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# TETRATHIONATE BROTH and IODINE for TETRATHIONATE

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## INTENDED USE

Remel Tetrathionate Broth, when supplemented with Iodine for Tetrathionate, is a liquid medium recommended for use in qualitative procedures as a selective enrichment medium for the isolation of *Salmonella* from fecal specimens.

## SUMMARY AND EXPLANATION

Tetrathionate Broth was originally described by Mueller for cultivation of *Salmonella* spp.<sup>1</sup> Mueller demonstrated coliforms were inhibited in the medium while certain enteric gram-negative bacilli, such as *Salmonella* spp., grew very well. Kauffmann used a modification of Mueller's formula and reported an increase in the recovery rate of *Salmonella* spp.<sup>2,3</sup> Tetrathionate Broth, supplemented with Iodine for Tetrathionate, is recommended for isolation of *Salmonella* spp. from contaminated clinical specimens.<sup>4,5</sup>

## PRINCIPLE

Casein and meat peptones supply nitrogen, amino acids, and peptides necessary for bacterial growth. Tetrathionate is formed by the addition of a solution containing iodine and iodide. Organisms capable of reducing tetrathionate, such as *Salmonella*, flourish in the medium while other fecal organisms are inhibited. Bile salts and sodium thiosulfate are selective agents which inhibit gram-positive organisms and some enteric gram-negative bacilli.

## REAGENTS (CLASSICAL FORMULA)\*

### Tetrathionate Broth:

Sodium Thiosulfate .....	30.0 g	Meat Peptone .....	2.5 g
Calcium Carbonate .....	10.0 g	Bile Salts .....	1.0 g
Casein Peptone.....	2.5 g	Demineralized Water.....	1000.0 ml

pH 8.4 ± 0.2 @ 25°C

### Iodine for Tetrathionate:

Iodine Crystals .....	6.0 g	Potassium Iodide.....	5.0 g
		Demineralized Water .....	20.0 ml

\*Adjusted as required to meet performance standards.

## PRECAUTIONS

**\*Warning! Iodine for Tetrathionate** causes irritation and possible burns by all routes of exposure. May cause allergic skin reaction. May be harmful if swallowed or absorbed through the skin. This substance has caused adverse reproduction and fetal effects in animals.

\*Warning pertains to Iodine for Tetrathionate **only**.

## PROCEDURE

1. Immediately before inoculation, add 0.2 ml of Iodine for Tetrathionate (REF R21228) to each tube of Tetrathionate Broth (10 ml). Mix well.
2. Inoculate Tetrathionate Broth with 1-2 grams of stool specimen and emulsify well. If specimen is received on a swab, insert the swab directly into the broth.
3. Incubate the tube aerobically at 33-37°C for 18-24 hours.
4. Observe for growth (turbidity or cloudiness).
5. Following incubation, subculture to selective and differential enteric plated media and streak for isolation.
6. Incubate plated media aerobically at 33-37°C for 18-24 hours and examine for typical colonies.

## QUALITY CONTROL

All lot numbers of Tetrathionate Broth and Iodine for Tetrathionate have been tested using the following quality control organisms and have been found to be acceptable. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

### CONTROL

*Salmonella enterica* serovar Typhimurium ATCC® 14028  
*Escherichia coli* ATCC® 25922

### INCUBATION

Aerobic, up to 24 h @ 33-37°C  
Aerobic, up to 24 h @ 33-37°C

### RESULTS

Growth recovered on subculture  
Inhibition (partial to complete)

## LIMITATIONS

1. **Do not add** Iodine for Tetrathionate to tubes until **just before** inoculating with specimen.
2. This medium is not recommended for growth of *Salmonella enterica* serovars: Typhi, Paratyphi, Sendai, Pullorum, and Gallinarium.<sup>5</sup>

## BIBLIOGRAPHY

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Refer to the front of Remel *Technical Manual of Microbiological Media* for **General Information** regarding precautions, product storage and deterioration, specimen collection, storage and transportation, materials required, quality control, and limitations.

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