Trehalose

Carbohydrate Differentiation Discs are used to differentiate bacteria on the basis of carbohydrate fermentation abilities.

**Directions**

A Sugar free medium base is prepared as desired, dispensed and sterilized. Following media are recommended for this test.

**Liquid Media**

- M885  Andrade Peptone Water
- MV885  Andrade HiVeg Peptone Water
- M909  Andrade Peptone Water with Meat Extract
- MV909  Andrade Peptone Water w/ HiVeg Extract No. 1
- M054  Phenol Red Broth Base
- MV054  Phenol Red HiVeg Broth Base
- M279  Phenol Red Broth Base w/ Meat Extract
- MV279  Phenol Red Broth Base w/ HiVeg Extract No. 1
- M284  Purple Broth Base
- MV284  Purple HiVeg Broth Base
- M676  Yeast Fermentation Broth
- MV676  Yeast Fermentation HiVeg Broth Base

**Semisolid Media**

- M159  Cystine Tryptone Agar
- MV159  Cystine Tryptone Agar, HiVeg
- M395  OF Basal Medium
- MV395  OF Basal HiVeg Medium
- M319  Tryptone Agar Base
- MV319  Tryptone Agar Base, HiVeg

**Solid Media**

- M053  Phenol Red Agar Base
- MV053  Phenol Red HiVeg Agar Base
- M098  Purple Agar Base
- MV098  Purple HiVeg Agar Base

Any medium- liquid, semisolid or solid can be used as per choice. Liquid and semisolid media are dispensed in 5 ml amounts in test tubes and sterilized. On cooling to 45 - 50°C a single Carbohydrate disc is added to each tube aseptically and inoculated with the test organisms. In semisolid medium the disc is pushed in the medium along with the inoculum just below the surface of the medium, so that the medium at the bottom can serve as control while fermentation can be detected at the surface level. Using solid media it is possible to detect fermentation of number of sugars on the same plate. Sterile plates containing the agar medium of choice are surface seeded with test organism(s) and required Carbohydrate discs are placed and pressed gently on the surface of the plate at sufficient distance (2cm) from each other. Incubation is carried out at 36 ± 1.0°C for 18-48 hours.
and results are recorded at 18 - 24 hours and again at 48 hours. The results should be frequently observed since reversal of fermentation reaction can take place. In case of liquid medium gas produced during fermentation is collected in the inverted Durham’s tube while acid produced changes colour of the medium. In semisolid media gas produced is trapped and seen as bubbles. On agar plates fermentation is visualized by change in colour around the disc.

**Principle And Interpretation**

Ability of an organism to ferment a specific carbohydrate added in the basal medium, results in the production of acid or acid and gas. This ability has been used to characterize a specific species of bacteria which helps in differentiation of species as well (2,3). When carbohydrate impregnated disc is added to a culture medium the carbohydrate diffuses through the medium. When a carbohydrate is fermented by a microorganism, the acid (or acid and gas) produced lowers the pH of the medium and the indicator in the basal medium thus changes colour (e.g. phenol red changes from red to orange to yellow).

Bacteria capable of fermentation grow in Andrade Peptone and produce acid due to fermentation of the added carbohydrate and change the colour of the indicator from light straw colored to pink(1).

**Quality Control**

**Appearance**

Filter paper discs of 10 mm diameter bearing letters "Te" in continuous printing style.

**Cultural response**

The carbohydrate fermentation reactions after an incubation of 18-48 hours at 35-37°C, of various bacteria with Trehalose Differentiation discs were tested using Phenol Red Broth Base (M054).

<table>
<thead>
<tr>
<th>Organism</th>
<th>Growth</th>
<th>Acid</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Citrobacter freundii ATCC 8090</em></td>
<td>Luxuriant</td>
<td>Positive reaction: yellow colour</td>
<td>Positive reaction</td>
</tr>
<tr>
<td><em>Enterobacter aerogenes ATCC 13048</em></td>
<td>Luxuriant</td>
<td>Positive reaction: yellow colour</td>
<td>Positive reaction</td>
</tr>
<tr>
<td><em>Escherichia coli ATCC 25922</em></td>
<td>Luxuriant</td>
<td>Positive reaction: yellow colour</td>
<td>Positive reaction</td>
</tr>
<tr>
<td><em>Klebsiella pneumoniae ATCC 13883</em></td>
<td>Luxuriant</td>
<td>Positive reaction: yellow colour</td>
<td>Positive reaction</td>
</tr>
<tr>
<td><em>Proteus vulgaris ATCC 13315</em></td>
<td>Luxuriant</td>
<td>Positive reaction: yellow colour</td>
<td>Positive reaction</td>
</tr>
<tr>
<td><em>Serratia marcescens ATCC 8100</em></td>
<td>Luxuriant</td>
<td>Positive reaction: yellow colour</td>
<td>Negative reaction</td>
</tr>
<tr>
<td><em>Salmonella Typhi ATCC 6539</em></td>
<td>Luxuriant</td>
<td>Positive reaction: yellow colour</td>
<td>Negative reaction</td>
</tr>
<tr>
<td><em>Salmonella Typhimurium ATCC 14028</em></td>
<td>Luxuriant</td>
<td>Positive reaction: yellow colour</td>
<td>Positive reaction</td>
</tr>
<tr>
<td><em>Shigella flexneri ATCC 12022</em></td>
<td>Luxuriant</td>
<td>Positive reaction: yellow colour</td>
<td>Negative reaction</td>
</tr>
</tbody>
</table>

**Storage and Shelf Life**

Store between 10-30°C. Use before expiry date on the label.

**Reference**


Please refer disclaimer Overleaf.