SELENITE CYSTINE BROTH (7283)

**Intended Use**

Selenite Cystine Broth is used for the selective enrichment of *Salmonella* species.

**Product Summary and Explanation**

The growth and isolation of *Salmonella* in food and other samples can be suppressed from food-processing procedures including exposure to low and or high temperatures, drying, radiation, preservatives, and sanitizers. Along with the harsh processing procedures, *Salmonella* organisms may be competing with other bacteria in the same sample. Primary and secondary (selective) enrichment media are used to nurture any injured or stressed cells, along with inhibiting nuisance organisms. *Salmonella* spp. cause many types of infections, from mild self-limiting gastroenteritis to life-threatening typhid fever.

Selenite Cystine Broth is based upon the formula of Selenite Broth described by Leifson, with the addition of cystine. The Food and Drug Administration proposed Selenite Cystine Broth as an enrichment medium for detecting *Salmonella* in food materials. Selenite Cystine Broth is recommended by AOAC, USP, and APHA as a selective enrichment medium for *Salmonella* spp., while inhibiting the growth of other Gram-negative bacilli.

**Principles of the Procedure**

Enzymatic Digest of Casein and Enzymatic Digest of Animal Tissue are used as nitrogen and vitamin sources in Selenite Cystine Broth. Lactose is the carbohydrate and Disodium Phosphate is the buffer. Sodium Selenite is the selective agent against Gram-positive bacteria and most enteric Gram-negative bacilli. L-Cystine is a reducing agent.

**Formula/Liter**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enzymatic Digest of Casein</td>
<td>2.5 g</td>
</tr>
<tr>
<td>Enzymatic Digest of Animal Tissue</td>
<td>2.5 g</td>
</tr>
<tr>
<td>Lactose</td>
<td>4 g</td>
</tr>
<tr>
<td>Sodium Phosphate</td>
<td>10 g</td>
</tr>
<tr>
<td>Sodium Selenite</td>
<td>4 g</td>
</tr>
<tr>
<td>L-Cystine</td>
<td>0.01 g</td>
</tr>
</tbody>
</table>

Final pH: 7.0 ± 0.2 at 25°C

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

**Precautions**

1. For Laboratory Use.
2. Toxic. Harmful by inhalation and if swallowed. Irritating to eyes, respiratory system, and skin.

**Directions**

1. Dissolve 23 g of the medium in one liter of purified water.
2. Heat to boiling to completely dissolve the medium.
3. **DO NOT AUTOCLAVE**. Use immediately.

**Quality Control Specifications**

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

**Prepared Appearance:** Prepared medium is clear, very pale yellow with no or very slight precipitate.
Expected Cultural Response: Cultural response is exhibited on MacConkey Agar after enrichment in Selenite Cystine Broth at 35°C for 24 - 48 hours.

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Response</th>
<th>Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escherichia coli ATCC® 11775</td>
<td>partial to complete inhibition</td>
<td>pink with bile precipitate (if recovered)</td>
</tr>
<tr>
<td>Escherichia coli ATCC® 25922</td>
<td>partial to complete inhibition</td>
<td>pink with bile precipitate (if recovered)</td>
</tr>
<tr>
<td>Salmonella typhi ATCC® 19430</td>
<td>good growth</td>
<td>colorless colony</td>
</tr>
<tr>
<td>Salmonella typhimurium ATCC® 14028</td>
<td>good growth</td>
<td>colorless colony</td>
</tr>
<tr>
<td>Shigella sonnei ATCC® 25931</td>
<td>fair to good growth</td>
<td>colorless colony</td>
</tr>
</tbody>
</table>

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

Test Procedure
1. Prepare food sample following the recommended procedure.
2. Inoculate into recommended pre-enrichment broth.
3. Transfer 1 mL of mixture to 10 mL Selenite Cystine Broth and to 10 mL Tetrathionate Broth.
4. Incubate at 35°C for 24 ± 2 hours.
5. Mix and streak 3 mm loopful (10 µL) of sample from both broths onto Bismuth Sulfite Agar, Xylose Lysine Desoxycholate Agar, Hektoen Enteric Agar or MacConkey Agar.
6. Examine plates for the presence of colonies that are typical for Salmonella spp.

Results
Refer to references for the characteristic growth of Salmonella spp. on appropriate media formulations.

Storage
Store sealed container 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.

Limitation of the Procedure
Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.

Packaging
<table>
<thead>
<tr>
<th>Selenite Cystine Broth</th>
<th>Code No.</th>
<th>500 g</th>
<th>2 kg</th>
<th>10 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7283A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7283B</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>7283C</td>
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</tbody>
</table>

References

Technical Information
Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (410)780-5120 or fax us at (410)780-5470.