Urea Broth (Filter Sterilizable)

Urea Broth (Filter Sterilizable) is recommended for the identification of bacteria on the basis of urea utilization, specifically for the differentiation of *Proteus* species from *Salmonella* and *Shigella* species.

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monopotassium phosphate</td>
<td>9.100</td>
</tr>
<tr>
<td>Yeast extract</td>
<td>0.100</td>
</tr>
<tr>
<td>Dipotassium phosphate</td>
<td>9.500</td>
</tr>
<tr>
<td>Urea</td>
<td>20.000</td>
</tr>
<tr>
<td>Phenol red</td>
<td>0.010</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 38.7 grams in 1000 ml distilled water. Mix well and sterilize by filtration. DO NOT AUTOCLAVE OR HEAT the medium. Dispense in sterile tubes.

**Principle And Interpretation**

Urea Broth (Filter Sterilizable) was developed by Rustigian and Stuart (1). This medium is especially recommended for the differentiation of *Proteus* species from *Salmonella* and *Shigella* species in the enteric infection diagnosis (2), based on urea utilization (3, 4). Gram-negative enteric bacilli are unable to utilize urea because of less nutrients and high buffering capacity of the medium. Urea Broth becomes alkaline as the utilization of urea by the organisms liberates ammonia during the incubation, indicated by pink red colour. All urea test media rely on the alkalinity formation and so they are not specific for urease testing. The utilization of proteins may raise the pH to alkalinity due to protein hydrolysis and excess of amino acids results in false-positive reaction.

**Quality Control**

**Appearance**

Light yellow to light pink coloured homogeneous free flowing powder

**Colour and Clarity of prepared medium**

Yellow to orange coloured clear solution without any precipitate.

**Reaction**

Reaction of 3.87% w/v aqueous solution at 25°C. pH : 6.8±0.2

**pH**

6.60-7.00

**Cultural Response**

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

<table>
<thead>
<tr>
<th>Organism</th>
<th>Inoculum (CFU)</th>
<th>Urease</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Escherichia coli</em> ATCC 25922</td>
<td>50-100</td>
<td>Negative reaction, no change</td>
</tr>
<tr>
<td><em>Enterobacter aerogenes</em> ATCC 13048</td>
<td>50-100</td>
<td>Negative reaction, no change</td>
</tr>
</tbody>
</table>
### Klebsiella pneumoniae ATCC 13883
- Reaction: 50-100 Positive reaction, cerise colour

### Proteus mirabilis ATCC 12453
- Reaction: 50-100 Positive reaction, cerise colour

### Proteus vulgaris ATCC 13315
- Reaction: 50-100 Positive reaction, cerise colour

### Salmonella Typhimurium ATCC 14028
- Reaction: 50-100 Negative reaction, no change

## Storage and Shelf Life
Store dehydrated powder and the prepared medium at 2 - 8°C. Use before expiry date on the label.

## Reference

Revision : 1 / 2011