**Shigella Broth**

**Intended Use**
Shigella Broth is a selective enrichment broth for the isolation of *Shigella* species from food.

**Summary and Explanation**
*Shigella* was first recognized as the etiologic agent of bacillary dysentery or shigellosis in the 1890s.1 Humans are the only natural reservoir. No natural food products harbor endogenous *Shigella* species, but a wide variety of foods may be contaminated.1

**User Quality Control**

**Identity Specifications**

| Dehydrated Appearance: | Off-white to light tan, free-flowing, may appear moist, free of extraneous material. |
| Solution: | 3.1% solution, soluble in purified water. Solution is pale to light amber, clear to slightly opalescent. |
| Prepared Appearance: | Pale to light amber, clear to slightly opalescent. |
| Reaction of 3.1% Solution at 25°C: | pH 7.0 ± 0.2 |

**Cultural Response**

Prepare the medium per label directions. Inoculate and incubate under anaerobic conditions at 40-44°C for 18-24 hours.

<table>
<thead>
<tr>
<th>ORGANISM</th>
<th>ATCC</th>
<th>INOCULUM CFU</th>
<th>RECOVERY</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Escherichia coli</em></td>
<td>25922</td>
<td>100</td>
<td>Good</td>
</tr>
<tr>
<td><em>Shigella flexneri</em></td>
<td>12022</td>
<td>100</td>
<td>Good</td>
</tr>
<tr>
<td><em>Shigella sonnei</em></td>
<td>25931</td>
<td>100</td>
<td>Good</td>
</tr>
</tbody>
</table>

**Formula**

*Difco™ Shigella Broth*

Approximate Formula* Per Liter

- Tryptone .......................................... 20.0 g
- Dipotassium Phosphate ............................ 2.0 g
- Monopotassium Phosphate ........................ 2.0 g
- Sodium Chloride ................................... 5.0 g
- Glucose ........................................... 1.0 g
- Polysorbate 80 ..................................... 1.5 g

*Adjusted and/or supplemented as required to meet performance criteria

**Directions for Preparation from Dehydrated Product**

1. Dissolve 31.5 g of the powder in 1 L of purified water. Mix thoroughly.
2. Autoclave at 121°C for 15 minutes. Cool to 45-50°C.
3. Prepare novobiocin solution by weighing 50 mg of novobiocin into 1 L of purified water. Sterilize by filtration using a 0.45μ filter.
4. Add 2.5 mL of sterile novobiocin solution from Step 3 to 225 mL of Shigella Broth.
5. Test samples of the finished product for performance using stable, typical control cultures.

**Procedure**

For food samples, follow appropriate standard methods for details on sample collection and preparation according to sample type and geographic location.2,4

Consult appropriate standard references for details on test methods using *Shigella* Broth.1,6

**Expected Results**

Growth is evident by the appearance of turbidity.

Shigellosis can manifest itself as a waterborne or a foodborne disease. It is usually spread among people by food handlers with poor personal hygiene. Foods most often incriminated in the transmission of the disease have been potato salad, shellfish, raw vegetables and Mexican food.2

The infectivity dose is extremely low. As few as ten *S. dysenteriae* bacilli can cause clinical disease, whereas 100-200 bacilli are needed for *S. sonnei* or *S. flexneri* infection.1 One possible reason for this low-dose response may be that virulent *Shigellae* can withstand the low pH of gastric juice.1

*Shigella* species are gram-negative, nonmotile, facultatively anaerobic, non-sporeforming rods. They utilize glucose and other carbohydrates, producing acid but not gas. They do not decarboxylate lysine or ferment lactose. *Shigella* organisms may be difficult to distinguish biochemically from *E. coli*. The genus *Shigella* consists of four species: *S. dysenteriae*, *S. flexneri*, *S. boydii* and *S. sonnei*.

Common contaminating bacteria found in food sources could mask the presence of any *Shigella* that could be present in the sample. Identification of *Shigella* is based on successful isolation of the organism, biochemical characterization and serological confirmation.

*Shigella* Broth is based on the formula developed by Mehlman, Romero and Wentz.2 Selectivity of the medium is achieved by the addition of novobiocin to the completed medium. *Shigella* Broth is recommended in standard test methods for use as a selective enrichment when isolating *Shigella* sp. from food samples.1,6
References

Availability
Difco™ Shigella Broth

BAM  CCAM  COMPF  ISO

Cat. No.  214915  Dehydrated – 500 g