit performance parameters

### Directions

Suspend 132.5 grams in 1000 ml distilled water. Heat just to boiling to dissolve 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.

### Principle And Interpretation

*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). This medium 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.

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 suppresses coliform bacteria and inhibits 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 maintains 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* from meat and meat products and from poultry and poultry products. Muller Kauffmann Tetrathionate Broth Base conforms with ISO Standards (9).

### Quality Control

#### Appearance

Cream to yellow homogeneous free flowing powder

#### Colour and Clarity of prepared medium

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

#### Cultural Response

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
<b>Cultural Response</b>		
<i>Salmonella</i> Typhimurium ATCC 14028	50-100	excellent
<i>Salmonella</i> Enteritidis ATCC 13076	50-100	excellent
<i>Salmonella</i> Paratyphi A	50-100	excellent
<i>Salmonella</i> Paratyphi B	50-100	excellent
<i>Salmonella</i> Typhi ATCC 6539	$\geq 10^3$	inhibited
<i>Escherichia coli</i> ATCC 25922	50-100	none-poor
<i>Proteus vulgaris</i> ATCC 13315	50-100	none-poor
<i>Shigella flexneri</i> ATCC 12022	50-100	Good

### Storage and Shelf Life

Store below 30°C in tightly closed container and use the freshly prepared medium. Use before expiry date on the label.

### Reference

- Murray, P. R., E. J. Baron, M. A. Pfaller, F. C. Tenover, and R. H. Tenover (eds.). 1995. Manual of clinical microbiology, 6th ed. American Society for Microbiology, Washington, D.C.
- Hartman, P. A., and S. A. Minnich. 1981. Automation for rapid identification of salmonellae in foods. J. Food Prot. 44:385-386.
- Muller, L. 1923. Un Nouveau milieu d'enrichissement pour la recherche du bacille typhique et des paratyphiques. C. R. Soc. Bio. 89:434. Paris.
- Kauffmann, F. 1930. Ein kombiniertes anreicherungsverfahren fur typhus und-paratyphusbacillen. Zentralb. Bakteriol. Parasitenke. Infektionskr. Hyg. Abr. I orig. 113:148.
- Kauffman, F. 1935. Weitere Erfahrungen mit den kombinierten Anreicherungsverfahren fur Salmonella bacillen. Z. Hyg. Infektionskr. 117:26.
- 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.
- 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.
- Knox, R., P. H. Gell, and M. R. Pollack. 1942. Selective media for organisms of the Salmonella group. J. Pathol. Bacteriol. 54:469-483.
- International Organization for Standardization (ISO). 1974. ISO/DIS 3565. Geneva, Switzerland.

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