McBride Listeria Agar Base

McBride Listeria Agar base is used for selective isolation and cultivation of \textit{Listeria monocytogenes} from foodstuffs, clinical samples.

\textbf{Composition**}

\begin{tabular}{|l|c|}
\hline
\textbf{Ingredients} & \textbf{Gms / Litre} \\
\hline
Tryptose & 10.000 \\
Beef extract & 3.000 \\
Sodium chloride & 5.000 \\
Glycine anhydride & 10.000 \\
Lithium chloride & 0.500 \\
Phenyl ethanol & 2.500 \\
Agar & 15.000 \\
Final pH (at 25°C) & 7.3±0.2 \\
\hline
\end{tabular}

**Formula adjusted, standardized to suit performance parameters

\textbf{Directions}

Suspend 46.00 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool below 50°C. Before gelling, aseptically add sterile defibrinated blood to a final concentration of 5% and add filter sterilized McBride Listeria Supplement (FD070). Mix well and pour into sterile Petri plates.

Warning: Lithium chloride is harmful. Avoid bodily contact and inhalation of vapours. On contact with skin, wash with plenty of water immediately.

\textbf{Principle And Interpretation}

The disease listeriosis is a frequent cause of abortions in cattle and sheep. In human, symptoms are manifested as septicemia, encephalitis and circulatory monocytosis (1). \textit{Listeria} multiplies over a wide range of temperatures, from 3°C to 45°C, and over a pH range of 5.0 to 9.6. It also survives in food products with pH levels outside these parameters (2). Because of these properties, \textit{Listeria} survives the various food processing techniques (3). McBride Listeria Agar (4), recommended by APHA (5) is used for isolating \textit{Listeria} from clinical specimens and foodstuffs including raw milk (6). This medium helps in the detection of low numbers of \textit{L. monocytogenes} present in food samples.

Tryptose and beef extract in the medium supply nitrogen, carbon, sulphur and trace nutrients required for the growth of \textit{Listeria}. Phenyl ethyl alcohol is bacteriostatic for gram-negative bacteria as it selectively inhibits DNA synthesis (7). Sodium chloride maintains the osmotic balance of the medium. Glycine inhibits certain gram-negative and gram-positive bacteria including \textit{Escherichia coli} and \textit{Enterococcus faecalis}, the common accompanying contaminants. Lithium chloride also has antibacterial activity. Further selectivity is achieved by the addition of McBride Listeria Supplement (FD070). The detection of \textit{L. monocytogenes} is greatly improved by pre-enrichment in liquid media either by one step or two steps. In one step method (8), infected material is inoculated directly in Listeria Selective Broth Base (M889), while in two steps method (9), infected material is inoculated in Listeria Enrichment Broth Base (UVM) (M890A) and incubated at refrigeration temperature of 4°C for few weeks (cold enrichment), as the organism has the ability to grow in low temperature. It is then inoculated in Fraser Secondary Enrichment Broth Base (M1083), followed by plating onto selective agar such as McBride Listeria Agar. The presumptive \textit{Listeria} colonies are selected under 45° transillumination. \textit{Listeria} colonies are dense white to iridescent white appearing as crushed glass. Small colonies tend to be blue, while non-Listeria show yellowish orange colonies that are further purified. McBride Listeria Agar can be used as a plating medium with or without supplementation of blood.

\textbf{Quality Control}

\textbf{Appearance}

Please refer disclaimer Overleaf.
Cream to yellow homogeneous free flowing powder

**Gelling**
Firm, comparable with 1.5% Agar gel

**Colour and Clarity of prepared medium**
Basal medium: Light amber coloured clear to very slightly opalescent gel. After addition of 5% v/v sterile blood: Cherry red opaque gel forms in Petri plates

**Reaction**
Reaction of 4.6% w/v aqueous solution at 25°C: pH: 7.3 ± 0.2

**pH**
7.10-7.50

**Cultural Response**
M386: Cultural characteristics observed in anaerobic atmosphere with added McBride Listeria Supplement (FD070) and 5% v/v sterile defibrinated blood, after an incubation at 35-37°C for 24-48 hours.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Inoculum (CFU)</th>
<th>Growth w/ FD070</th>
<th>Recovery w/ FD070</th>
<th>Growth w/ blood and FD070</th>
<th>Recovery w/ blood and FD070</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Listeria monocytogenes</em></td>
<td>50-100</td>
<td>good-luxuriant</td>
<td>&gt;=50%</td>
<td>good-luxuriant</td>
<td>&gt;=50%</td>
</tr>
<tr>
<td>ATCC 19112</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Escherichia coli ATCC</em></td>
<td>50-100</td>
<td>none-poor</td>
<td>&lt;=10%</td>
<td>none-poor</td>
<td>&lt;=10%</td>
</tr>
<tr>
<td>25922</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>50-100</td>
<td>none-poor</td>
<td>&lt;=10%</td>
<td>none-poor</td>
<td>&lt;=10%</td>
</tr>
<tr>
<td>ATCC 27853</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><em>Enterococcus faecalis ATCC</em></td>
<td>50-100</td>
<td>none-poor</td>
<td>&lt;=10%</td>
<td>none-poor</td>
<td>&lt;=10%</td>
</tr>
<tr>
<td>29212</td>
<td></td>
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</tbody>
</table>

**Storage and Shelf Life**
Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

**Reference**

Disclaimer:
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