Nutrient Agar w/ Tyrosine

Nutrient Agar w/ Tyrosine is used for cultivation and enumeration of *Bacillus cereus* in water and food in accordance with FDA BAM, 1998.

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef extract</td>
<td>3.000</td>
</tr>
<tr>
<td>Peptone</td>
<td>5.000</td>
</tr>
<tr>
<td>Agar</td>
<td>15.000</td>
</tr>
<tr>
<td>Tyrosine</td>
<td>5.000</td>
</tr>
<tr>
<td>Final pH (at 25°C)</td>
<td>6.8±0.2</td>
</tr>
</tbody>
</table>

**Directions**

Suspend 28.00 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. Mix well and dispense 3.5 ml into sterile tubes with frequent mixing. Keep in slanted position and cool rapidly to prevent separation of tyrosine.

**Principle And Interpretation**

*Bacillus cereus* is an aerobic spore-forming bacterium that is commonly found in soil, on vegetables, and in many raw and processed foods. *B. cereus* food poisoning may occur when foods are prepared and held without adequate refrigeration for several hours before serving, with *B. cereus*. Foods incriminated in past outbreaks include cooked meat and vegetables, boiled or fried rice, vanilla sauce, custards, soups, and raw vegetable sprouts. Nutrient Agar w/ Tyrosine is used for cultivation and enumeration of *Bacillus cereus* in water and food in accordance with FDA BAM, 1998(1). The organism can be identified by its ability to hydrolyze tyrosine in the medium. Peptone and beef extract provide essential nutrients for the growth of the organism. Agar acts as the solidifying agent. Tyrosine is a source of amino acid which is hydrolyzed by *Bacillus* species.

Prepare 1:10 dilutions of 50 g of the sample in Butterfield’s phosphate-buffered dilution water (R094). Plate count of *B. cereus* can be done on MYP (M636F) agar plates from appropriate dilutions. *B. cereus* gives pink coloured colonies on MYP agar. Suspected colonies are subcultured into Nutrient agar (M561F). Inoculate entire surface of tyrosine agar slant with mm loopful of culture from Nutrient agar. Incubate slants 48 h at 35°C. Positive results are indicated by the zone of clearance in and around the bacterial growth, indicating hydrolysis. Examine negative slants for obvious signs of growth, and incubate for a total of 7 days before considering as negative(1). This media is used in the confirmation of other species of *Bacillus* such as *B. cereus*, *B. thuringiensis*, *B. mycoides*, *B. weihenstephanensis*, *B. anthracis* and *B. megaterium* and also for *Streptomyces* and *Nocardia* species (2,3).

**Quality Control**

**Appearance**

Cream to yellow homogeneous free flowing powder

**Gelling**

Firm, comparable with 1.5% Agar gel

**Colour and Clarity of Prepared medium**

Yellow coloured clear to slightly opalescent gel forms in slants (may shows some white particles after solidification)

**Reaction**

Reaction of 2.8% 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 48 hours up to 7 days.
## Organism and Cultural Response

<table>
<thead>
<tr>
<th>Organism</th>
<th>Growth</th>
<th>Tyrosine hydrolysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacillus cereus ATCC 10876</td>
<td>good-luxuriant</td>
<td>positive reaction, clearing of medium in and around the bacterial growth</td>
</tr>
<tr>
<td>Bacillus thuringiensis ATCC 10792</td>
<td>good-luxuriant</td>
<td>positive reaction, clearing of medium in and around the bacterial growth</td>
</tr>
<tr>
<td>Escherichia coli ATCC 25922</td>
<td>good</td>
<td>negative reaction, no clear zones</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


Revision: 1 / 2015