

PRODUCT INFORMATION AND QUALITY CONTROL SHEET

m-FC AGAR

I. INTENDED USE

m-FC Agar is used with rosolic acid for the detection and enumeration of fecal coliforms by membrane filtration.

II. SUMMARY AND EXPLANATION

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

Many standard method membrane filtration procedures recommend m-FC media for testing water. The American Public Health Association (APHA) specified m-FC media and incubation at $44.5 \pm 0.5^{\circ}\text{C}$ in the fecal coliform procedure and other tests.^{2,3} The Association of Official Analytical Chemists (AOAC) specifies m-FC Agar for detecting total coliforms and fecal coliforms.⁴ The US Environmental Protection Agency specified using m-FC media in fecal coliform methods for testing water by the direct MF method or the delayed-incubation MF methods.^{5,6}

III. PRINCIPLES OF THE PROCEDURE

Enzymatic Digest of Casein and Enzymatic Digest of Animal Tissue provide nitrogen, carbon, and minerals in m-FC Agar. Yeast Extract is a source of vitamins and trace elements. Sodium Chloride maintains the osmotic balance. Lactose serves as a carbohydrate source. Bile Salts inhibit growth of gram-positive bacteria. The differential indicator system combines Aniline Blue and Rosolic Acid which is added as a supplement. Agar is the solidifying agent.

IV. TYPICAL FORMULA AND APPEARANCE

Appearance = light blue, slightly opalescent
(Approximate formula* per liter of processed water)

Enzymatic Digest of Animal Tissue	2.5 g
Enzymatic Digest of Casein	9.0 g
Yeast Extract	6.5 g
Lactose	12.5 g
Bile Salts	1.5 g
Aniline Blue	0.1 g
Agar	15.0

*adjusted and/or supplemented to meet performance criteria.
Final pH: 7.4 ± 0.2 @ 25°C

V. PRECAUTIONS

This product is for IN VITRO diagnostic use only. Culture specimens may contain microorganisms which can be potentially infectious to the user. Strict adherence to aseptic techniques and established precautions against microbiological hazards should be followed throughout the procedure. Carefully dispose of all items which contact patient specimens or isolated bacteria.

VI. STORAGE/SHELF LIFE

Plated media should be stored at $2-8^{\circ}\text{C}$ ($36-46^{\circ}\text{F}$), media side up, in the unopened or resealed package protected from light. DO NOT FREEZE OR EXPOSE TO HIGH TEMPERATURES. Allow unopened plates to warm to room temperature prior to inoculation. Prior to and during inoculation procedures, plates should be handled in a manner that minimizes product exposure to the environment. Product which has exceeded the assigned expiration date noted on the label should not be used. Do not use plates that exhibit evidence of drying, cracking, discoloration, microbial contamination or any other signs of deterioration. The presence of excessive condensate may indicate plates which have been damaged by exposure to temperature extremes.

VII. SPECIMEN COLLECTION

The quality of culture results depends primarily on the adequacy and condition of the specimen submitted for examination. Proper specimen collection techniques must be followed to ensure the most

accurate culture results.

VIII. MATERIALS PROVIDED

Cat No. 1080 - m-FC Agar Plates (10/pkg)
Cat No. 1080DD - m-FC Agar Plates (10/pkg)

IX. MATERIALS REQUIRED BUT NOT PROVIDED

Waterbath maintaining $44.5 \pm 0.5^{\circ}\text{C}$.
Ancillary culture media, reagents and laboratory equipment as required.

X. PROCEDURE

1. Filter duplicate samples through separate membrane filters.
2. Transfer filters to surface of separate m-FC Agar plates.
3. Place each plate in separate waterproof plastic bag. Submerge in waterbath set at $44.5 \pm 0.5^{\circ}\text{C}$; incubate for 24 ± 2 hours.

XI. EXPECTED RESULTS

NCCLS CONTROL ORGANISMS (ATCC STRAINS) at 44.5°C .

Microorganism	Response	Reactions w/Rosolic Acid
<i>Enterobacter aerogenes</i> (ATCC 13048)	growth	Grey to blue-grey colonies
<i>Escherichia coli</i> (ATCC 25922)	growth	blue colonies
<i>Escherichia coli</i> (ATCC 11775)	growth	blue colonies
<i>Salmonella typhimurium</i> (ATCC 14028)	growth	Grey colonies
<i>Staphylococcus aureus</i> (ATCC 25923)	growth	---

XII. LABORATORY RESULTS

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

XIII. LIMITATIONS

The ability to detect microorganisms by culture techniques can be affected by the following factors: improper specimen collection, storage and inoculation, improper culture incubation temperatures and atmospheres, improper length of culture incubation, and improper storage and handling of culture media.

XIV. REFERENCES

1. Geldreich, E.E., H.F. Clark, C.B. Huff, and L.C. Best. 1965. Fecal -coliform-organism medium for the membrane filter technique. J.Am. Water Works Assoc. 57:208-214.
2. Eaton, A.D., L.S. Clesceri, and A.E. Greenburg (eds.). 1995. Standard methods for the examination of water and wastewater. 19th ed. American Public Health Association, Washington, D.C.
3. Cowman, S., and R. Kelsey. 1992. Bottled water, p. 1031-1036. In C. Vanderzant, and D.F. Splittstoesser (eds.). Compendium of methods for the microbiological examination of foods, 3rd ed. American Public Health Association, Washington, D.C.
4. Andrews, W. 1995. Microbial methods, p. 17.1-17-119. In Official methods of analysis of AOAC International, 16th ed. AOAC International, Arlington, VA.
5. Bordner, R. and J. Winter (eds.). 1978. Microbiological methods for monitoring the environment. EPA-600/8-78-017, Environmental Monitoring and Support Laboratory. Office of Research and Development, U.S. Environmental Protection Agency. Cincinnati, OH.
6. 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, U.S. Environmental Protection Agency, Cincinnati, OH.

USER QUALITY ASSURANCE/ QUALITY CONTROL PROCEDURES AND INFORMATION

HealthLink recommends that the following quality assurance and quality control procedures be performed on each batch of product.

I. QUALITY ASSURANCE

The following quality assurance procedures must be performed to assure the product will perform according to its intended use within the assigned expiry date:

1. Daily, document that product storage refrigerator maintains temperature within 2-8⁰C.
2. Daily, document that laboratory waterbath maintains temperature within the recommended range: 44.5 ± 0.5⁰C.

II. QUALITY CONTROL

The following incoming inspection procedures must be performed for each batch (batch = same lot, same shipment) of culture media received in the laboratory:

Inspect plates according to instructions contained in the Section VI "STORAGE/SHELF LIFE"

Note: Notify Technical Service immediately if media does not meet the inspection criteria.

TECHNICAL SERVICE

HealthLink provides a toll free technical service line (1-800-638-2625) to assist with product usage. To have technical questions answered; please call between the hours of 9:00 am to 5:00 pm EST.

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