

# **Technical Data**

## **M-FC Basal Medium**

## **M1812**

## **Intended Use:**

Recommended for enumeration of faecal coliform by membrane filtration technique with the addition of fluorogenic and chromogenic supplement. It can also be used for clinical samples.

## **Composition\*\***

| Ingredients         | Gms / Litre |
|---------------------|-------------|
| Tryptose            | 10.000      |
| Proteose peptone    | 5.000       |
| Bile Salts Mixture  | 1.500       |
| Yeast extract       | 3.000       |
| Sodium chloride     | 5.000       |
| Agar                | 15.000      |
| Final pH ( at 25°C) | 7.4±0.2     |
|                     |             |

\*\*Formula adjusted, standardized to suit performance parameters

### Directions

Suspend 39.5 grams in 1000 ml purified / distilled water. Heat to boiling to dissolve the medium completely. DO NOT AUTOCLAVE. Cool to 45-50°C. Add rehydrated contents of 1 vial of MUG supplement (FD092) or Chromogenic supplement (FD270) or FD092 and FD270 in combination. Mix well and pour into sterile Petri plates.

## **Principle And Interpretation**

Coliform bacteria are the members of the *Enterobacteriaceae* and are present in large numbers in faeces and sewage. The presence of coliform bacteria, which grow at 44°C, confirms serious water contamination (3). Membrane filter technique is the most common technique used in the detection of faecal coliforms as recommended by APHA. This medium is formulated in accordance with Ciebin et.al. (2). The chromogenic substrate, 5-bromo-4-chloro-3-indolyl-beta-D-glucuronide (BCIG) in the medium is cleaved by the presence of enzyme  $\beta$ - glucuronidase in *E.coli* thereby producing blue coloured colonies. The MUG Supplement in the medium is cleaved by the enzyme  $\beta$ -glucuronidase of *E.coli* to release 4-methylumbelliferone which produces visible blue–green fluorescence under long UV light (1). This medium can be used by addition of either of the two supplements or in combination for the confirmation of *E.coli*. Tryptose, proteose peptone and yeast extract provides carbon, nitrogen compounds, Vitamin Bcomplex and other essential growth nutrients. Bile salts inhibit gram positive organisms. Sodium chloride maintains osmotic balance.

#### Type of specimen

Clinical sample - faecal samples ; Water samples

## **Specimen Collection and Handling**

For clinical samples follow appropriate techniques for handling specimens as per established guidelines (4,5). 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

In Vitro diagnostic Use. 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 clinical specimens. Safety guidelines may be referred in individual safety data sheets.

## Limitations

1. Further biochemical and serological tests must be carried out for further identification.

## **Quality Control**

#### Appearance

Cream to yellow homogeneous free flowing powder

#### Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Light yellow coloured clear to slightly opalescent gel forms in Petri plates

#### Reaction

Reaction of 3.95% w/v aqueous solution at 25°C. pH : 7.4±0.2

#### **Cultural Response**

Cultural characteristics observed with added MUG supplement (FD092) and Chromogenic supplement (FD270) or both in combination, after an incubation at 44-45°C for 24 hours.

| Organism  | Inoculum<br>(CFU) | Growth         | Colour of<br>colony | Fluorescence<br>under uv light |
|---|-------------------|----------------|---------------------|--------------------------------|
| # Klebsiella aerogenes<br>ATCC 13048 (00175*)                 | >=10 <sup>4</sup> | inhibited      |                     |                                |
| Escherichia coli ATCC<br>25922 (00013*)                       | 50-100            | good-luxuriant | blue                | positive                       |
| Enterococcus faecalis ATCC 29212 (00087*)                     | >=10 <sup>4</sup> | inhibited      |                     |                                |
| Staphylococcus aureus<br>subsp. aureus ATCC<br>25923 (00034*) | >=10 <sup>4</sup> | inhibited      |                     |                                |

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

#### **Storage and Shelf Life**

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°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. 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 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. Ciebin, Brodsky, Eddington, Horsnell, Choney, Palmateer, Ley, Joshi and Shears. 1995. Appl. Enviro Microbiol.

3. Collee J.G., Fraser A.G., Marmion B.P., Simmons A., (Eds) Mackie and McCartney, Practical Medical Microbiology 1996, 14th Edition, Churchill Livingstone.

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.

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