

## Technical Information

### Gillies Agar No. 1 (Dextrose Mannitol Agar)

#### Product Code: DM 1241

**Application:** Gillies Agar No. 1 (Dextrose Mannitol Agar) is recommended for detection of urease production, dextrose and mannitol fermentation for primary isolation of Salmonella and Shigella species

#### Composition\*\*

Ingredients	Gms / Litre
Proteose peptone	15.000
Beef extract	2.000
Yeast extract	2.000
Dextrose	1.000
Mannitol	10.000
Bromothymol blue	0.025
Cresol red	0.008
Thymol blue	0.020
Agar	16.000
Final pH ( at 25°C)	7.2±0.2

\*\*Formula adjusted, standardized to suit performance parameters

#### Principle & Interpretation

Enterobacteriaceae genera consist of gram-negative bacilli and are widely distributed in nature. It includes pathogens such as Salmonella, Shigella, Yersinia, diarrheagenic E.coli and others. These bacteria cause different type of diseases in humans and are frequently isolated from clinical specimens. Detection and identification of the bacteria are of importance both from clinical and epidemiological point of view. The other enterobacteria are essentially commensals or saprophytes <sup>(1)</sup>. Gillies Agar No. 1 <sup>(2)</sup>, a modification of Kohns Medium <sup>(3)</sup> is recommended for detection of urease production and dextrose and mannitol fermentation activities. This medium is a reliable substitute for the conventional method of determining the biochemical identity of non-lactose fermenting colonies prior to confirmation by serological typing <sup>(1)</sup>.

Fermentation of dextrose is indicated by the butt changing colour from deep green to yellow and that of mannitol by the development of a yellow slant. Gas production during fermentation, appears in varying degrees from a slight splitting along the wire track to disruption of the medium. Urease production produces a deep blue colour throughout the medium.

Beef extract, proteose peptone and yeast extract serve as sources of essential nutrients for bacterial growth. Yeast extract additionally serves as a source of B complex vitamins. Dextrose and mannitol are the fermentable carbohydrates, with bromothymol blue, cresol red and thymol blue forming the indicator mixture.

The specimen is inoculated into a preliminary enrichment medium such as Fluid Tetrathionate Broth Base (DM1032). After incubation at 35-37°C for 18-24 hours, this enriched culture is subcultured on a differential media such as Wilson and Blair Medium (DM1331) or MacConkey Agar (DM1081). Presumptive colonies are purified and pure cultures are used to inoculate the tubes of Gillies Agar No.1. The medium is inoculated by both smearing the slant and then stabbing to the base of the butt.

#### Methodology

Suspend 46.05 grams of powder media in 1000 ml distilled water. Shake well & heat to dissolve the medium completely. Sterilize by autoclaving at 115°C for 15 minutes. Cool to 45°C and aseptically add 25 ml of sterile 40% urea solution (MS2048). Mix well and dispense in tubes. Cool in a slanted position to form slants with generous butts.

## Quality Control

### Physical Appearance

Light yellow to greenish yellow homogeneous free flowing powder

### Gelling

Firm, comparable with 1.6% Agar gel

### Colour and Clarity of prepared medium

Green coloured, clear to slightly opalescent gel forms in tubes as slants

### Reaction

Reaction of 4.6% w/v aqueous solution at 25°C. pH : 7.2±0.2

### pH Range

7.00-7.40

### Cultural Response/Characteristics

DM 1241: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Dextrose/Mannitol Urea
<i>Enterobacter aerogenes</i> ATCC 13048	50-100	luxuriant	Positive reaction, yellow butt/slant Negative reaction
<i>Escherichia coli</i> ATCC 25922	50-100	Luxuriant	Positive reaction, yellow butt/slant Negative reaction
<i>Klebsiella pneumoniae</i> ATCC 13883	50-100	Luxuriant	Positive reaction, yellow butt/slant Positive reaction, deep blue colour
<i>Salmonella Typhi</i> ATCC 6539	50-100	luxuriant	Positive reaction, yellow butt/slant Negative reaction

## Storage and Shelf Life

**Dried Media:** Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

**Prepared Media:** 2-8° in sealable plastic bags for 2-5 days.

## Further Reading

1. Cruickshank R., Duguid J. P., Marmion B. P., Swain R. H. A., (Eds.), 1975, Medical Microbiology, 12th Edition, Vol. II, Churchill Livingstone
2. Gillies R. R., 1956, J. Clin. Pathol., 9, 368.
3. Kohn J., 1953, J. Clin. Pathol., 6, 249.

## Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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