# Tetrathionate Broth Base (NCM0092)

## Intended Use
Tetrathionate Broth Base is used with iodine for the recovery of *Salmonella* spp in a laboratory setting. Tetrathionate Broth Base is not intended for use in the diagnosis of disease or other conditions in humans.

## Description
Tetrathionate Broth Base is used as a selective enrichment for the cultivation of *Salmonella* spp.. *Salmonella* organisms may be injured in food-processing procedures, which include exposure to low temperatures, sub-marginal heat, drying, radiation, preservative, and sanitizers.

Mueller demonstrated the effectiveness of Tetrathionate Broth for enriching typhoid and paratyphoid bacilli while inhibiting coliform organisms. Using modified Mueller's broth, Kauffmann increased the number of positive isolates. Tetrathionate Broth was used in studies for the poultry industry and in a collaborative study for rapid screening of *Salmonella* in food. Tetrathionate Broth Base, abbreviated as TT Broth Base, is specified in standard methods for *Salmonella* testing. The FDA, Bacteriological Analytical Manual incorporate Tetrathionate Broth Base as a pre-enrichment medium for detecting *Salmonella* in food materials.

## Typical Formulation
| | |
|---|---|
| Enzymatic Digest of Casein | 2.5 g/L |
| Enzymatic Digest of Animal Tissue | 2.5 g/L |
| Bile Salts | 1.0 g/L |
| Calcium Carbonate | 10.0 g/L |
| Sodium Thiosulfate | 30.0 g/L |

pH: 8.4 ± 0.2 at 25°C
Formula may be adjusted and/or supplemented as required to meet performance specifications.

## Supplement
Iodine-Potassium Iodide Solution
Composition per 20.0 mL

| | |
|---|---|
| Potassium Iodide | 5.0g |
| Iodine | 6.0g |

## Precaution
1. Refer to SDS

## Preparation
1. Dissolve 46 g of the medium in one liter of purified water.
2. Heat with frequent agitation and boil for one minutes to completely dissolve the medium.
3. Cool to 45-50°C and add 20 mL of the Iodine-Potassium Iodide Solution to the prepared Tetrathionate Broth Base. If preparing solution, add 6 grams Iodine + 5 grams Potassium Iodide in 20 mL of purified water.
4. DO NOT REHEAT AFTER ADDING IODINE SOLUTION.
   Note: Do not add Iodine/Potassium Iodide Solution to tubes until just before inoculation. Chemical Tetrathionate inhibits by oxidation of Thiosulfate through the addition of Iodine just prior to use.

## Test Procedure
For a complete discussion of the isolation and identification of *Salmonella*, refer to appropriate references.

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## Quality Control Specifications

**Dehydrated Appearance:** Powder is homogeneous, free flowing, and white to off-white.

**Prepared Appearance:** Prepared medium is milky white to slightly yellow-white and opaque.

**Expected Cultural Response:** Cultural response after enrichment in Tetrathionate Broth Base (with the Iodine/Iodide solution) following incubation aerobically at 35 ± 2°C and 43 ± 0.2°C and sub-cultured to MacConkey Agar or Tryptic Soy Agar for *Enterococcus faecalis*. Subcultures were incubated aerobically at 35 ± 2°C and examined for growth after 18 - 24 hours.

| Microorganism | Approx. Inoculum (CFU) | Expected Results |
|---|---|---|
| *Escherichia coli* ATCC® 25922 | > 1000 | Complete Inhibition |
| *Salmonella arizonae* ATCC® 13314 | 10 – 100 | Growth |
| *Salmonella typhimurium* ATCC® 14028 | 10 – 100 | Growth |
| *Salmonella enterica* ATCC® 13076 | 10 – 100 | Growth |
| *Shigella flexneri* ATCC® 12022 | > 1000 | Complete Inhibition |
| *Enterococcus faecalis* ATCC® 29212 | > 1000 | < 10 cfu, Satisfactory Inhibition |

The organisms listed are the minimum that should be used for quality control testing.

## Results

Refer to appropriate references for results.

## Expiration

Refer to expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

## Limitation of the Procedure

Due to nutritional variation, some strains may grow poorly or fail to grow on this medium.

## Storage

Dehydrated culture media: Store sealed bottle containing the dehydrated medium at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

## References


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