Dihydrolase Broth Base

Dihydrolase Broth Base is used for studying dihydrolase reaction of *Vibrio parahaemolyticus*.

**Composition**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptic digest of animal tissue</td>
<td>5.000</td>
</tr>
<tr>
<td>Yeast extract</td>
<td>6.000</td>
</tr>
<tr>
<td>Dextrose</td>
<td>2.000</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>30.000</td>
</tr>
<tr>
<td>Bromo cresol purple</td>
<td>0.032</td>
</tr>
<tr>
<td>Final pH (at 25°C)</td>
<td>6.8±0.2</td>
</tr>
</tbody>
</table>

**Directions**

Suspend 43.03 grams in 1000 ml distilled water. Heat, if necessary to dissolve the medium completely. Divide in 2 parts. Add 0.5% L-Arginine to first portion. Use second portion as control. Dissolve completely and dispense 3.0 ml into 13 mm x 100 mm screw cap tube. Sterilize by autoclaving at 115°C for 15 minutes.

**Principle And Interpretation**

*Vibrios* are fairly easy to isolate from both clinical and environmental material, though some species may require growth factors and/or vitamins. *Vibrio parahaemolyticus* is the leading cause of bacterial diarrhoea associated with the consumption of contaminated food products (1). Dihydrolase Broth Base is formulated as per APHA (2) and is used for studying dihydrolase reaction of *V. parahaemolyticus*.

Dextrose is utilized by *Vibrio species* where there is drop in pH indicated by Bromocresol purple resulting in yellow colour. The medium is supplemented with L-Arginine as a substrate for dihydrolase reaction (3, 4). L-Arginine is converted to putrescine by the dihydrolase enzyme; however putrescine is also formed from arginine by the decarboxylase system as well. In the decarboxylase system, L-Arginine undergoes decarboxylation to yield agmatine. Agmatine is then catabolized by the enzyme agmatine dihydrolase to putrescine, CO2 and ammonia by way of an intermediate compound monocarbaminyl putrescine (5). Thus, because of production of amine like putrescine in the medium the pH is elevated (6) changing the colour of the indicator from yellow to purple. Bromocresol purple is the pH indicator in the medium, which turns purple from yellow at alkaline pH. For confirmation, it is suggested to inoculate a basal medium tube, which does not contain L-Arginine. Alkalization of the surface of the medium may be caused by exposure to air, so a dihydrolase negative organism may be misidentified as positive. It is therefore recommended to protect the inoculated tubes from air with overlay of sterile mineral oil.

Peptic digest of animal tissue and yeast extract provide nitrogenous nutrients to support bacterial growth. Dextrose is the fermentable carbohydrate. Sodium chloride maintains osmotic equilibrium.

**Quality Control**

**Appearance**

Cream to yellow homogeneous free flowing powder

**Colour and Clarity of prepared medium**

Purple coloured, clear solution without any precipitate

**Reaction**

Reaction of 4.3% w/v aqueous solution at 25°C. pH : 6.8±0.2

**pH**

6.60-7.00

**Cultural Response**

M915: Cultural characteristics observed with added 0.5% L-Arginine after an incubation at 35 - 37°C for 18 - 24 hours.
### Technical Data

<table>
<thead>
<tr>
<th>Organism</th>
<th>Inoculum (CFU)</th>
<th>Growth</th>
<th>Arginine dihydrolase</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Vibrio cholerae ATCC 15748</em></td>
<td>50-100</td>
<td>good-luxuriant</td>
<td>negative reaction, yellow colour</td>
</tr>
<tr>
<td><em>Vibrio parahaemolyticus ATCC 17802</em></td>
<td>50-100</td>
<td>good-luxuriant</td>
<td>negative reaction, yellow colour</td>
</tr>
</tbody>
</table>

### 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


Revision : 2 / 2015

### Disclaimer

User must ensure suitability of the product(s) in their application prior to use. Products conform solely to the information contained in this and other related HiMedia™ publications. The information contained in this publication is based on our research and development work and is to the best of our knowledge true and accurate. HiMedia™ Laboratories Pvt Ltd reserves the right to make changes to specifications and information related to the products at any time. Products are not intended for human or animal or therapeutic use but for laboratory, diagnostic, research or further manufacturing use only, unless otherwise specified. Statements contained herein should not be considered as a warranty of any kind, expressed or implied, and no liability is accepted for infringement of any patents.