Technical Data

MUG EC Broth, Modified

M1342

Intended use

Recommended for the detection and enumeration of *Escherichia coli* in surface and waste water by miniaturized method (MPN).

Composition**

Ingredients	Gms / Litre
Tryptone	40.000
Salicin	1.000
Triton X-100	1.000
MUG	0.100
Final pH (at 25°C)	6.9±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 42.1 grams in 1000 ml purified/distilled water. Heat if necessary to dissolve the medium completely. Dispense into tubes or flasks as desired. Sterilize by autoclaving at 15 lbs pressure (121°C) for 12-15 minutes.

Principle And Interpretation

EC Broth was devised by Hajna and Perry (3) for the detection of *Escherichia coli* and coliforms. This was further modified by the addition of the fluorogeniccompound MUG (2) for rapid detection of *E. coli*. MUG permits rapid detection of *E. coli* when medium is observed under UV light for fluorescence (2,6). MUG also detects anaerogenic strains which may not be detected in conventional procedure (2). MUG is hydrolyzed by an enzyme ß-glucuronidase possessed by *Escherichia coli* to yield a fluorescent end product 4-Methylumbelliferone.

Tryptone provides essential nutrients. Salicin act as energy sources and Triton X-100 acts as a surfactant. Following incubation, observe tubes for growth and fluorescence under long-wave (366nm) UV light. Positive reaction exhibits bluish fluorescence. Some strains of *Salmonella* and *Shigella* may also produce glucuronidase therefore these must be distinguished from *E.coli* on the basis of other parameters i.e. growth at 44°C and other biochemical tests.

Type of specimen

Water samples.

Specimen Collection and Handling

For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.(1) 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. This medium is general purpose medium and may not support the growth of fastidious organisms.

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

Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Light amber coloured clear solution

Reaction
Reaction of 4.21% w/v aqueous solution at 25°C. pH : 6.9±0.2

pH
6.70-7.10

Cultural Response
M1342: Cultural characteristics observed after an incubation at 44°C for 36 hours.

Organism	Inoculum (CFU)	Growth	Fluorescence under 366 nm
Cultural Response			
# Klebsiella aerogenes ATCC 13048 (00175*)	>=10^3	inhibited	negative
Escherichia coli ATCC 25922 (00013*)	50-100	luxuriant	positive, blue
Shigella flexneri ATCC 12022 (00126*)	>=10^3	inhibited	negative
Salmonella Typhi ATCC 6539	>=10^3	inhibited	negative

Key : *Corresponding WDCM numbers. # Formerly known as *Enterobacter aerogenes*

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 20-30°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. Use before expiry date on the label.
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 (4,5).

Reference

1. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23rd ed., APHA, Washington, D.C.
2. Feng P. C. S and Hartman P. A. S., 1982, Appl. Environ Microbiol., 43:132.
3. Hajna A. A. and Perry C. A., 1943, Am. J. Public Health 33 : 550.
4. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.
5. 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.
6. Robinson J., 1984, Appl. Environ. Microbiol, 48: 285.

Revision : 02 / 2018