Technical Information

MUG Lauryl Sulphate Broth

Product Code: DM 2046

Application: - MUG Lauryl Sulphate Broth is used for detection of coliform organisms in water and food specimens by a fluorogenic procedure.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	20.000
Lactose	5.000
Sodium chloride	5.000
Dipotassium phosphate	2.750
Monopotassium phosphate	2.750
Sodium lauryl sulphate	0.100
4-Methylumbelliferyl ß-D-glucuronide (MUG)	0.050
Final pH (at 25°C)	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

MUG Lauryl Sulphate Broth was formulated by Mallmann and Darby (1) and is recommended by APHA for the detection and enumeration of coliform organisms in foods, water and wastewater (2, 3). MUG is added in Lauryl Sulphate Broth as the fluorogenic compound which permits the rapid detection of Escherichia coli when observed under UV light where further confirmation is not required (2, 4). MUG detects anaerogenic strains which may not be detected in the conventional procedure. Feng and Hartman (5) used MUG-containing medium for studying ß-glucuronidase activity and found *Escherichia coli* has 96-100% activity, *Salmonella* species with 17% and *Shigella* species 40% activity and other genera were negative. For weakly positive strains incubation should be carried out overnight. Robison (4) reported no false negative results and about 5% false positive results.

Casein enzymic hydrolysate provides nutrients while lactose serve as energy source. Sodium lauryl sulphate enhances many organisms other than coliforms. 4-methylumbelliferyl-ß-D-glucuronide is hydrolyzed by an enzyme ß-glucuronidase possessed by organisms to yield 4-methylumbelliferone, a fluorescent end product.

Inoculate 10 ml of the test specimen into three tubes each of single strength and double strength medium. Incubate the tubes at 35°C for 24 hours. Observe for opacity and gas formation. For confirmation of presumptive *E. coli*, observe for fluorescence and perform indole reaction using Kovacs Reagent (R1008).

Methodology

Suspend 35.65 grams of dehydrated powder media in 1000 ml distilled water. Mix thoroughly & heat if necessary to dissolve the medium completely. Dispense into tubes with inverted Durhams tubes as required, taking into account the volume of sample to be tested. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Colour and Clarity

Light amber coloured clear solution without any precipitate

Reaction
Reaction of 3.57% w/v aqueous solution at 25°C. pH : 6.8±0.2

pH Range
6.60-7.00

Cultural Response
DM 2046: Cultural characteristics observed after an incubation at 35-37°C for 4-24 hours.

Organism	Inoculum (CFU)	Growth	Fluorescence under uv at 366nm	Indole production
Escherichia coli ATCC 25922	50-100	luxuriant	positive	positive reaction, red ring at the Interface of the medium
Enterobacter aerogenes ATCC 13048	50-100	luxuriant	negative	negative reaction

Storage and Shelf Life

Dried Media: Store below 10-30°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. Mallmann and Darby, 1941, Am.J. Public Health, 31:127.
2. Downes F. P and Ito K. (Ed.), 2001 Compendium of Methods for the Microbiological Examination of Foods, 3rd ed., APHA, Washington, D.C.
3. Greenberg A. E., Trussell R. R. and Clesceri L. S. (Eds.), 1985, Standard Methods for the Examination of Water and Wastewater, 16th ed., APHA, Washington, D.C.
4. Robison, 1984, Appl.Environ.Microbiol., 48:285.
5. Feng P.C.S. and Hartman P. A., 1982, Appl. Environ. Microbiol., 43:1320.

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