MUG MacConkey Agar

M1080

MUG MacConkey Agar is used for the selective isolation and detection of lactose fermenting coliform organisms by a fluorogenic procedure.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	20.000
Lactose	10.000
Bile salts mixture	1.500
Sodium chloride	5.000
Neutral red	0.030
Crystal violet	0.001
4-Methylumbelliferyl ß-D-glucuronide (MUG)	0.100
Agar	15.000
Final pH (at 25°C)	7.1±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 51.63 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Mix well before pouring.

Principle And Interpretation

MacConkey Agar is employed for the cultivation of enteric bacteria and in differentiation of lactose fermenters and non-fermenters. The medium contains bile salts to inhibit non-intestinal bacteria and lactose with neutral red indicator to distinguish the lactose-fermenting coliforms from the lactose-non-fermenting *Salmonella* and dysentery groups (1). MUG MacConkey Agar is based on the modification of MacConkey medium as per Trepeta and Edberg (2). It is used for the selective isolation and detection of lactose fermenting coliform organisms by a fluorogenic procedure. MUG MacConkey Agar helps to detect the presence of an enzyme ß-glucuronidase and thereby rapidly identifying *Escherichia coli* in mixed clinical specimens (3).

Peptic digest of animal tissue provides essential nitrogen compounds for the growth of coliforms. Lactose is the fermentable carbohydrates source. Bile salts and crystal violet inhibit the growth of gram-positive bacteria.

Neutral red is the pH indicator. MUG is cleaved by the enzyme ß-glucuronidase to release an end product 4-methylumbelliferone which produces a visible greenish-blue fluorescence under long wave ultra-violet light (366nm). The plates are exposed to ammonia fumes to increase fluorescence as suggested by Freir and Hartman (5).

The medium can be directly inoculated with the test specimen by streaking.

Quality Control

Appearance
Light yellow to pink homogeneous free flowing powder

Gelling
Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium
Red with purple tinge clear to slightly opalescent gel forms in Petri plates

Reaction
Reaction of 5.16% w/v aqueous solution at 25°C. pH : 7.1±0.2

pH
6.90-7.30

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

Cultural Response

Organism	Inoculum (CFU)	Growth	Recovery	*Fluorescence under uv
Cultural Response				
Enterobacter aerogenes ATCC 13048	50-100	luxuriant	>=50%	negative
Escherichia coli ATCC 25922	50-100	luxuriant	>=50%	positive

Storage and Shelf Life

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

Reference

1. Cruickshank R., Duguid J. P., Marmion B. P., Swain R. H. A., 1975, Medical Microbiology, Churchill Livingstone
2. Trepeta R. W. and Edberg S. C., 1984, J. Clin. Microbiol., 19 (2) :172.
3. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification Maintenance of Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore.
4. Maddocks J. L. and Greenan M. J. (1975) J. Clin. Pathol. 28. 686-687.
5. Freir T. A. and Hartman P. A. (1987) Appl. Env. Microbiol. 53. 1246-1250.

Revision : 1 / 2011

CE