Gillies Agar No. 1 (Dextrose Mannitol Agar)

M241

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

Directions

Suspend 46.05 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 115°C(10 lbs pressure) for 15 minutes. Cool to 45°C and aseptically add 25 ml of sterile 40% urea solution (FD048). Mix well and dispense in tubes. Cool in a slanted position to form slants with generous butts.

Principle And 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 multitude 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 (1). Gillies Agar No. 1 (2), a modification of Kohns Medium (3) is recommended for detection of urease production and dextrose and mannitol fermentation. 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 (1).

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 (M032). 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 (M331) or MacConkey Agar (M081). 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.

Quality Control

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
7.00-7.40

Cultural Response
M241: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

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

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

Reference
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.

Revision : 2 / 2015