Phenol Red Starch Broth

Phenol Red Starch Broth is used for starch fermentation studies of microorganisms.

**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>Starch</td>
<td>5.000</td>
</tr>
<tr>
<td>Phenol red</td>
<td>0.018</td>
</tr>
<tr>
<td>Final pH (at 25°C)</td>
<td>7.4±0.2</td>
</tr>
</tbody>
</table>

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

**Directions**

Suspend 21.02 grams in 1000 ml distilled water and mix well. Heat if necessary to ensure complete dissolution. Distribute in fermentation tubes (tubes containing inverted Durham's tubes). Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

**Principle And Interpretation**

Phenol Red Broth Medium is formulated as per Vera (2) and is recommended to determine the fermentation reaction of carbohydrates for the differentiation of microorganisms (3, 4, 5). Phenol Red Broth Medium with various carbohydrates serves as a differential medium by aiding in differentiation of various species and genera by their ability to ferment the specific carbohydrate, with the production of acid or acid and gas (6). Phenol Red Starch Broth is used to study starch fermentation in various bacteria.

Proteose peptone and beef extract serve as sources for carbon and nitrogen. Sodium chloride is the osmotic stabilizer. Phenol red is the pH indicator, which turns yellow at acidic pH i.e. on fermentation of starch. Gas formation is seen in Durhams tubes. All of the *Enterobacteriaceae* grow well in this medium. In addition to producing a pH colour shift, the production of mixed acids, notably butyric acids, often results in a pungent, foul odour from the culture medium (1).

**Quality Control**

**Appearance**
Light yellow to pink coloured homogeneous free flowing powder

**Colour and Clarity of prepared medium**
Red coloured clear solution without any precipitate

**Reaction**
Reaction of 2.1% w/v aqueous solution at 25°C. pH : 7.4±0.2

**pH**
7.20-7.60

**Cultural Response**
M1016: Cultural characteristics observed after an incubation at 35 - 37°C for 18 - 24 hours.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Growth</th>
<th>Acid</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Citrobacter freundii</em> ATCC 8090</td>
<td>luxuriant</td>
<td>Weak reaction</td>
<td>Positive reaction</td>
</tr>
<tr>
<td><em>Escherichia coli</em> ATCC 25922</td>
<td>luxuriant</td>
<td>Negative reaction, no colour change</td>
<td>Negative reaction</td>
</tr>
</tbody>
</table>
Enterobacter aerogenes ATCC 13048 luxuriant Positive reaction, yellow reaction colour

Klebsiella pneumoniae ATCC 13883 luxuriant Weak reaction Negative reaction

Proteus vulgaris ATCC 13315 Negative reaction, no colour change Negative reaction

Salmonella Typhi ATCC 6539 luxuriant Negative reaction, no colour change Negative reaction

Salmonella Typhimurium ATCC 14028 luxuriant Negative reaction, no colour change Negative reaction

Serratia marcescens ATCC 8100 luxuriant Negative reaction, no colour change Negative reaction

Shigella flexneri ATCC 12022 luxuriant Positive reaction, yellow reaction colour

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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