



Bi.G.G.Y. Agar (Nickerson Medium)

M217

Bi.G.G.Y. Agar (Bismuth Glycine Glucose Yeast Agar) (Nickerson Agar) is a selective medium used for detection, selective isolation, differentiation and presumptive identification of *Candida albicans* and *Candida tropicalis*.

Composition**

Ingredients	Gms / Litre
Yeast extract	1.000
Glycine	10.000
Dextrose	10.000
Bismuth ammonium citrate	5.000
Sodium sulphite	3.000
Agar	16.000
Final pH (at 25°C)	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 45 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. DO NOT AUTOCLAVE OR OVERHEAT. Overheating will destroy the selective properties. Disperse the flocculant precipitate formed by swirling prior to dispensing into Petri plates.

Principle And Interpretation

In a study of sulphite reduction by yeasts, the ability of many types of yeast to reduce bismuth sulphite was noted. Growth on an acidic or neutral medium containing bismuth sulphite produced black colonies because of the extra cellular reaction of the bismuth sulphite to bismuth sulphide.

Bi.G.G.Y. Agar (Nickerson Agar) was originally formulated by Nickerson (1, 2) and further modified by Haley (3) following study of sulphite reduction. This medium is only a part of the identification process of organisms. Other tests may be required. Bismuth ammonium citrate and sodium sulphite together act as selective agents for *Candida* species suppressing bacterial growth, at the same time indicating substrate reduction to yield bismuth sulphite which helps to presumptively identify *Candida* species. Yeast extract, dextrose and glycine serve as nutrients.

Bi.G.G.Y. Agar can be directly inoculated with clinical specimens such as tissues, skin scrapings, hair, nail clipping etc. (4, 5). Do not use slants of medium. Precipitate present in molten medium should be uniformly suspended while plating the agar. This medium may be used for the isolation and presumptive identification of *C. albicans* and *C. tropicalis* from sputum (3) and vaginal smears (6).

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.6% Agar gel.

Colour and Clarity of prepared medium

Light amber coloured, opalescent gel (with a dispersible flocculant precipitate) forms in Petriplates

Reaction

Reaction of 4.5% w/v aqueous solution at 25°C. pH : 6.8±0.2

pH

6.60-7.00

Cultural Response

M217: Cultural characteristics observed after an incubation at 25-30°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colony morphology
Cultural Response				
<i>Candida albicans</i> ATCC 10231	50-100	luxuriant	>=50%	smooth, circular intensely brown black, no colour diffusion and no sheen
<i>Candida kruisei</i> ATCC 24408	50-100	luxuriant	>=50%	large flat, wrinkled silvery brown, black colonies with brown peripheries, yellow halo
<i>Candida tropicalis</i> ATCC 750	50-100	luxuriant	>=50%	smooth discrete, dark brown with black centres, diffused blackening after 72 hours, sheen, slight mycelial fringe
<i>Escherichia coli</i> ATCC 25922	>=10 ³	inhibited	0%	
<i>Staphylococcus aureus</i> ATCC 25923	>=10 ³	inhibited	0%	
<i>Candida pseudotropicalis</i>	50-100	Good	40-50%	Dark reddish brown, glistening colony

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

Reference

1. Nickerson W.J., 1947, The Chronica, Botanica Co.
2. Nickerson W.J., 1953, J. Inf. Dis., 93:43.
3. Haley L.D., 1959, Trans. N.Y. Acad. Sci., 21(8):708.
4. Lennette, Balows, Hausler and Shadomy (Eds.), 1985, Manual of Clinical Microbiology, 4th ed., A.S.M. Washington, D.C.
5. MacFaddin J.F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore..
6. Mendel E.B., Naberman S. and Hall D. K., 1960, Obstet and Gynec.16, 180-184.

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