MUG Plate Count Agar

MUG Plate Count Agar is used for determination of plate count of microorganisms in milk and other dairy products by fluorogenic method.

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casein enzymic hydrolysate</td>
<td>5.000</td>
</tr>
<tr>
<td>Yeast extract</td>
<td>2.500</td>
</tr>
<tr>
<td>Dextrose</td>
<td>1.000</td>
</tr>
<tr>
<td>4-Methylumbelliferyl ß-D-Glucuronide (MUG)</td>
<td>0.100</td>
</tr>
<tr>
<td>Agar</td>
<td>15.000</td>
</tr>
<tr>
<td>Final pH (at 25°C)</td>
<td>7.0±0.2</td>
</tr>
</tbody>
</table>

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

**Directions**

Suspend 23.6 grams in 1000 ml distilled water. Heat gently to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Pour in sterile Petri plates.

**Principle And Interpretation**

Plate Count Agar is a general-purpose cultivation medium used for a wide variety of organisms and is recommended by APHA (1, 2, 3) and AOAC (4).

MUG Plate Count Agar, which is Plate Count Agar supplemented with MUG, is used for determining plate count of microorganisms in milk and other dairy products by fluorogenic method. The medium does not contain any inhibitor or pH indicator. It is used to determine the total microbial count of milk, dairy products (1), water (2) and other materials. Organism like *Escherichia coli* can be identified by the formation of fluorescent colonies visualized on exposure to UV light (366nm).

Casein enzymic hydrolysate, yeast extract provide nitrogenous compounds and vitamin B complex. Dextrose serves as energy source. MUG is cleaved by the enzyme beta-glucuronidase to release 4-methylumbelliferone, which produces a visible fluorescence under long wave UV light.

**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 Petri plates.

**Reaction**
Reaction of 2.36% w/v aqueous solution at 25°C. pH : 7.0±0.2

**pH**
6.80-7.20

**Cultural Response**
M1194: 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>Growth</th>
<th>Fluorescence (under UV)</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Escherichia coli</em></td>
<td>50-100</td>
<td>luxuriant</td>
<td>positive</td>
<td>&gt;=70%</td>
</tr>
<tr>
<td>ATCC25922</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>50-100</td>
<td>luxuriant</td>
<td>negative</td>
<td>&gt;=70%</td>
</tr>
<tr>
<td>ATCC 25923</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Bacillus subtilis ATCC 6633**  50-100  luxuriant  negative  >=70%
**Streptococcus pyogenes ATCC 19615**  50-100  luxuriant  negative  >=70%
**Enterococcus faecalis ATCC 50-100 29212**  luxuriant  negative  >=70%
**Lactobacillus casei ATCC 9595**  50-100  luxuriant  negative  >=70%

**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**

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