TETRATHIONATE BROTH BASE (7241)

**Intended Use**
Tetrathionate Broth Base is used with iodine for the recovery of *Salmonella* spp.

**Product Summary and Explanation**
Tetrathionate Broth Base is used as a selective enrichment for the cultivation of *Salmonella* spp. that may be present in small numbers and compete with intestinal flora. *Salmonella* organisms may also be injured in food-processing procedures, which include exposure to low temperatures, sub-marginal heat, drying, radiation, preservative, and sanitizers. *Salmonella* spp. cause many types of infections, from mild self-limiting gastroenteritis to life-threatening typhoid fever.

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. Tetrathionate Broth Base is used in processing fecal cultures for bacteria.

**Principles of the Procedure**
Enzymatic Digest of Casein and Enzymatic Digest of Animal Tissue provides nitrogen, carbon, vitamins, and amino acids in Tetrathionate Broth Base. Selectivity is accomplished by the combination of Sodium Thiosulfate and tetrathionate, which suppresses commensal intestinal organisms. Tetrathionate is formed in the medium upon addition of the iodine and potassium iodide solution. Organisms containing the enzyme tetrathionate reductase will proliferate in the medium. Bile Salts, a selective agent, suppresses coliform bacteria and inhibits Gram-positive organisms. Calcium Carbonate neutralizes and absorbs toxic metabolites.

**Formula / Liter**
- Enzymatic Digest of Casein ...................................................2.5 g
- Enzymatic Digest of Animal Tissue ........................................2.5 g
- Bile Salts ...............................................................................1 g
- Calcium Carbonate ..............................................................10 g
- Sodium Thiosulfate .............................................................30 g
- Final pH: 8.4 ± 0.2 at 25°C

Formula may be adjusted and/or supplemented as required to meet performance specifications.

**Precautions**
1. For Laboratory Use.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

**Directions**
1. Dissolve 46 g of the medium in one liter of purified water.
2. Heat with frequent agitation to boiling.
3. Cool to 45°C and add 20 mL of an iodine-iodide solution (6 grams iodine + 5 grams potassium iodide in 20 mL of purified water). DO NOT REHEAT AFTER ADDING IODINE.

**Quality Control Specifications**
**Dehydrated Appearance:** Powder is homogeneous, free flowing, and white.

**Prepared Appearance:** Prepared medium is milky white and opaque.
Expected Cultural Response: Cultural response after enrichment in Tetrathionate Broth Base (with the iodine solution) and subcultured to MacConkey Agar at 35°C after 18 - 24 hours incubation.

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Escherichia coli</em> ATCC® 25922</td>
<td>inhibited</td>
</tr>
<tr>
<td><em>Salmonella arizonae</em> ATCC® 13314</td>
<td>good growth</td>
</tr>
<tr>
<td><em>Salmonella typhimurium</em> ATCC® 14028</td>
<td>good growth</td>
</tr>
<tr>
<td><em>Shigella flexneri</em> ATCC® 12022</td>
<td>inhibited</td>
</tr>
</tbody>
</table>

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

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

Results
Refer to appropriate references for results.

Storage
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.

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.

Packaging
*Tetrathionate Broth Base*  
Code No.  
7241A 500 g  
7241B 2 kg  
7241C 10 kg

References

Technical Information
Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (517)372-9200 or fax us at (517)372-2006.