



MUG MFC Agar

M1387

MUG MFC Agar is recommended for cultivation and enumeration of faecal coliforms by the membrane filter technique at elevated temperature.

Composition**

Ingredients	Gms / Litre
Tryptose	10.000
Proteose peptone	5.000
Yeast extract	3.000
Bile salts	1.500
Sodium chloride	5.000
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

Directions

Suspend 39.6 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. DO NOT AUTOCLAVE. Mix well and pour into sterile Petri plates.

Principle And Interpretation

Faecal coliforms are organisms present in the gastrointestinal tract of warm blooded animals. Presence of faecal coliforms in water is an indication of faecal contamination. MFC Agar, formulated by Geldrich et al (1) is recommended for the detection of faecal coliforms in water samples by the membrane filter technique (2). *Escherichia coli* is a member of the faecal coliform group, which possess the enzyme β -glucuronidase. This enzyme specifically cleaves 4-Methylumbelliferyl- β -D-Glucuronide (MUG) to form a fluorescent end product 4-Methylumbelliferone. This end product fluoresces under long wave UV light (366 nm) (1). MUG MFC Agar is MFC Agar with added MUG and is recommended for cultivating and enumerating faecal coliforms by the membrane filtration technique.

Tryptose and proteose peptone provide carbon, nitrogen, vitamins and minerals necessary for the growth of faecal coliforms. Yeast extract provides B-complex vitamins, which stimulate bacterial growth. Bile salts inhibit the growth of gram-positive microorganisms. Incorporation of MUG in the medium permits rapid detection of *E. coli*, when the medium is observed for fluorescence under long-wave UV light.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Yellow coloured clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 3.96% w/v aqueous solution at 25°C. pH : 7.4 \pm 0.2

pH

7.20-7.60

Cultural Response

M1387: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours

Organism	Inoculum (CFU)	Growth	Recovery	Fluorescence (under UV)
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<i>Escherichia coli</i> ATCC 25922	50-100	luxuriant	>=50%	positive
<i>Enterococcus faecalis</i> ATCC 29212	>=10 ³	inhibited	0%	
<i>Salmonella Typhimurium</i> ATCC 14028	50-100	luxuriant	>=50%	negative
<i>Shigella flexneri</i> ATCC 12022	50-100	luxuriant	>=50%	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. Geldreich E. E., Clark H. F., Huff C. B. and Best L. C., 1965, J. Amer. Water Works Assoc. 57:208.
2. Eaton A. D., Clesceri L. S. and Greenberg A. E., (Eds.), 1995, Standard Methods for the Examination of Water and Wastewater, 19th Ed., American Public Health Association, Washington, D.C.

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