Kirchner Medium Base, Modified (DM706)

Intended Use
Kirchner Medium Base, Modified (DM706) is recommended for cultivation of *Mycobacterium tuberculosis*.

Product Summary and Explanation
*Mycobacterium tuberculosis* is an acid-fast gram-positive, highly aerobic bacteria involved in most cases of tuberculosis. Humans are the only reservoir for the bacterium. Many non-pathogenic *Mycobacteria* are components of the normal flora of humans, found most often in dry and oily locales. Kirschner Medium was first developed by Kirschner based on the original formulation of Long's Medium (1) and further modified with addition of glycerol and enrichments for the cultivation of *M. tuberculosis*. This medium is widely used for antibacterial test, for antituberculosis agents and sometimes in differential culture of *M. tuberculosis* from unhealthy materials. Addition of 2% agar to this medium yields Kirschner Agar Medium. Kirschner Semisolid Agar Medium is obtainable by addition of agar up to 0.1%. To achieve culture of tubercle bacilli, in case of screening test for antituberculosis agents on solid media, it takes at least 3-4 weeks. Broth medium can give results in a week or two; hence broth medium is widely used in cases where rapid results are needed.

Principles of the Procedure
Kirchner medium contains two phosphates, a sulphate and citrate, which acts as buffering agents in the medium. Hence, the medium can be directly inoculated without any prior neutralization. L-asparagine in the medium supports the growth of *M. tuberculosis*, as it is a good nutrient for the organism. Horse serum added also promotes the growth of the organism. Penicillin inhibits the growth of contaminating bacteria.

**Formula / Liter**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Gms / Liter</th>
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</thead>
<tbody>
<tr>
<td>Disodium phosphate</td>
<td>3.00</td>
</tr>
<tr>
<td>Monopotassium phosphate</td>
<td>4.00</td>
</tr>
<tr>
<td>Magnesium sulphate</td>
<td>0.60</td>
</tr>
<tr>
<td>Sodium citrate</td>
<td>2.50</td>
</tr>
<tr>
<td>L-Asparagine</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Final pH: 7.4 ± 0.2 at 25°C

Formula may be adjusted and/or supplemented as required to meet performance specifications

Precautions
1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions
1. Suspend 15.1 grams in 700 ml distilled water. Add 200 ml glycerol.
2. Heat to boiling to dissolve the medium completely.
3. Dispense in 9 ml aliquots.
4. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
5. Just before use, aseptically add 1 ml of Horse serum (MS084) and 100 IU Penicillin per 9 ml medium.

Quality Control Specifications

<table>
<thead>
<tr>
<th>Dehydrated Appearance</th>
<th>White to cream homogeneous free flowing powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared Medium</td>
<td>Colourless solution having slight white precipitate at the bottom</td>
</tr>
<tr>
<td>Reaction of 1.51% Solution (with Glycerol)</td>
<td>pH: 7.4 ± 0.2 at 25°C</td>
</tr>
<tr>
<td>Gel Strength</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
Expected Cultural Response: Cultural characteristics observed with added Horse Serum (RM1239) and 100IU Penicillin, after an incubation at 35-37°C for 2-4 weeks.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Organisms</th>
<th>Results to be achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mycobacterium tuberculosis H37 RV(25618)</td>
<td>50 - 100, good-luxuriant</td>
</tr>
<tr>
<td>2.</td>
<td>Mycobacterium smegmatis ATCC 14468</td>
<td>50 - 100, good-luxuriant</td>
</tr>
<tr>
<td>3.</td>
<td>Mycobacterium fortuitum ATCC 6841</td>
<td>50 - 100, good-luxuriant</td>
</tr>
</tbody>
</table>

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure
Refer to appropriate references for standard test procedures.

Results
At first stage after inoculation of *M. tuberculosis*, granular colonies are observed at the bottom of the tube and as the incubation proceeds, bacterial film will be formed on the surface, rendering the medium transparent.

Storage
Store the sealed bottle containing the dehydrated medium at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration
Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure
1. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
2. Consult appropriate texts for detailed information and recommended procedures.

Packaging
Product Name: Kirchner Medium Base, Modified
Product Code: DM706
Available Pack sizes: 500gm

References

Further Information
For further information please contact your local MICROMASTER Representative.
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