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## m FC AGAR with BCIG

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### INTENDED USE

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

### SUMMARY AND EXPLANATION

Geldreich et al.<sup>1</sup> formulated a medium to enumerate fecal coliforms (MFC) using the membrane filter (MF) technique without prior enrichment. Fecal coliforms (i.e., those found in the feces of warm-blooded animals) are differentiated from coliforms from environmental sources by their ability to grow at  $44.5 \pm 0.5^\circ\text{C}$ .<sup>2</sup>

Many “standard methods” membrane filtration procedures specify m FC medium for testing water.<sup>2-4</sup> The American Public Health Association (APHA) specifies m FC medium and incubation at  $44.5 \pm 0.5^\circ\text{C}$  in the fecal coliform membrane filter procedure, the delayed-incubation fecal coliform procedure and the two-layer agar method for recovering injured fecal coliforms.<sup>2</sup> AOAC International specifies m FC Agar for detecting total coliforms and fecal coliforms in foods.<sup>3</sup>

The U. S. Environmental Protection Agency specifies using m FC medium in fecal coliform methods for testing water by the direct MF method or the delayed-incubation MF method.<sup>4,5</sup>

### PRINCIPLE

Coliform bacteria are the members of the *Enterobacteriaceae* and are present in large numbers in feces and sewage. The presence of coliform bacteria, which grow at  $44^\circ\text{C}$ , confirms serious water contamination. Membrane filter technique is the most common technique used in the detection of fecal coliforms as recommended by APHA. This medium is formulated in accordance with Ciebin *et.al.*. 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.

m FC Agar contain peptones as sources of carbon, nitrogen, vitamins and minerals. Yeast extract supplies B-complex vitamins that stimulate bacterial growth. Lactose is a carbohydrate. Bile Salts No. 3 inhibits growth of gram-positive bacteria. m FC Agar contains agar as the solidifying agent.

**REAGENTS (FORMULA)**

Tryptose .....	10.0	g
Proteose Peptone No. 3 .....	5.0	g
Yeast Extract .....	3.0	g
Lactose .....	12.5	g
Bile Salts No. 3 .....	1.5	g
Sodium Chloride .....	5.0	g
Aniline Blue .....	0.1	g
Agar .....	15.0	g
Deionized Water .....	1000.0	ml

**PROCEDURE**

1. Roll the membrane filter used to collect the water sample onto the surface of the agar, so as to avoid the formation of air bubbles between the filter and the agar surface.
- 2 Place the dishes in plastic bags and incubate, by immersion, in a water bath at  $44.5 \pm 0.2^\circ\text{C}$  for  $24 \pm 2$  hours.

**EXPECTED RESULTS**

Colonies of fecal coliforms will be various shades of blue. Non-fecal coliforms are gray to cream-colored.

**QUALITY CONTROL**

All lot numbers have been tested and have been found to be acceptable. Customers can test products using the following quality control organisms. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, sample results should not be reported.

<b>Organisms</b>	<b>Incubation</b>	<b>Results</b>
<i>Escherichia coli</i> ATCC 25922	$44.5 \pm 0.5^\circ\text{C}$ for $24 \pm 2$ hours	Growth, Blue
<i>Enterococcus faecalis</i> ATCC 19433	$44.5 \pm 0.5^\circ\text{C}$ for $24 \pm 2$ hours	Complete Inhibition

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**BIBLIOGRAPHY**

1. Geldreich, Huff and Best. 1965. J. Am. Water Works Assoc. 57:208.
2. Eaton, Rice and Baird (ed). 2005. Standard methods for the examination of water and wastewater, 21st ed., online. American Public Health Association, Washington, D.C.
3. Horwitz (ed.). 2007. Official methods of analysis of AOAC International, 18th ed., online. AOAC International. Gaithersburg, Md.

4. U.S. Environmental Protection Agency. 1992. Manual for the certification of laboratories analyzing drinking water. EPA-814B-92-002. Office of Ground Water and Technical Support Division, USEPA, Cincinnati, Ohio.

5. Bordner, Winter and Scarpino (ed.). 1978. Microbiological methods for monitoring the environment: water and wastes. Publication EPA-600/8-78-017. Environmental Monitoring and Support Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio.



155-196 Innovation Drive, Winnipeg, MB, R3T 2N2, Canada

Phone: +1 (204) 269-2255

Email: [info@cbsalife.com](mailto:info@cbsalife.com)

Website: <https://cbsalife.com>