# Technical Information

## MUG Bromocresol Purple Broth w/ Lactose

## Product Code: DM 2486

**Application: -** MUG Bromocresol Purple Broth w/ Lactose is recommended for identification of *Escherichia coli* and coliform bacteria from water samples by a fluorogenic assay method.

## Composition**

| Ingredients | Gms / Litre |
|---|---|
| Casein enzymic hydrolysate | 17.000 |
| Papaic digest of soyabean meal | 3.000 |
| Lactose | 10.000 |
| Sodium chloride | 5.000 |
| Bromocresol purple | 0.020 |
| Tryptophan | 1.000 |
| 4-Methylumbelliferyl ß-D-Glucuronide (MUG) | 0.010 |
| Final pH ( at 25°C) | 7.0±0.2 |

**Formula adjusted, standardized to suit performance parameters

## Principle & Interpretation

MUG-Bromocresol Purple Broth w/Lactose is used for identification of *E. coli* and coliform bacteria from water samples by a fluorogenic assay method (1).

*Escherichia coli* is a member of the faecal coliform group of bacteria. Detection of *E. coli* in water indicates faecal contamination. Enzymatic assay have been developed that allow the identification of this organism.

In MUG-Bromocresol Purple Broth w/ Lactose, casein enzymic hydrolysate and papaic digest of soyabean meal provide carbon, nitrogen and other essential growth factors. Sodium chloride helps to maintain the osmotic balance of the medium. The medium is supplemented with lactose as a carbon source. Bromocresol purple acts as pH indicator which has yellow colour at acidic pH and purple colour at alkaline pH. Due to the fermentation of lactose, acid is produced which turns the medium yellow. Gas in the Durhams tubes after incubation indicates the presence of *E. coli* and/ or coliform bacteria. To confirm the detection, cover the culture with 5 mm layer of Kovacs indole reagent (R1008). Development of a red ring after 1-2 minutes confirms presence of *Escherichia coli*.

All commensal *E. coli* produce-glucuronidase which cleave MUG to release 4-methylumbelliferone, a fluorescent compound. The fluorescence can be observed by exposure to long wave UV light (366 nm). The plates are exposed to ammonia fumes to increase fluorescence as suggested by Freir and Hartman (3).

## Methodology

Suspend 36.03 grams of dehydrated powder media or if desired, suspend 72.06 grams in 1000 ml distilled water to prepare double strength medium. Mix thoroughly & heat if necessary to dissolve the medium completely. Dispense into test tubes containing inverted Durhams tubes. Sterilize by autoclaving at 115°C for 20 minutes.

## Quality Control

**Appearance**

Cream to yellow homogeneous free flowing powder

**Colour and Clarity**

Purple coloured clear solution without any precipitate

**Reaction**
Reaction of 3.6% w/v aqueous solution at 25°C. pH : 7.0±0.2

**pH Range**
6.80-7.20

**Cultural Response**
DM 2486: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

| Organism | Inoculum (CFU) | Growth | Acid production | Gas | Fluorescence (under uv) | Indole |
|---|---|---|---|---|---|---|
| *Escherichia coli ATCC 25922* | 50-100 | good-luxuriant | positive reaction, colour | positive reaction | Positive (by adding 0.2N NaOH) | positive reaction, red ring at the interface of the medium |
| *Enterococcus faecalis ATCC 29212* | 50-100 | fair to good | occasional reaction | negative reaction | negative | negative reaction |
| *Klebsiella pneumoniae ATCC 13883* | 50-100 | good-luxuriant | positive reaction, colour | positive reaction | negative | variable reaction |
| *Salmonella Typhimurium ATCC 14028* | 50-100 | good-luxuriant | negative Reaction | negative reactio | negative | negative reaction |

## Storage and Shelf Life

**Dried Media:** Store below 30°C 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. Kolbeck K. et al, 1992, Zbl. Hyg., 193, 31437.
2. Maddocks J. L. and Greenan M. J. (1975) J. Clin. Pathol. 28. 686-687.
3. Freir T. A. and Hartman P. A. (1987) Appl. Env. Microbiol. 53. 1246-1250.

## Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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