Feeley Gorman Broth (F.G. Broth)  

Feeley Gorman Broth is recommended for the cultivation of *Legionella* species.

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casein acid hydrolysate</td>
<td>17.500</td>
</tr>
<tr>
<td>Beef extract</td>
<td>3.000</td>
</tr>
<tr>
<td>Starch</td>
<td>1.500</td>
</tr>
<tr>
<td>L-Cysteine hydrochloride</td>
<td>0.400</td>
</tr>
<tr>
<td>Ferric pyrophosphate, soluble</td>
<td>0.250</td>
</tr>
<tr>
<td>Final pH (at 25°C)</td>
<td>6.9±0.2</td>
</tr>
</tbody>
</table>

**Formula adjusted, standardized to suit performance parameters**

**Directions**

Suspend 22.65 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C. Mix well and dispense into sterile tubes.

**Principle And Interpretation**

Feeley et al formulated (1, 2) this medium, which is used as nonselective enrichment medium for isolation of *Legionella* species. *Legionella* is a gram-negative bacterium, including species that cause legionellosis or Legionnaires' disease, most notably *L. pneumophilia* (3). *Legionella* species are the causative agent of the human Legionnaires' disease and the lesser form, Pontiac fever. *Legionella* transmission occurs via aerosols—inhaling mist droplets containing the bacteria. Common sources include cooling towers, domestic hot-water systems, fountains, and similar disseminators that tap into a public water supply. Natural sources of *Legionella* include freshwater ponds and creeks. Person-to-person transmission of *Legionella* has not been demonstrated (4).

*Legionella* are nutritionally fastidious and require L-cysteine and iron salts for their growth, which are provided in the medium. *Legionella* species are highly pathogenic microorganisms. Certain safety precautions must be taken when handling *Legionella* cultures.

Casein acid hydrolysate, beef extract, L-cysteine hydrochloride and ferric pyrophosphate act as sources of nutrients. Incubation should be carried out in the presence of 2.5% carbon dioxide but if it exceeds the limit, *Legionella* growth is inhibited due to formation of acidic condition. *Legionella* species can be identified by their characteristic fluorescence in presence of UV light (5,6).

Safety Precautions for handling specimens and cultures.

Use bacteriological safety hood (Biosafety cabinet).

Wear gown, mask and gloves.

Decontaminate work surface with either 5% hypochlorite or 5% phenol.

Autoclave all materials before discarding or cleaning.

Since *Legionella* disease is primarily a pulmonary infection, prevention and containment of aerosols is essential (7).

**Quality Control**

**Appearance**

Cream to yellow homogeneous free flowing powder

**Colour and Clarity of prepared medium**

Yellow coloured, clear to slightly opalescent solution in tubes

**Reaction**
Reaction of 2.3% w/v aqueous solution at 25°C. pH: 6.9±0.2

**pH**
6.70-7.10

**Cultural Response**

M812: Cultural characteristics observed in presence of 2.5% Carbon dioxide (CO₂) after an incubation at 35-37°C for 4 days.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Growth</th>
<th>Fluorescence under 366 nm</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Legionella bozemanni</em> ATCC 33217</td>
<td>good-luxuriant</td>
<td>blue-white</td>
</tr>
<tr>
<td><em>Legionella micdadei</em> ATCC 33218</td>
<td>good-luxuriant</td>
<td>none</td>
</tr>
<tr>
<td><em>Legionella pneumophila</em> ATCC 33153</td>
<td>good-luxuriant</td>
<td>bright yellow</td>
</tr>
</tbody>
</table>

**Storage and Shelf Life**

Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C away from light. Use before expiry date on the label.

**Reference**