Dehydrated Culture Media

CORN MEAL AGAR

Code: CM0103

A recommended medium for chlamydospore production by Candida albicans and for the maintenance of fungal stock cultures.

Typical Formula*  gm/litre
Corn Meal Extract (from 50 grams whole maize)  2.0
Agar  15.0
pH 6.0 ± 0.2 @ 25°C

* Adjusted as required to meet performance standards

Directions
Suspend 17g in 1 litre of distilled water. Bring to the boil to dissolve completely. Sterilise by autoclaving at 121°C for 15 minutes.

Description
Corn Meal Agar is a well established mycological medium which is a suitable substrate for chlamydospore production by Candida albicans and the maintenance of fungal stock cultures.

When grown on this medium, microscopic examination of Candida albicans shows the characteristic chlamydospore production which is an accepted criterion for the identification of this species. Prospero and Reyes 1 investigated the use of corn meal agar, soil extract agar, and purified polysaccharide medium for the morphological identification of Candida albicans. Out of 290 yeast colonies isolated on Sabouraud agar, corn meal agar stimulated the production of chlamydospores in 149 colonies (51%), soil extract agar in 103 (36%) and purified polysaccharide medium in 94 (32%).

The addition of ‘Tween 80’ (e.g. 1%) to Corn Meal Agar greatly enhances the development of chlamydospores on the medium 2,3,4,5,6.

Mackenzie 7 found that all 163 isolates of Candida albicans obtained from laboratories in the United Kingdom produced chlamydospores on Oxoid Corn Meal Agar but Dawson 8 using only 27 isolates of Candida albicans, found that Oxoid Czapek Dox Agar CM0097 and rice infusion agar were slightly superior for chlamydospore production.

Corn meal agar is a nutritionally impoverished medium and so may be employed for the maintenance of stock cultures of fungi, especially the black-pigmented varieties.

The addition of glucose (0.2g% w/v) to Corn Meal Agar will enhance the chromogenesis of some species of Trichophyton e.g. Trichophyton rubrum 9.

Technique
A single Petri dish containing Corn Meal Agar may be used to identify four or five different colonies of Candida grown on Sabouraud Dextrose Agar CM0041. Using a straight wire, pick a colony off the surface of the latter medium and make a deep cut in the Corn Meal Agar (i.e. a horizontal furrow). Repeat for each colony. Place a flamed sterile coverslip over the line of inoculum. After incubation for 24 to 48 hours at 22°C, the streaks are examined microscopically, through the cover slip, using a low power objective. Along such streaks, Candida albicans produces mycelium-bearing ball-like clusters of budding cells and the characteristic thick-walled round chlamydospores 9.

The addition of 0.001g % w/v Trypan blue to Corn Meal Agar provides a contrasting background for the observation of characteristic morphological features of yeast cultures 10.

Storage conditions and Shelf life
Store the dehydrated medium at 10-30°C and use before the expiry date on the label. Store the prepared medium at 2-8°C.

**Appearance**
Dehydrated medium: Off-white coloured, free-flowing powder
Prepared medium: Light straw coloured gel

**Quality control**

<table>
<thead>
<tr>
<th>Positive control</th>
<th>Expected results</th>
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<tbody>
<tr>
<td>Chlamydospore Production</td>
<td>Good growth; white colonies and chlamydospores</td>
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<tr>
<td><strong>Candida albicans</strong> ATCC® 10231 *</td>
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<table>
<thead>
<tr>
<th>Negative control</th>
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<tbody>
<tr>
<td><strong>Candida krusei</strong> ATCC® 6258</td>
<td>Good growth; white / cream colonies, no chlamydospores</td>
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</tbody>
</table>

* This organism is available as a Culti-Loop®

**Precautions**
Glucose supplemented Corn Meal Agar should not be used for chlamydospore production. Corn Meal Agar with ‘Tween 80’ (or other wetting agents) will allow *Candida stellatoideae* and *Candida tropicalis* to produce chlamydospores. Some *Candida* strains lose their ability to produce chlamydospores after repeated subculturing.

**References**