MUG MacConkey HiVeg™ Agar

MV1080

Intended Use:

Recommended as a selective medium for isolation and detection of lactose fermenting coliform organisms by a fluorogenic method.

Composition**

Ingredients	g / L
HiVeg™ peptone	20.000
Lactose	10.000
Synthetic detergent no. 1	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 purified / distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C. Mix well and pour into sterile Petri plates.

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). MUG MacConkey HiVeg™ Agar is prepared by using vegetable peptones in place of animal based peptones which make the media free of BSE/TSE risks.

HiVeg™ peptone provides essential nitrogen compounds for the growth of coliforms. Lactose is the fermentable carbohydrates source. Synthetic detergent no. 1 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 (4). The medium can be directly inoculated with the test specimen by streaking.

Type of specimen

Food and dairy samples; Water samples.

Specimen Collection and Handling

For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (5,6). For water samples, follow appropriate techniques for sample collection and processing as per guidelines (7). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions:

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations:

1. Though the medium is recommended for selective isolation, further biochemical and serological testing must be carried out for further confirmation.

2. The surface of the mediumshould be dry when inoculated.
3. Approximately 40% of *Shigella* spp. and various biotypes of *Salmonella* may also be ß-glucuronidase positive. (4)

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

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.

Organism	Inoculum (CFU)	Growth	Recovery	# Fluorescence under uv
Klebsiella aerogenes ATCC 13048 (00175*)	50-100	luxuriant	>=50%	negative
Escherichia coli ATCC 25922 (00013*)	50-100	luxuriant	>=50%	positive

Key :(*) Corresponding WDCM numbers

Storage and Shelf Life

Store between 10- 30°C in a tightly closed container and the prepared medium at 20-30°C. For better performance ot is advised to store the plates at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (8,9).

Reference

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5. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.
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9. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

Revision : 03/2024