MUG Nutrient Agar

M1461

MUG Nutrient Agar is used for detection of *Escherichia coli* in water and food samples by a fluorogenic procedure.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	5.000
Sodium chloride	5.000
Beef extract	1.500
Yeast extract	1.500
4-Methylumbelliferyl ß-D-Glucuronide (MUG)	0.100
Agar	15.000
Final pH (at 25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 28.1 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 and pour into sterile Petri plates.

Principle And Interpretation

Escherichia coli is the member of faecal coliform group, presence of which in water indicates faecal contamination. These bacteria possess the enzyme b-glucuronidase and are capable of cleaving the fluorogenic substrate 4-Methylumbelliferyl beta-D-Glucuronide (MUG) with the release of the corresponding fluorogen, 4-Methylumbelliferone (1). Therefore incorporation of MUG and subsequent fluoroscense is confirmatory for presence of *E. coli* with no further confirmation required (2). MUG Nutrient Agar is recommended for detection of *E. coli* in water and food samples by a fluorogenic method. Presumptive *E. coli* in the samples can be directly inoculated into the medium.

Peptic digest of animal tissue, beef extract and yeast extract provide nitrogenous compounds and vitamin B complex. MUG is cleaved by the enzyme beta-glucuronidase of *E.coli* to release 4-methylumbelliferone which produces visible green-blue fluorescence under long wave UV light (1). Some strains of *Salmonella* and *Shigella* species also produce glucuronidase (3). Refer appropriate references for standard procedures (1).

Quality Control

Appearance
Cream to yellow homogeneous free flowing powder

Gelling
Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium
Light amber coloured clear to slightly opalescent gel forms in Petri plates

Reaction
Reaction of 2.81% w/v aqueous solution at 25°C. pH : 7.4±0.2

pH
7.20-7.60

Cultural Response
M1461: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Fluorescence (under UV light at 366 nm)

Cultural Response

Escherichia coli ATCC 25922	50-100	good-luxuriant	>=70%	positive
Pseudomonas aeruginosa ATCC 27853	50-100	good-luxuriant	>=70%	negative
Staphylococcus aureus ATCC 25923	50-100	good-luxuriant	>=70%	negative
Streptococcus pyogenes ATCC 19615	50-100	good-luxuriant	>=70%	Negative

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

1. Eaton A. D., Clesceri L. S. and Greenberg A. E. (ed.), 1995, Standard Methods for the Examination of Water and Wastewater, 19th Ed., American Public Health Association, Washington, D.C.
2. Feng J. S. and Hartman P. A., 1982, Appl. Environ. Microbiol., 43:1320
3. McFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Vol. I, Williams and Wilkins, Baltimore.

Revision : 2 / 2015