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

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

**Composition**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Gms / Litre</th>
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</thead>
<tbody>
<tr>
<td>Yeast extract</td>
<td>1.000</td>
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<tr>
<td>Glycine</td>
<td>10.000</td>
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<tr>
<td>Dextrose</td>
<td>10.000</td>
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<tr>
<td>Bismuth ammonium citrate</td>
<td>5.000</td>
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<tr>
<td>Sodium sulphite</td>
<td>3.000</td>
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<tr>
<td>Agar</td>
<td>16.000</td>
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<tr>
<td>Final pH (at 25°C)</td>
<td>6.8±0.2</td>
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</table>

**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. Cool to 45-50°C. Disperse the flocculant precipitate formed by swirling, prior to dispensing into sterile 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 coloured granular medium

**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**

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

Please refer disclaimer Overleaf.
### Organism | Inoculum (CFU) | Growth | Recovery | Colony morphology
--- | --- | --- | --- | ---
**Cultural Response**
*Candida albicans ATCC 10231* | 50-100 | luxuriant | >=50% | smooth, circular intensely brown black, no colour diffusion and no sheen

*Candida kruisei ATCC 24408* | 50-100 | luxuriant | >=50% | large flat, wrinkled silvery brown, black colonies with brown peripheries, yellow halo smooth discrete, dark brown with black centres, diffused blackening after 72 hours, sheen, slight mycelial fringe

*Candida tropicalis ATCC 750* | 50-100 | luxuriant | >=50% | Dark reddish brown, glistening colony

*Escherichia coli ATCC 25922* | >=10³ | inhibited | 0% |  

*Staphylococcus aureus ATCC 25923* | >=10³ | inhibited | 0% |  

*Candida pseudotropicalis* | 50-100 | Good | 40-50% |  

### 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

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**Disclaimer:**
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