MacConkey Agar w/ 0.15% Bile salts, CV and NaCl Plate

Intended Use:
Recommended for the selective isolation and differentiation of coliform organisms and other enteric pathogens from clinical and non-clinical samples.

Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gelatin peptone</td>
<td>17.000</td>
</tr>
<tr>
<td>Tryptone</td>
<td>1.500</td>
</tr>
<tr>
<td>Peptone</td>
<td>1.500</td>
</tr>
<tr>
<td>Lactose</td>
<td>10.000</td>
</tr>
<tr>
<td>Bile salts</td>
<td>1.500</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>5.000</td>
</tr>
<tr>
<td>Neutral red</td>
<td>0.030</td>
</tr>
<tr>
<td>Crystal violet</td>
<td>0.001</td>
</tr>
<tr>
<td>Agar</td>
<td>15.000</td>
</tr>
<tr>
<td>Final pH (at 25°C)</td>
<td>7.1±0.2</td>
</tr>
</tbody>
</table>

**Formula adjusted, standardized to suit performance parameters

Directions
Either streak, inoculate or surface spread the test inoculum (50-100 CFU) aseptically on the plate.

Principle And Interpretation
MacConkey agars are slightly selective and differential plating media mainly used for the detection and isolation of gram-negative organisms from clinical (10), dairy (14), food (5,11), water (1), pharmaceutical (3,12) and industrial sources (15). It is also recommended for the selection and recovery of the Enterobacteriaceae and related enteric gram-negative bacilli. USP recommends this medium for use in the performance of Microbial Limit Tests (12).

These agar media are selective since the concentration of bile salts, which inhibit gram-positive microorganisms, is low in comparison with other enteric plating media. The medium M081, which corresponds with, that recommended by APHA can be used for the direct plating of water samples for coliform bacilli, for the examination of food samples for food poisoning organisms (11) and for the isolation of Salmonella and Shigella species in cheese (14). Other than that this medium is also used for count of coli-aerogenes bacteria in cattle and sheep faeces (9), the count of coli-aerogenes and non-lactose fermenters in poultry carcasses (9), bacterial counts on irradiated canned minced chicken (13) and the recognition of coli-aerogenes bacteria during investigations on the genus Aeromonas (4).

MacConkey Agar is the earliest selective and differential medium for cultivation of enteric microorganisms from a variety of clinical specimens (7,8). The original medium contains protein, bile salts, sodium chloride and two dyes. The selective action of this medium is attributed to crystal violet and bile salts, which are inhibitory to most species of gram-positive bacteria. Gram-negative bacteria usually grow well on the medium and are differentiated by their ability to ferment lactose. Lactose-fermenting strains grow as red or pink colonies 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, transparent and typically do not alter appearance of the medium.

Peptone, Tryptone and gelatin peptone are sources of nitrogen, carbon, long chain amino acids and other nutrients. Lactose is a fermentable carbohydrate, Sodium chloride maintains the osmotic equilibrium. Bile salts and crystal violet are selective agents that inhibit growth of gram-positive organisms. Neutral red is the pH indicator dye.

Type of specimen
Clinical - faeces, urine and other pathological material, foodstuffs and dairy samples, water samples, pharmaceutical samples.

Specimen Collection and Handling
For clinical samples follow appropriate techniques for handling specimens as per established guidelines (6,10).
For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (5,11,14.). For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.(1) For pharmaceutical samples, follow appropriate techniques for sample collection, processing as per guidelines.(3,12) After use, contaminated materials must be sterilized by autoclaving before discarding.

**Warning and Precautions**

In Vitro diagnostic use only. Read the label before opening the pack. 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. Individual organisms differ in their growth requirement and may show variable growth patterns on the medium
2. Each lot of the medium has been tested for the organisms specified on the COA. It is recommended to users to validate the medium for any specific microorganism other than mentioned in the COA based on the user’s unique requirement.
3. It is recommended to store the plates at 24-30°C to avoid minimum condensation.
4. Though the medium is recommended for selective isolation, further biochemical and serological testing must be carried out for further confirmation.
5. The surface of the medium should be dry when inoculated.

**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**

Sterile MacConkey Agar w/ 0.15% Bile salts, CV and NaCl in 90 mm disposable plates.

**Colour of medium**

Red with purplish tinge coloured medium

**Quantity of medium**

25 ml of medium in 90 mm disposable plates.

**pH**

6.90-7.30

**Sterility Test**

Passes release criteria

**Cultural Response**

Cultural response was observed after an incubation at 30-35°C for 18-72 hours. Recovery rate is considered as 100% for bacteria growth on Soybean Casein Digest Agar.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Inoculum (CFU)</th>
<th>Growth</th>
<th>Recovery</th>
<th>Colour of colony</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corynebacterium diphtheriae type gravis</td>
<td>&gt;=10⁵</td>
<td>inhibited</td>
<td>0%</td>
<td>colourless</td>
</tr>
<tr>
<td>Shigella flexneri ATCC 12022 (00126*)</td>
<td>50 -100</td>
<td>fair to good</td>
<td>30-40%</td>
<td>colourless</td>
</tr>
<tr>
<td>Salmonella Paratyphi A ATCC 9150</td>
<td>50 -100</td>
<td>luxuriant</td>
<td>&gt;=50%</td>
<td>colourless</td>
</tr>
<tr>
<td>Salmonella Abony NCTC 6017 (00029*)</td>
<td>50 -100</td>
<td>luxuriant</td>
<td>&gt;=50%</td>
<td>colourless</td>
</tr>
<tr>
<td>Proteus vulgaris ATCC 13315</td>
<td>50 -100</td>
<td>luxuriant</td>
<td>&gt;=50%</td>
<td>colourless</td>
</tr>
<tr>
<td>Salmonella Typhi ATCC 6539</td>
<td>50 -100</td>
<td>luxuriant</td>
<td>&gt;=50%</td>
<td>colourless</td>
</tr>
</tbody>
</table>

Please refer disclaimer Overleaf.
### Technical Data

**Staphylococcus aureus**

<table>
<thead>
<tr>
<th>ATCC 6538 (00032*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;=10⁵ inhibited 0%</td>
</tr>
</tbody>
</table>

**Salmonella Paratyphi B**

<table>
<thead>
<tr>
<th>ATCC 8759</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 -100 luxuriant &gt;=50 % colourless</td>
</tr>
</tbody>
</table>

**Escherichia coli ATCC 25922 (00013*)**

| 50 -100 luxuriant >=50 % pink to red with bile precipitate |

**Escherichia coli NCTC 9002**

| 50 -100 luxuriant >=50 % pink to red bile precipitate |

**# Klebsiella aerogenes**

<table>
<thead>
<tr>
<th>ATCC 13048 (000175*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 -100 luxuriant &gt;=50 % pink to red</td>
</tr>
</tbody>
</table>

**Salmonella Typhimurium ATCC 14028 (00031*)**

| 50 -100 luxuriant >=50 % colourless |

**Enterococcus faecalis ATCC 29212 (00087*)**

| 50 -100 none - poor <=10 % colourless to pale pink |

**Salmonella Enteritidis ATCC 13076 (00030*)**

| 50 -100 luxuriant >=50 % colourless |

**Staphylococcus aureus subsp.aureus ATCC 25923 (00034*)**

| >=10⁵ inhibited 0% |

### Storage and Shelf Life

On receipt store between 20-30°C 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 (6,10).

### Reference

12. The United States Pharmacopoeia, 2018, The United States Pharmacopeial Convention, Rockville, M.D.

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Please refer disclaimer Overleaf.
In vitro diagnostic medical device

CE Marking

Storage temperature

Do not use if package is damaged

HiMedia Laboratories Pvt. Limited,
23 Vadhani Industrial Estate,
LBS Marg, Mumbai-86, MS, India

CE Partner 4U, Esdoornlaan 13, 3951 DB Maarn The Netherlands,
www.cepartner4u.eu

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