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Mycobacteria Selectatab™ (Kirchner)

MS24 For use in Kirchner Broth for the selective isolation of mycobacteria species.

Introduction

The genus Mycobacterium contains several organisms which are pathogenic to man, the most important of these being Mycobacterium tuberculosis. Mycobacteria are acid-fast, or acid and alcohol fast rods, which grow very slowly on artificial culture media, therefore isolation of these organisms is often difficult due to overgrowth of contaminants.

Mitchison et al., in an attempt to find a suitable selective medium, incorporated a wide range of antibacterial drugs into oleic acid albumin agar (7H10). The best combination with which selective isolation of the organisms was achieved was polymyxin B (200,000 units/litre) carbenicillin (100mg/litre), trimethoprim (10mg/litre) and amphotericin B (10mg/litre).

Incorporation of these antibiotics into a modified version of the 7H10 medium, 7H11, was considered by Mitchison et al. and McClatchy et al. to be the most effective medium for the selective isolation of mycobacteria when used in conjunction with other media, both egg based and agar based.

Later work by Mitchison et al. and Allen et al. showed that liquid Kirchner medium, made selective by the addition of the antibiotics mentioned earlier, was more effective in the isolation of mycobacteria than other media tested.

The MAST Mycobacteria Selectatab™ (Kirchner) has been modified to contain the antibiotic ticarcillin following the withdrawal of the manufacture of carbenicillin as a therapeutic antibiotic. Extensive work carried out at MAST and an external collaborating laboratory shows that ticarcillin has similar selective properties and also has no adverse affect on the growth of Mycobacteria species at the concentration used.

Description

Each Mycobacteria Selectatab™ (Kirchner) contains accurately assayed quantities of antibiotics in a soluble, non-interfering, carrier substance.

<table>
<thead>
<tr>
<th>MS24 Content</th>
<th>Concentration in 500ml medium</th>
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<tbody>
<tr>
<td>Polymyxin B</td>
<td>100,000 units</td>
</tr>
<tr>
<td>Ticarcillin</td>
<td>50mg</td>
</tr>
<tr>
<td>Amphotericin B</td>
<td>5mg</td>
</tr>
<tr>
<td>Trimethoprim</td>
<td>5mg</td>
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</tbody>
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Directions

1. Sterilise the bulk liquid medium, Kirchner Medium Base, according to directions and allow to cool to room temperature.

2. Sterilise and label the final test tubes or containers using the self adhesive labels provided.

3. Using sterile forceps add one Selectatab™ to each 500ml of medium and label the bottle. Allow to stand for several minutes until the Selectatab™ has broken up.

4. After the Selectatab™ has broken up swirl 3-4 times and invert to complete dispersal.

An alternative method is to first dissolve the Selectatab™ in 3-5ml of sterile water and add this to the appropriate volume of medium.

5. Mix well and pour into the final, sterile containers.

6. To obtain optimum isolation the Selective Kirchner medium should be used as soon as possible after preparation.
In Use

The use of a selective Kirchner medium is recommended in conjunction with two slopes of Lowenstein-Jensen medium, one with and one without added pyruvate. Although results produced with the egg media are inferior to those with Kirchner medium alone, they should be included as growth suitable for identification and sensitivity testing is obtained more rapidly on solid media. In addition several species of mycobacteria, such as M. intracellulare and M. ulcerans, may be inhibited by the antibiotics in the selective medium.

Pus, swabs and CSF specimens should be inoculated without decontamination, all other specimens should be decontaminated before inoculation. In all cases cultures should be incubated for a minimum of 8-9 weeks at a temperature of 37°C.

References