MacConkey Agar Medium

**Intended Use:**
MacConkey Agar Medium is used for isolation and differentiation of lactose fermenting and lactose non-fermenting enteric bacteria and also for isolation of faecal streptococci.

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptone</td>
<td>20,000</td>
</tr>
<tr>
<td>Bile salts</td>
<td>5,000</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>5,000</td>
</tr>
<tr>
<td>Lactose</td>
<td>10,000</td>
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<tr>
<td>Neutral red</td>
<td>0,070</td>
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<tr>
<td>Agar</td>
<td>15,300</td>
</tr>
<tr>
<td>Final pH (at 25°C)</td>
<td>7.4±0.2</td>
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</tbody>
</table>

**Directions**
Suspend 55.37 grams in 1000 ml purified/distilled water. Heat to boiling with gentle swirling to dissolve the agar completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Avoid overheating. Cool to 45-50°C and pour into sterile petri plates. The surface of the medium should be dry when inoculated.

**Principle And Interpretation**
MacConkey Agar Medium is the earliest selective and differential medium for cultivation of enteric microorganisms from a variety of clinical specimens (4,5). Subsequently MacConkey Agar is recommended for use in microbiological examination of foodstuffs (8) and for direct plating / inoculation of water samples for coliform counts (1). This medium is also accepted by the Standard Methods for the Examination of Milk and Dairy Products (6) and pharmaceutical preparations (9). Lactose fermenting strains grow as red or pink and may be surrounded by a zone of acid precipitated bile. The red colour is due to production of acid from lactose, absorption of neutral red and a subsequent colour change of the dye when the pH of medium falls below 6.8. Lactose non-fermenting strains, such as *Shigella* and *Salmonella* are colourless and transparent and typically do not alter appearance of the medium.

**Type of specimen**
Clinical samples - Blood, urine; Food and dairy samples; Water samples.

**Specimen Collection and Handling**
For clinical samples follow appropriate techniques for handling specimens as per established guidelines (2,3). For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (7,10). For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.(1) After use, contaminated materials must be sterilized by autoclaving before discarding.

**Warning and Precautions**
In Vitro diagnostic use. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets.

**Limitations**
1. Although this medium is selective for gram negative organisms, biochemical identification and serological testing using pure cultures is recommended for complete identification.
2. It is advised to incubate for recommended period and temperature to avoid misinterpretation of results.
3. It is advised to read the results immediately after incubation, as overgrowth of *Proteus* species may mask other colonies.

*Please refer disclaimer Overleaf.*
Performance and Evaluation
Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance
Light yellow to pink coloured homogeneous free flowing powder

Gelling
Firm, comparable with 1.53% Agar gel.

Colour and Clarity of prepared medium
Light red coloured clear to slightly opalescent gel forms in Petri plates.

Reaction
Reaction of 5.53% w/v aqueous solution at 25°C. pH : 7.4±0.2

pH
7.20-7.60

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

Organism | Inoculum (CFU) | Growth | Recovery | Colour of Colony
--- | --- | --- | --- | ---
# Klebsiella aerogenes ATCC 13048 (00175*) | 50-100 | luxuriant | >=50% | pink to red
Escherichia coli ATCC 25922 (00013*) | 50-100 | luxuriant | >=50% | pink to red w/ bile ppt
Proteus vulgaris ATCC 13315 | 50-100 | luxuriant | >=50% | colourless
Salmonella Typhi ATCC 6539 | 50-100 | luxuriant | >=50% | colourless
Salmonella Enteritidis ATCC 13076 (00030*) | 50-100 | luxuriant | >=50% | colourless
Shigella flexneri ATCC 12022 (00126*) | 50-100 | luxuriant | >=50% | colourless
Staphylococcus aureus subsp. aureus ATCC 25923 (00034*) | >=10⁴ | Inhibition | 0% |
Enterococcus faecalis ATCC 29212 (00087*) | 50-100 | fair to good | 30-40% | pale pink to red
Salmonella Paratyphi A ATCC 9150 | 50-100 | luxuriant | >=50% | colourless
Salmonella Paratyphi B ATCC 8759 | 50-100 | luxuriant | >=50% | colourless

Key : *Corresponding WDCM numbers
#- Formerly known as Enterobacter aerogenes.

Storage and Shelf Life
Store between 10-30°C in a tightly closed container and the prepared medium at 20-30°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition Seal the container tightly after use. Use before expiry date on the label. Product performance is best if used within stated expiry period.

Disposal
User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (2,3).
Reference


Revision : 04/ 2019

Disclaimer :
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