QUALITY CONTROL PROCEDURES

I INTRODUCTION
BD BBL™ CHROMagar™ Candida is a selective medium for the isolation and presumptive identification of yeast and filamentous fungi and differentiation of Candida albicans, C. tropicalis and C. krusei.1

II PERFORMANCE TEST PROCEDURE
1. Inoculate representative samples with dilutions of the cultures listed below.
   a. Streak inoculate with 103–104 CFUs of the organisms listed below.
   b. Incubate plates at 35 ± 2 °C in an aerobic atmosphere.
   c. Include BD Trypticase™ Soy Agar with 5% Sheep Blood (TSA II) plates as nonselective controls for P. aeruginosa and Sabouraud Dextrose Agar for all Candida species.

2. Examine plates after 18–24 and 42–48 h for amount of growth and color formation.

3. Expected Results

<table>
<thead>
<tr>
<th>Organisms</th>
<th>ATCC®</th>
<th>Recovery</th>
<th>Colony Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Candida albicans</td>
<td>60193</td>
<td>Fair to heavy growth</td>
<td>Light to medium green</td>
</tr>
<tr>
<td>Candida albicans</td>
<td>10231</td>
<td>Fair to heavy growth</td>
<td>Light to medium green</td>
</tr>
<tr>
<td>*Candida krusei</td>
<td>34135</td>
<td>Fair to heavy growth</td>
<td>Mauve to rose pink, flat, may have whitish border</td>
</tr>
<tr>
<td>*Candida tropicalis</td>
<td>1369</td>
<td>Fair to heavy growth</td>
<td>Dark blue to metallic blue, with or without halos</td>
</tr>
<tr>
<td>Candida tropicalis</td>
<td>9968</td>
<td>Fair to heavy growth</td>
<td>Grey blue, with or without halos</td>
</tr>
<tr>
<td>*Pseudomonas aeruginosa</td>
<td>27853</td>
<td>Inhibition (partial to complete)</td>
<td></td>
</tr>
</tbody>
</table>

Recommended organism strain for User Quality Control.

III ADDITIONAL QUALITY CONTROL
1. Examine plates as described under “Product Deterioration.”
2. Visually examine representative plates to assure that any existing physical defects will not interfere with use.
3. Determine the pH potentiometrically at room temperature for adherence to the specification of 5.9 ± 0.2.
4. Note the firmness of plates during the inoculation procedure.
5. Incubate uninoculated representative plates aerobically at 35 ± 2 °C for 72 h and examine for microbial contamination.

PRODUCT INFORMATION

IV INTENDED USE
BD BBL CHROMagar Candida is a selective medium for the isolation and presumptive identification of yeast and filamentous fungi and differentiation of Candida albicans, C. tropicalis and C. krusei.1 Due to the differences in morphology and colors of the yeast colonies, this medium facilitates the detection of mixed yeast cultures in specimens.2,3 It may also be used as a selective isolation medium for other yeasts and for filamentous fungi instead of Sabouraud Dextrose Agar or similar media.

V SUMMARY AND EXPLANATION
The usefulness of a selective and differential medium for the primary isolation of Candida species has long been noted. In 1953 Nickerson developed a medium following a study of sulfite reduction by Candida species.4 In 1958 Pagano et al. added triphenyltetrazolium chloride to Sabouraud Dextrose medium to differentiate C. albicans from other yeasts.5

BD BBL CHROMagar Candida is a selective and differential medium developed by A. Rambach and is sold by BD under a licensing agreement with CHROMagar, Paris, France. With the inclusion of chromogenic substrates in the medium, the colonies of C. albicans, C. tropicalis and C. krusei produce different colors, thus allowing the direct detection of these yeast species on the isolation plate.1,3 Colonies of C. albicans appear light to medium green, C. tropicalis colonies appear dark blue to metallic-blue and C. krusei colonies appear light mauve to mauve, flat colonies with a whitish border. Other yeasts may appear light to dark mauve (e.g., C. glabrata and other species).

VI PRINCIPLES OF THE PROCEDURE
Specially selected peptones supply the nutrients in BD BBL CHROMagar Candida. The chromogen mix consists of artificial substrates (chromogens), which release differently colored compounds upon degradation by specific enzymes. This permits the differentiation of certain species, or the detection of certain groups of organisms, with only a minimum of confirmatory tests. Chloramphenicol inhibits most bacterial contaminants.

VII REAGENTS
BD BBL CHROMagar Candida
Approximate Formula* Per Liter Purified Water
Chromopeptone................................................................. 10.0 g
Glucose ................................................................. 20.0 g
Chromogen Mix ................................................................. 2.0 g
Chloramphenicol ................................................................. 0.5 g
Agar ................................................................. 15.0 g

*Adjusted and/or supplemented as required to meet performance criteria.
Warnings and Precautions: For in vitro Diagnostic Use.
If excessive moisture is observed, invert the bottom over the offset lid and allow to air dry in order to prevent formation of a seal between the top and the bottom of the plate during incubation.

Storage Instructions: On receipt, store plates in the dark at 2–8 °C in original sleeve wrapping and original cardboard box until time of inoculation. Plates may be inoculated up to the expiration date.

Product Deterioration: Do not use plates if they show evidence of microbial contamination, discoloration, drying or cracking.

VIII SPECIMEN COLLECTION AND HANDLING
Refer to appropriate texts for details of specimen collection and handling procedures.
Pathogenic microorganisms, including hepatitis viruses and Human Immunodeficiency Virus, may be present in clinical specimens.

IX PROCEDURE
Material Provided: BD BBL CHROMagar Candida
Materials Required But Not Provided: Ancillary culture media, reagents, quality control organisms and other laboratory equipment as required.

Test Procedure: Observe aseptic techniques. The agar surface should be smooth and moist, but without excessive moisture. Allow the medium to warm to room temperature before inoculation.
As soon as possible after receipt in the laboratory, inoculate the specimen onto a BD BBL CHROMagar Candida plate and streak for isolation. If the specimen is cultured from a swab, roll the swab gently over a small area of the surface at the edge, then streak from this area with a loop. Incubate plates aerobically at 35 ± 2 °C for 36–48 h in an inverted position (agar-side up). Occasional isolates, such as Cryptococcus neoformans and filamentous fungi, will require a longer incubation time and possibly a lower incubation temperature. Do not incubate in an atmosphere supplemented with carbon dioxide. Minimize exposure to light both before and during incubation.

User Quality Control: See “Quality Control Procedures.”
Quality control requirements must be performed in accordance with applicable local, state and/or federal regulations or accreditation requirements and your laboratory’s standard Quality Control procedures. It is recommended that the user refer to pertinent CLSI guidance and CLIA regulations for appropriate Quality Control practices.

X RESULTS
After proper incubation, read plates against a white background. Plates from specimens containing yeasts will show growth. Depending on the yeast species, colonies will appear light to medium green (C. albicans), light mauve to mauve flat colonies with a whitish border (C. krusei), or dark blue to metallic blue (C. tropicalis). Colonies that appear light to dark mauve or appear in their natural cream color should be identified using standard methods. Identification is presumptive for these three species, confirmatory tests are recommended.

XI LIMITATIONS OF THE PROCEDURE
Consult appropriate references for detailed information and recommended procedures for the identification of isolates. Since molds and other filamentous fungi metabolize the chromogenic substrates, the colors exhibited by these organisms on BD BBL CHROMagar Candida medium may differ from those exhibited on Sabouraud Dextrose Agar. Do not use the appearance of growth on this medium for traditional descriptive identification from Sabouraud Dextrose Agar.
C. glabrata and C. parapsilosis cannot be differentiated using this product. These identifications should be confirmed using other standard laboratory methods.
It has been reported that C. dubliniensis produces a distinctive dark green color on primary isolation with BD BBL CHROMagar Candida Medium. However, this property may not be retained in subculture. Additional phenotypic and genotypic assays may be necessary. The clinical importance of C. dubliniensis requires further study.
Minimize exposure to light before and during incubation, as light may destroy the chromogens. Keep plates within original sleeve wrapping and cardboard box for the entire storage period.

XII PERFORMANCE CHARACTERISTICS
A total of 160 clinical samples were plated onto BD BBL CHROMagar Candida plates at a large metropolitan hospital. Preliminary identification was done using the following reference methods: microscopy, Cream of Rice Agar, sheep blood media, Vitek™ and API™ systems.

Candida albicans: A total of 160 isolates were grown and identified with BD BBL CHROMagar Candida plates. Of the 160 isolates, 105 developed the characteristic "green" colony color of Candida albicans on BD BBL CHROMagar Candida. The one outlying isolate did not develop green colonies. When the confirming method was used for identification, the result was Candida albicans. Identification of all BD BBL CHROMagar Candida albicans results were verified using at least one of the reference methods. It should be noted that four of these isolates were initially isolated in mixed culture with other fungi.

Candida krusei: A total of 5 isolates were grown and identified with BD BBL CHROMagar Candida. All 5 isolates developed colonies that appeared as mauve with white edges and were powdery or dry in appearance, the characteristic colony color of C. krusei. Identification of all BD BBL CHROMagar Candida krusei results were verified using at least one of the reference methods.

Candida tropicalis: A total of 10 isolates were grown and identified with BD BBL CHROMagar Candida. Of the 10 isolates, all developed the characteristic "blue" to "metallic blue" color of C. tropicalis on the test medium. Identification of all BD BBL CHROMagar C. tropicalis results were verified using at least one of the reference methods.

XIII AVAILABILITY
Cat. No. Description
254093 BD BBL™ CHROMagar™ Candida, Pkg. of 20 plates
XIV REFERENCES


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7 Loveton Circle
Sparks, MD 21152 USA

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