TCBS Agar (Vibrio Selective Agar)

This culture medium complies with the recommendations of the World Health Organization WHO (1965, 1967) and the APHA (1992).

**Principle**
Microbiological method

**Mode of Action**
The high concentrations of thiosulfate and citrate and the strong alkalinity of this medium largely inhibit the growth of Enterobacteriaceae. Ox bile and cholate suppress primarily enterococci. Any coliform bacteria, which may grow, cannot metabolize sucrose. Only a few sucrose-positive Proteus strains can grow to form yellow, vibrid-like colonies. The mixed indicator thymol blue-bromothymol blue changes its colour to yellow, when acid is formed, even in this strongly alkaline medium.

**Typical Composition (g/litre)**
Peptone from casein 5.0; peptone from meat 5.0; yeast extract 5.0; sodium citrate 10.0; sodium thiosulfate 10.0; ox bile 5.0; sodium cholate 3.0; sucrose 20.0; sodium chloride 10.0; iron(III) citrate 1.0; thymol blue 0.04; bromothymol blue 0.04; agar-agar 14.0.

**Preparation and Storage**
Cat. No. 1.10263. TCBS Agar (Vibrio Selective Agar) (500 g) Usable up to the expiry date when stored dry and tightly closed at +15 to +25° C. Protect from light.

After first opening of the bottle the content can be used up to the expiry date when stored dry and tightly closed at +15 to +25° C. Suspend 88 g/litre and pour plates.

- **Do not autoclave.**

pH: 8.6 ± 0.2 at 25 °C.
The plates are clear and green-blue.

**Specimen**
e.g. Stool
Clinical specimen collection, handling and processing, see general instructions of use.

**Experimental Procedure and Evaluation**
Inoculate by spreading the sample or material from an enrichment culture, Alkaline Peptone water, on the surface of the plates.

Incubation: 18-24 hours at 35 °C aerobically.

According to BURKHARDT (1969), it is advised to use, in addition to a liquid enrichment medium, two different solid culture media - a highly selective (e.g. TCBS Agar) and a less selective culture medium (e.g. Nutrient Agar: Merck Cat. No.1.05450.).

Further tests are necessary for complete identification (MUCKERJEE 1961, FINKELSTEIN and MUCKERJEE 1963, ROY et al. 1965, BOCKEMÜHL 1974 etc.).

**Appearance of Colonies**

<table>
<thead>
<tr>
<th>Microorganisms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibrio cholerae, Vibrio cholerae type El Tor</td>
</tr>
<tr>
<td>Vibrio parahaemolyticus</td>
</tr>
<tr>
<td>Vibrio alginolyticus</td>
</tr>
<tr>
<td>Pseudomonas, Aeromonas and others</td>
</tr>
<tr>
<td>Enterobacteriaceae and others</td>
</tr>
</tbody>
</table>

**Appearance of Colonies Microorganisms**

*Flat, 2-3 mm in diameter, yellow*  
Vibrio cholerae, Vibrio cholerae type El Tor

*Small, blue-green centre*  
Vibrio parahaemolyticus

*Large, yellow*  
Vibrio alginolyticus

*Blue*  
Pseudomonas, Aeromonas and others

*Very small, translucent*  
Enterobacteriaceae and others

**Literature**

BOCKEMÜHL, J.: Einfache Laboratoriumsdiagnostik der El Tor-Cholera.  

BURKHARDT, F.: Die bakteriologische Diagnose der Vibrio El Tor-Infektion.  


MUCKERJEE, S.: Diagnostic use of bacteriophage.  

NAKANISHI, Y.: An isolation agar medium for cholerae and enteropathogenic halophilic vibrios.  
- Modern Media, 9; 246 (1963).


TCBS Agar (Vibrio Selective Agar)
Thiosulfate Citrate Bile Sucrose Agar

Ordering Information

<table>
<thead>
<tr>
<th>Product</th>
<th>Merck Cat. No.</th>
<th>Pack size</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCBS Agar (Vibrio Selective Agar)</td>
<td>1.10263.0500</td>
<td>500 g</td>
</tr>
<tr>
<td>Alkaline Peptone water</td>
<td>1.01800.0500</td>
<td>500 g</td>
</tr>
</tbody>
</table>

Quality control

<table>
<thead>
<tr>
<th>Test strains</th>
<th>Growth</th>
<th>Colour change to yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibrio alginolyticus</td>
<td>good / very good</td>
<td>+</td>
</tr>
<tr>
<td>Vibrio cholerae Inaba NIH 35</td>
<td>good / very good</td>
<td>+</td>
</tr>
<tr>
<td>Vibrio cholerae El Tor Inaba CH 38</td>
<td>good / very good</td>
<td>+</td>
</tr>
<tr>
<td>Vibrio cholerae Ogawa NIH 41</td>
<td>good / very good</td>
<td>+</td>
</tr>
<tr>
<td>Vibrio cholerae El Tor Ogawa CH 60</td>
<td>good / very good</td>
<td>+</td>
</tr>
<tr>
<td>Vibrio parahaemolyticus ATCC 17802</td>
<td>good / very good</td>
<td>-</td>
</tr>
<tr>
<td>Escherichia coli ATCC 25922</td>
<td>none / poor</td>
<td>-</td>
</tr>
<tr>
<td>Enterobacter cloacae ATCC 13047</td>
<td>none / poor</td>
<td>-</td>
</tr>
<tr>
<td>Proteus mirabilis ATCC 14273</td>
<td>none / poor</td>
<td>-</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa ATCC 27853</td>
<td>none / poor</td>
<td>-</td>
</tr>
</tbody>
</table>

Vibrio cholerae Inaba NIH 35
Vibrio parahaemolyticus ATCC 17802