Purple Broth Base

Purple Broth Base is recommended for the fermentation studies of *Listeria monocytogenes*.

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proteose peptone</td>
<td>10.000</td>
</tr>
<tr>
<td>Beef extract</td>
<td>1.000</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>5.000</td>
</tr>
<tr>
<td>Bromo cresol purple</td>
<td>0.020</td>
</tr>
<tr>
<td>Final pH (at 25°C)</td>
<td>6.8±0.2</td>
</tr>
</tbody>
</table>

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

**Directions**

Suspend 16.02 grams in 1000 ml distilled water. If desired, add 5-10 grams of the carbohydrate to be tested. Heat if necessary to dissolve the medium completely. Dispense in tubes containing inverted Durhams tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Alternatively, to 900 ml of sterile and cooled basal medium aseptically add 100 ml of sterile 5 - 10% solution (final concentration 0.5 to 1 %)

**Principle And Interpretation**

Purple Broth Base is used for studying carbohydrate fermentation reactions, particularly in the identification of gram-negative enteric bacteria on addition of the desired carbohydrate (1, 2). Purple media were originally formulated by Vera (3) and further modified by addition of beef extract (4). These media are recommended by FDA (5) for fermentation studies of sugars. Purple Broth Base (M284D) differs from Purple Broth Base (M284) with the addition of beef extract in the former.

Beef extract and peptone special or proteose peptone supply the essential nutrients especially nitrogen sources to the growing organisms. Sodium chloride maintains the osmotic balance of the medium. Bromocresol purple is the pH indicator, which turns yellow at acidic pH. Gas production is evident by its collection in Durham's tube. The acid produced during the fermentation of carbohydrate causes bromocresol purple, the pH indicator to turn yellow. If the carbohydrate is not utilized or fermented, the color of the medium remains unchanged or becomes more alkaline (darker purple) due to decarboxylation of the amino acids present in the medium.

The broth is inoculated with 18 to 24 hours old pure culture and incubated at 35 ± 2°C for 24 to 72 hours (upto 30 days if necessary) either in an aerobic or anaerobic atmosphere depending on the organism being tested. It is recommended (6) to add carbohydrate in 1% concentration to avoid possible reversion reactions except glucose (dextrose). If the medium containing carbohydrate is sterilized by autoclaving, precautions should be taken to use minimum amount of heat required for sterilization to avoid hydrolysis of the carbohydrate.

**Quality Control**

**Appearance**

Light yellow to light green homogeneous free flowing powder

**Colour and Clarity of prepared medium**

Purple coloured clear solution in tubes

**Reaction**

Reaction of 1.6% w/v aqueous solution at 25°C. pH : 6.8±0.2

**pH**

6.60-7.00

**Cultural Response**

M284D: Cultural characteristics observed after an incubation at 35-37°C for 18-48 hours with and without addition of 1% Dextrose
<table>
<thead>
<tr>
<th>Organism</th>
<th>Inoculum</th>
<th>Growth</th>
<th>Acid (without carbohydrate)</th>
<th>Gas (without carbohydrate)</th>
<th>Acid (with 1% dextrose)</th>
<th>Gas (with 1% dextrose)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli ATCC 25922</td>
<td>50-100</td>
<td>luxuriant</td>
<td>negative reaction, no colour change</td>
<td>negative reaction</td>
<td>positive reaction, yellow reaction colour</td>
<td>positive reaction</td>
</tr>
<tr>
<td>L. monocytogenes ATCC 19112</td>
<td>50-100</td>
<td>luxuriant</td>
<td>negative reaction, no colour change</td>
<td>negative reaction</td>
<td>positive reaction, yellow reaction colour</td>
<td>negative reaction</td>
</tr>
<tr>
<td>N. meningitidis ATCC 50-100</td>
<td>good-luxuriant</td>
<td>negative reaction, no colour change</td>
<td>negative reaction</td>
<td>positive reaction, yellow reaction colour (fermentative metabolism)</td>
<td>negative reaction</td>
<td></td>
</tr>
<tr>
<td>S. aureus ATCC 25923</td>
<td>50-100</td>
<td>luxuriant</td>
<td>negative reaction, no colour change</td>
<td>negative reaction</td>
<td>positive reaction, yellow reaction colour</td>
<td>negative reaction</td>
</tr>
</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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