PRODUCT SPECIFICATION SHEET

Bi.G.G.Y. Agar (Nickerson Medium) (DM031)

Intended Use
Bi.G.G.Y. Agar is used for selective isolation, detection, differentiation and presumptive identification of Candida albicans and Candida tropicalis.

Product Summary and Explanation
BiGGY, Bismuth Sulphite Glucose Glycine Yeast Agar, is based on the formulation developed by Nickerson[1] and may be used for the isolation and presumptive identification of Candida species. In a study of sulphite reduction by yeasts, the ability of many yeasts to reduce a bismuthyl hydroxyl polysulphite was noted. This was demonstrated to be most evident in Candida species but strong reducing ability was confined to Candida albicans, Candida krusei and Candida tropicalis. Growth on an acidic or neutral medium containing bismuth sulphite produced black colonies because of the extra-cellular reduction of the bismuth sulphite, to bismuth sulphide. Barr and Collins[2]described the addition of neomycin sulphate to the medium at 2mg per litre to improve inhibition of accompanying bacterial flora. The medium may be used for the isolation and presumptive identification of C. albicans and C. tropicalis from sputum[2,3]and vaginal smears[4] It is a recommended medium for the quality assessment of pharmaceutical and cosmetic products[5]

Principles of the Procedure
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.

Formula / Liter

Ingredients	Gms / Liter
Yeast extract	1.00
Glycine	10.00
Dextrose	10.00
Bismuth ammonium citrate	5.00
Sodium sulphite	3.00
Agar	16.00
Final pH: 6.8± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions
1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions
1. Suspend 45 grams of the medium in one liter of distilled water.
2. Heat if necessary, to dissolve the medium completely.
3. Autoclave at 121°C , 15 psi pressure, for 15 minutes / validated cycle.
4. Mix well and pour into sterile Petri plates.

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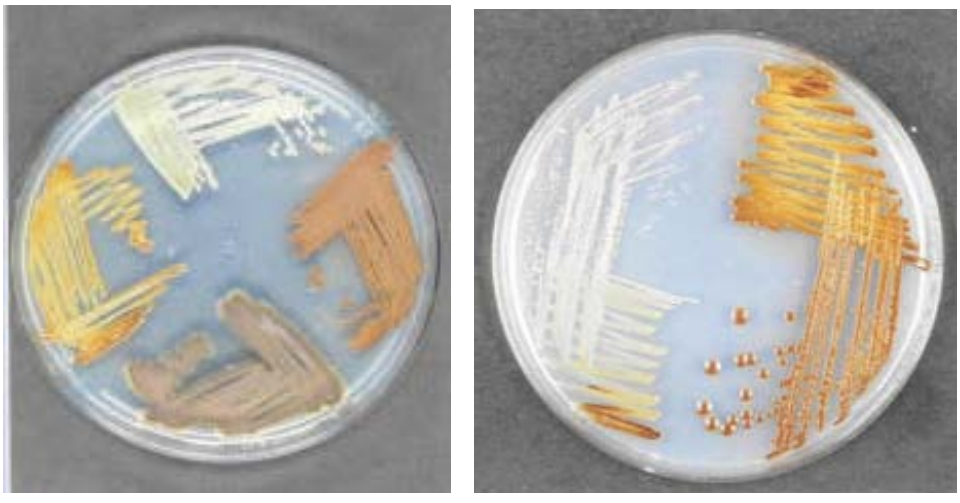
Quality Control Specifications

Dehydrated Appearance	Cream to yellow homogeneous free flowing powder
Prepared Medium	Light amber coloured, opalescent gel (with a dispersible flocculant precipitate) forms in Petriplates
Reaction of 4.5% Solution	pH : 6.8 ± 0.2 at 25°C
Gel Strength	Firm, comparable with 1.6% Agar gel.

Expected Cultural Response: Cultural characteristics observed after an incubation at 35 - 37°C for 18 - 48 hours.

Sr. No.	Organisms	Results to be achieved			
		Inoculum (CFU)	Growth	Recovery	Colony morphology
1.	*Candida albicans ATCC 10231*	50 -100	Luxuriant	>=50%	smooth,circular intensly brown black, no colour diffusion and no sheen
2.	*Candida kruisei ATCC 24408*	50 -100	Luxuriant	>=50%	large flat, wrinkled silvery brown, black colonies with brown peripheries, yellow halo
3.	*Candida tropicalis ATCC 750*	50-100	Luxuriant	>=50%	Smooth discrete, dark brown with black centres, diffused blackening after 72 hours, sheen, slight mycelial fringe
4.	*Escherichia coli ATCC 25922*	>=10^3	Inhibited	0%	-
5.	*Staphylococcus aureus ATCC 25923*	>=10^3	Inhibited	0%	-
6.	*Candida pseudotropicalis*	50-100	Good	40-50%	Dark reddish brown, glistening colony

The organisms listed are the minimum that should be used for quality control testing.



Different colony colors and morphologies of various *Candida* species on BIGGY agar.[10]

a) Isolates of *C. parapsilosis* (top), *C. albicans* (left), *C. krusei* (bottom) and *C. tropicalis* (right)
b) Isolates of *C. glabrata* (left) *C. albicans* (right) on BIGGY agar plates

Test Procedure

1. Consult appropriate references for information about the processing and inoculation of specimens such as tissues, skin scrapings, hair, nail clippings, etc.[2-5]
2. The streak plate technique is used primarily to obtain isolated colonies from specimens containing mixed flora.
3. When using slants, streak the surface of the slant with a sterile inoculating loop needle using two to three isolated colonies. However use of slants has been found to be unsatisfactory.
4. Incubate plates in an inverted position (agar side up) for up to 5 days at 25 ± 2°C.

Results

1. Within 5 days of incubation, the plates should show isolated colonies in streaked areas and confluent growth in areas of heavy inoculation.
2. Slants should show evidence of growth.
3. Examine plates and slants for colonies showing characteristic growth patterns and morphology.
4. Further tests are necessary for confirmation of the presumptive identification obtained on this medium.[9]
5. 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

Storage

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

1. Do not use slants of medium because the reactions are unsatisfactory.
2. The flocculent precipitate present in the molten medium must be evenly suspended whilst dispensing the agar.
3. Yeasts other than Candida and certain filamentous fungi may grow on this medium, but can be differentiated by different appearance on this medium.
4. For a final identification of the species isolated, additional biochemical and morphological tests are needed.
5. Certain bacteria may grow on BiGGY Agar and produce a brownish precipitate. They can be differentiated by microscopic examination.
6. Plates must not be incubated longer than 5 days since this may cause false positives.

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Packaging
Product Name :Bi.G.G.Y.Agar.
Product Code : DM031
Available Pack sizes : 100gm / 500gm

References

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Further Information

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