

Tetrathionate Broth Base acc. to MULLER-KAUFFMANN

For the selective enrichment of salmonellae from various materials, particularly meat, meat products and other foodstuffs.

This culture medium complies with the recommendations of the DIN Norm 10160 for the examination of meat and the DIN Norm 10181 for the examination of milk.

Mode of Action

Tetrathionate is produced from thiosulfate by adding iodine to the culture medium. Tetrathionate suppresses the growth of coliform and other enteric bacteria. Salmonella, Proteus and some other species of bacteria can reduce tetrathionate and are not inhibited. Calcium carbonate buffers the sulphuric acid, which is liberated when tetrathionate is reduced. Bile promotes the growth of Salmonella, but largely inhibits the accompanying bacteria. Brilliant green suppresses primarily Gram-positive bacteria.

Typical Composition (g/litre)

Meat extract 0.9; peptone from meat 4.5; yeast extract 1.8; sodium chloride 4.5; calcium carbonate 25.0; sodium thiosulfate 40.7; oc bile 4.75.

Also to be added:

Potassium iodide 5.0; iodine 4.0; brilliant green 0.01.

Preparation

Suspend 82g/litre, heat briefly to the boil and cool rapidly. A sediment of calcium carbonate appears in the turbid broth at the bottom of the tubes.

■ Do not autoclave.

Prior to use add iodine/potassium iodide solution (20mg/litre) and a 0.1 % solution of brilliant green (10ml/litre), dispense into test tubes taking care to suspend any precipitate evenly. Avoid further heating.

pH: 7.6 ± 0.2 at 25 °C.

Preparation of the iodine/potassium iodide solution: Potassium iodide 5g; iodine 4g; distilled water 20ml.

■ The ready-to-use broth should be prepared and used the same day.

The medium is turbid and green with a white sediment (calcium carbonate).

Experimental Procedure and Evaluation

Directly suspend approximately 10g of sample material in 100 ml Tetrathionate Broth acc. to MULLER-KAUFFMANN.

Incubation: 18-24 hours at 35-37 °C or 43 °C respectively (BÄNFFER 1971, EDEL and KAMPELMACHER 1969).

The resulting cultures should be subjected to further tests.

Literature

BÄNFFER, J.R.: Comparison of the isolation of Salmonellae from human faeces by enrichment at 37 °C and 43 °C. - *Zbl. Bakt. I. Orig.*, **217**; 35-40 (1971).

DIN Deutsches Institut für Normung e.V.: Untersuchung von Fleisch und Fleischerzeugnissen. Nachweis von Salmonellen. Referenzverfahren. - **DIN 10160**

DIN Deutsches Institut für Normung e.V.: Mikrobiologische Milchuntersuchung. Nachweis von Salmonellen. Referenzverfahren. - **DIN 10181**.

EDEL, W., a. KAMPELMACHER, E.H.: Salmonella isolation in nine European laboratories using a standardized technique. - *Bull. Wld. Hlth. Org.*, **41**; 297-306 (1969).

KAUFFMANN, F.: Ein kombiniertes Anreicherungsverfahren für Typhus- und Paratyphusbazillen. - *Zbl. Bakt. I. Orig.*, **119**; 148-152 (1930).

KAUFFMANN, F.: Weitere Erfahrungen mit dem kombinierten Anreicherungsverfahren für Salmonellenbacillen. - *Z. Hyg. Infekt.-Krk.*, **117**; 26-32 (1935).

MULLER, L.: Un nouveau milieu d'enrichissement pour la recherche du bacille typhique et des paratyphiques. - *Comp. rend. Soc. biol.*, **89**; 434-437 (1923).

Ordering Information

Product	Merck Cat. No.	Pack size
Tetrathionate Broth Base acc. to MULLER-KAUFFMANN	1.10863.0500	500 g
Brilliant green (C.I. 42040)	1.01310.0050	50 g
Iodine resublimed	1.04761.0100	100 g
Potassium iodide	1.05043.0250	250 g

Quality control

Test strains	Inoculum	Growth after 24 hours
Escherichia coli ATCC 25922	approx. 99 %	≤ 5 %
Salmonella typhimurium ATCC 14028	approx. 1 %	≥ 95 %