BD™ BiGGY Agar (Bismuth Glucose Glycine Yeast Agar)

INTENDED USE

BD BiGGY Agar is a partially selective and differential medium for the isolation and differentiation of *Candida* species from clinical specimens.

PRINCIPLES AND EXPLANATION OF THE PROCEDURE

Microbiological method.

BiGGY Agar is a modification of the Nickerson medium.[1] During the study of the sulfite reduction of *Candida* species, Nickerson detected differences in this ability between the *Candida* species. He described this medium for the isolation of *Candida albicans* which can be differentiated from other *Candida* species by means of colony colour and morphology.[2]

In **BD BiGGY Agar**, yeast extract and glucose provide the nutrients necessary for yeast growth. Glycine is an additional nutrient, but also inhibits many bacterial species at the high concentration used in this medium. *Candida* species, through a process of substrate reduction, reduce the bismuth salt to bismuth and sulfite to sulfide. Bismuth and sulfide combine to a brownish to black precipitate which stains the colonies and may diffuse into the medium. Also, the bismuth and sulfur compounds are inhibitory to many bacteria.

REAGENTS

BD BiGGY Agar

Formula* Per Liter Purified Water

Bismuth Ammonium Citrate	5.0 g
Sodium Sulfite	3.0
Glucose	10.0
Glycine	10.0
Yeast Extract	1.0
Agar	16.0

pH 6.8 +/- 0.2

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

PRECAUTIONS

IVD . For professional use only.

Do not use plates if they show evidence of microbial contamination, discoloration, drying, cracking or other signs of deterioration.

Consult **GENERAL INSTRUCTIONS FOR USE** document for aseptic handling procedures, biohazards, and disposal of used product.

STORAGE AND SHELF LIFE

On receipt, store plates in the dark at 2 to 8° C, in their original sleeve wrapping until just prior to use. Avoid freezing and overheating. The plates may be inoculated up to the expiration date (see package label) and incubated for the recommended incubation times.

Plates from opened stacks of 10 plates can be used for one week when stored in a clean area at 2 to 8° C.

USER QUALITY CONTROL

Inoculate representative samples with the following strains (for details, see **GENERAL INSTRUCTIONS FOR USE** document). Incubate the plates for 48 to 72 hours at 25 to 28° C.

Strains	Growth Results
Candida albicans ATCC™ 60193	Colonies brown-red, or creme with brown center; no sheen
Candida glabrata ATCC 2001	Light brown colonies
Candida krusei ATCC 34135	Large flat, reddish-brown colonies with silvery black top, brown edge and yellowish halos
Candida tropicalis ATCC 1369	Brown colonies with black centers and sheen, diffuse blackening of the surrounding medium (often only after 72 h of incubation)
Escherichia coli ATCC 25922	Inhibition partial to complete; beige colonies
Pseudomonas aeruginosa ATCC 27853	Inhibition partial to complete; beige colonies
Staphylococcus aureus ATCC 25923	Inhibition partial to complete; white colonies
Uninoculated	Whitish to light amber, opalescent with a slightly flocculent precipitate

PROCEDURE

Materials Provided

BD BiGGY Agar (90 mm **Stacker™** plates). Microbiologically controlled.

Materials Not Provided

Ancillary culture media, reagents and laboratory equipment as required.

Specimen Types

This medium is used for the isolation and differentiation of *Candida* species from all types of clinical specimens (see also **PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THE PROCEDURE**).

Test Procedure

Streak the specimen as soon as possible after it is received in the laboratory. The streak plate is used primarily to isolate pure cultures from specimens containing mixed flora. Alternatively, if material is being cultured directly from a swab, roll the swab over a small area of the surface at the edge; then streak from this inoculated area.
Incubate the plates aerobically for at least 48 hours and not longer than 5 days, at 30 +/2° C.
The inoculation of other fungal media, e.g., **BD Sabouraud Glucose Agar** or **BD CHROMagar™ Candida Medium**, and media for the detection of bacteria is recommended to provide an indication of all pathogens present in the specimen.

Results

After the incubation, the appearance of the organisms will be as follows:

Candida albicans	Brown red to black colonies, no pigment diffusion into the medium; no sheen
C. tropicalis	Dark brown colonies with black centers and sheen, diffuse blackening of the surrounding medium (often only after 72 h of incubation)
C. krusei	Large flat reddish-brown colonies with silvery black top, brown edge and yellowish halos
C. pseudotropicalis	Large, reddish-brown colonies, flat with mycelial fringe
Candida glabrata	Pale to light brown colonies

Further tests are necessary for confirmation of the presumptive identification obtained on this medium.[3]

PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THE PROCEDURE

BD BiGGY Agar is a selective and differential medium for the isolation and differentiation of *Candida* species from clinical specimens.[4-6] Accompanying bacterial flora is partially to completely inhibited on this medium.
Yeasts other than Candida and certain filamentous fungi may grow on this medium, but can be differentiated by different appearance on this medium.
For a final identification of the species isolated, additional biochemical and morphological tests are needed. Identification of *Candida albicans*, *C. krusei*, and *C. tropicalis* may be performed by using **BD CHROMagar Candida Medium**. For other species, complete biochemical identification is necessary.
Certain bacteria may grow on **BD BiGGY Agar** and produce a brownish precipitate. They can be differentiated by microscopic examination.
Plates must not be incubated longer than 5 days since this may cause false positives.

REFERENCES

1. Nickerson, W. J. 1947. Biology of pathogenic fungi. The Chronica Botanica Co., Waltham, MA. USA.
2. Nickerson, W. J. 1953. Reduction of inorganic substances by yeasts. I. Extracellular reduction of sulfite by species of *Candid*a. J. Infect. Dis. 93:43.
3. Warren, N. G., and K. C. Hazen. 1995. *Candid*a, *Cryptococcu*s, and other yeasts of medical importance, p. 723-737. *In* P. R. Murray, E. J. Baron, M. A. Pfaller, F. C. Tenover and R. H. Yolken (ed.)., Manual of clinical microbiology, 6th ed. American Society for Microbiology, Washington, D.C.
4. MacFaddin, J. D. 1985. Media for isolation – cultivation – identification - maintenance of medical bacteria, vol. 1, p. 65-68. Williams & Wilkins, Baltimore, MD.
5. Atlas, R.M. 1993. Handbook of microbiological media. CRC Press, Boca Raton, FL, USA.
6. Larocco, M.T. 2003. Reagents, stains, and media: mycology. *In:* Murray, P. R., E. J. Baron, J.H. Jorgensen, M. A. Pfaller, and R. H. Yolken (ed.). Manual of clinical microbiology, 8th ed. American Society for Microbiology, Washington, D.C.

PACKAGING/AVAILABILITY

BD BiGGY Agar
Cat. No. 255002 Ready-to-use Plated Media, cpu 20

FURTHER INFORMATION

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