Vogel-Johnson Agar Medium with addition of potassium tellurite is used for the selective isolation of coagulase positive, mannitol fermenting *Staphylococcus aureus* from heavily contaminated foods and clinical specimens in accordance with Indian Pharmacopoeia, 2007

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancreatic digest of casein</td>
<td>10.000</td>
</tr>
<tr>
<td>Yeast extract</td>
<td>5.000</td>
</tr>
<tr>
<td>Mannitol</td>
<td>10.000</td>
</tr>
<tr>
<td>Dibasic potassium phosphate</td>
<td>5.000</td>
</tr>
<tr>
<td>Lithium chloride</td>
<td>5.000</td>
</tr>
<tr>
<td>Glycine</td>
<td>10.000</td>
</tr>
<tr>
<td>Phenol red</td>
<td>0.025</td>
</tr>
<tr>
<td>Agar</td>
<td>16.000</td>
</tr>
<tr>
<td>pH after sterilization (at 25°C)</td>
<td>7.2±0.2</td>
</tr>
</tbody>
</table>

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

**Directions**

Suspend 61.02 grams in 1000 ml purified/distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45°C and aseptically add 20 ml of sterile 1% Potassium Tellurite solution (FD052). Mix gently and pour into sterile Petri plates.

Warning: Lithium chloride is harmful. Avoid bodily contact and inhalation of vapors. On contact with skin, wash with plenty of water immediately.

**Principle And Interpretation**

Vogel-Johnson Agar Medium is prepared according to the formula of Vogel and Johnson (1). Originally it was developed by Zebovitz (2) as a Tellurite Glycine Agar, a selective medium for the detection of coagulase positive Staphylococci. This medium is used to detect *Staphylococcus* in pharmaceutical and cosmetics products (4). *Staphylococcus* is a prevalent pathogen in food poisoning due to its enterotoxin production. It is a commensal found on skin and scalp of human body.

Vogel-Johnson modified the medium by adding phenol red as a pH indicator and by increasing the mannitol quantity (3). Pancreatic digest of casein and yeast extract provide nitrogenous compounds, vitamin B complex and other growth nutrients. Dibasic potassium phosphate gives buffering capacity to the medium. During first 24 hours of incubation, contaminating organisms are almost inhibited by tellurite, lithium chloride and high glycine content. *Staphylococcus aureus* may be inhibited by these inhibitors but get compensated by mannitol and glycine.

Coagulase-positive Staphylococci reduce potassium tellurite to metallic free tellurium and thus produce black colonies surrounded by yellow zones. This yellow colour is due to phenol red indicator, which turns yellow in acidic condition by the fermentation of mannitol. Prolonged incubation may result in the growth of black coagulase negative colonies.

**Quality Control**

**Appearance**
Light yellow to pink homogeneous free flowing powder

**Gelling**
Firm, comparable with 1.6% Agar gel.

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

**pH**
7.00-7.40
Growth Promotion Test
Growth promotion is carried out in accordance with Indian Pharmacopoeia.

Cultural Response
MM023: Cultural characteristics observed with added 1% Potassium Tellurite solution (FD052), after an incubation at 35-37°C for 18-48 hours.

Organism | Inoculum (CFU) | Growth | Observed Lot value (CFU) | Recovery | Colour of colony | Incubation period
--- | --- | --- | --- | --- | --- | ---
*Staphylococcus aureus* ATCC 6538 | 50 -100 | luxuriant | 25 -100 | >50 % | black colony surrounded by yellow zone | 18 -48 hrs

Additional microbiological testing
*Staphylococcus aureus* ATCC 25923 | 50 -100 | luxuriant | 25 -100 | >50 % | black surrounded by yellow zone translucent to blackish yellow | 18 -48 hrs

*Staphylococcus epidermidis* ATCC 12228 | 50 -100 | fair-good | 15 -40 | 30 -40 % | translucent to blackish yellow | 18 -48 hrs

*Proteus mirabilis* ATCC 25933 | 50 -100 | none-poor | 0 -10 | 0 -10 % | yellow | 18 -48 hrs

*Escherichia coli* ATCC 8739 >10³ | inhibited | 0 | 0 % | >=48 hrs

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

Disclaimer:
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