

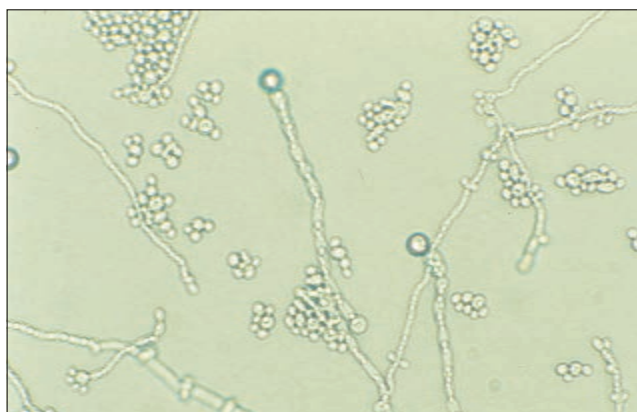
# Corn Meal Agar • Corn Meal Agar with Polysorbate 80 • Corn Meal Agar with 1% Dextrose

## Intended Use

Corn Meal Agar is a general-purpose medium for the cultivation of fungi. With the addition of polysorbate 80, it is utilized primarily for the testing of *Candida* species for their ability to produce chlamydospores. BBL™ prepared plates of Corn Meal Agar with Polysorbate 80 are deep-filled to reduce the effects of drying during prolonged incubation. Corn Meal Agar with 1% Dextrose enhances pigment production.

## Summary and Explanation

Corn Meal Agar has been used for many years to cultivate fungi. Pollack and Benham reported on its usefulness for studying



Microscopic Photo of Chlamydospores

the morphology of *Candida*.<sup>1</sup> In 1960, Walker and Huppert modified the basic formulation of Corn Meal Agar by adding polysorbate 80, which stimulated rapid and abundant chlamydo-spore formation.<sup>2</sup> This modified formulation is recommended for the production and visualization of chlamydospores.<sup>3</sup>

The addition of dextrose enhances fungal growth and pigment production.<sup>4</sup> Corn Meal Agar with Dextrose is commonly used in the differentiation of *Trichophyton* species based on chromogenesis.<sup>5</sup>

## Principles of the Procedure

Corn Meal Agar is a relatively simple medium, consisting of an infusion of corn meal and agar. The infusion product contains sufficient nutrients to support the growth of fungal species. The polysorbate 80 is a mixture of oleic esters which, when added to the basal medium, stimulates the production of chlamydospores.<sup>3</sup> Dextrose is added to Corn Meal Agar to provide an energy source to enhance fungal growth and chromogenesis.

## Formula

### BBL™ Corn Meal Agar

Approximate Formula* Per Liter	
Corn Meal Infusion from (Solids) .....	2.0 g
Agar .....	15.0 g

\*Adjusted and/or supplemented as required to meet performance criteria.

## User Quality Control

### Identity Specifications

#### BBL™ Corn Meal Agar

Dehydrated Appearance: Coarse, homogeneous, free of extraneous material.

Solution: 1.7% solution, soluble in purified water upon boiling. Solution is pale to light, yellow to tan, slightly hazy to hazy.

Prepared Appearance: Pale to light, yellow to tan, slightly hazy to hazy.

Reaction of 1.7%  
Solution at 25°C: pH 6.0 ± 0.2

### Cultural Response

#### BBL™ Corn Meal Agar

Prepare the medium per label directions. Test for chlamydospore production. Using fresh cultures, streak two parallel lines approximately 1.5 cm long each and 1.0 cm apart. Make an S-shape by lightly streaking back and forth across the two parallel streak lines. Place a coverslip over the streak marks. Incubate at 25 ± 2°C for 4 days and examine microscopically.

ORGANISM	ATCC™	RECOVERY	CHLAMYDOSPORE PRODUCTION
<i>Aspergillus brasiliensis</i> (niger)	16404	Good	N/A
<i>Candida albicans</i>	10231	Good	Present
<i>Candida albicans</i>	60193	Good	Present
<i>Candida kefyr</i>	8553	Good	None

### Corn Meal Agar with Polysorbate 80

*Candida albicans*  
ATCC™ 10231



## Directions for Preparation from Dehydrated Product

1. Suspend 17 g of the powder in 1 L of purified water. Add 1% polysorbate 80, or 1% dextrose, if desired. Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
3. Autoclave at 121°C for 15 minutes.
4. Test samples of the finished product for performance using stable, typical control cultures.

## Procedure

To prepare plated media from agar deeps, place the agar deeps in a boiling water bath until the medium becomes liquefied (clear). Pour the molten medium into a sterile Petri dish and allow to solidify before use. Organisms to be cultivated for identification must first be isolated in pure culture on an appropriate medium.

Using an inoculating needle, streak the medium with growth from a pure culture and incubate at  $25 \pm 2^\circ\text{C}$ . Examine at intervals for up to 28 days for growth and pigmentation.

Corn Meal Agar with 1% Dextrose should be incubated for up to 4 weeks to allow sufficient time for pigmentation to develop.

Test for the production of chlamydo-spores on medium containing polysorbate 80 using the Dalmau plate method.<sup>6</sup> With a sterile inoculating needle, lightly touch the yeast colony, and then make two separate streaks approximately 1.5 cm long each and 1.0 cm apart. Do not dig into the agar. Flame the needle, allow to cool. Then lightly make an S-shaped streak back and forth across the two original streak lines. Flame a coverslip and, after it cools, place it over the central area of the stab marks to provide slightly reduced oxygen tension.<sup>3</sup> Incubate the plates at room temperature ( $25 \pm 2^\circ\text{C}$ ) for 24-48 hours. If the test is negative, reincubate plates an additional 48-72 hours and examine again.<sup>7</sup>

## Expected Results

Observe cultures for growth and morphology. After 24-48 hours on medium containing polysorbate 80, most strains of *C. albicans* and *C. stellatoidea* will have formed typical chlamydo-spores.<sup>3</sup> Invert the plate and examine microscopically (low and high power objectives) for chlamydo-spore formation along the edge of the coverslip.

On Corn Meal Agar with 1% Dextrose, macroscopically observe chromogenesis.

## Limitation of the Procedure

Corn Meal Agar with Dextrose is not recommended for detecting the production of chlamydo-spores by *Candida* species.

## References

1. Pollack and Benham. 1960. J. Lab. Clin. Med. 50:313.
2. Walker and Huppert. 1960. Tech. Bull. Reg. Med. Technol. 30:10.
3. McGinnis. 1980. Laboratory handbook of medical mycology. Academic Press, New York, N.Y.
4. Conant, Smith, Baker and Callaway. 1971. Manual of clinical mycology, 3rd ed. W.B. Saunders Co., Philadelphia, Pa.
5. Haley and Callaway. 1978. Laboratory methods in medical mycology. HEW Publication No. (CDC) 78-8361. Center for Disease Control, Atlanta, Ga.
6. Isenberg (ed.). 1992. Clinical microbiology procedures handbook, vol. 1. American Society for Microbiology, Washington, D.C.
7. Campbell and Stewart. 1980. The medical mycology handbook. John Wiley & Sons, New York, N.Y.

## Availability

### BBL™ Corn Meal Agar

Cat. No. 211132 Dehydrated – 500 g  
297379 Prepared Pour Tubes, 20 mL – Pkg. of 10

### BBL™ Corn Meal Agar with Polysorbate 80

**BS12**

Cat. No. 221854 Prepared Plates (Deep Fill) – Pkg. of 10\*  
297235 Prepared Pour Tubes, 20 mL – Pkg. of 10

### BBL™ Corn Meal Agar with 1% Dextrose

Cat. No. 297229 Prepared Pour Tubes, 20 mL – Pkg. of 10

\*Store at 2-8°C.