

Technical Information

MUG Nutrient Agar

Product Code: DM 2461

Application: - MUG Nutrient Agar is recommended 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 β -D-Glucuronide (MUG)	0.100
Agar	15.000
Final pH (at 25°C)	7.4 \pm 0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

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.

Escherichia coli is the member of faecal coliform group, presence of which in water indicates faecal contamination. These bacteria possess the enzyme β -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 fluorescence is confirmatory for presence of *E. coli* with no further confirmation required (2).

Peptic digest of animal tissue, beef extract and yeast extract supply nitrogenous compounds and vitamin B complex. MUG is cleaved by the enzyme β -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).

Methodology

Suspend 28.1 grams of dehydrated powder media in 1000 ml distilled water. Mix thoroughly & heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Shake well before pour into sterile Petri plates.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity

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 \pm 0.2

pH Range

7.20-7.60





Dehydrated Culture Media
Bases / Media Supplements

Cultural Response

DM 2461: 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)
<i>Escherichia coli</i> ATCC 25922	50-100	good-luxuriant	>=70%	positive
<i>Pseudomonas aeruginosa</i> ATCC 27853	50-100	good-luxuriant	>=70%	negative
<i>Staphylococcus aureus</i> ATCC 25923	50-100	good-luxuriant	>=70%	negative
<i>Streptococcus pyogenes</i> ATCC 19615	50-100	good-luxuriant	>=70%	Negative

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

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

Further Reading

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.

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