m FC Agar (NCM0149)

Intended Use
m FC Agar is used with rosolic acid for the detection and enumeration of fecal coliforms by membrane filtration in a laboratory setting. m-FC Agar is not intended for use in the diagnosis of disease or other conditions in humans.

Description
Geldreich et al. formulated a medium to enumerate fecal coliforms (FC) using the membrane filter (m) technique without prior enrichment.

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 ± 0.5°C in the fecal coliform procedure and other tests. The Association of Official Analytical Chemists (AOAC) specifies m-FC Agar for detecting total coliforms and fecal coliforms in foods. 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.

Typical Formulation

Enzymatic Digest of Casein	10.0 g/L
Enzymatic Digest of Animal Tissue	5.0 g/L
Yeast Extract	3.0 g/L
Sodium Chloride	5.0 g/L
Lactose	12.5 g/L
Bile Salts	1.5 g/L
Aniline Blue	0.1 g/L
Agar	15.0 g/L

Final pH: 7.4 ± 0.2 at 25°C
Formula may be adjusted and/or supplemented as required to meet performance specifications.

Supplement
1% Rosolic Acid, 10 mL

Precaution
Refer to SDS

Preparation
1. Suspend 52 g of the medium in 1 L of purified water containing 10 mL of 1% Rosolic Acid in 0.2 N NaOH.
2. If necessary, adjust pH to 7.4 with 1N HCl.
3. Heat with frequent agitation and boil for one minute to completely dissolve the medium.
4. Cool to 45 - 50°C and pour plates.
5. DO NOT AUTOCLAVE.

Rosolic Acid: Dissolve 1 g in 100 mL of 0.2 N NaOH to prepare a 1% solution.

Quality Control Specifications
Dehydrated Appearance: Powder is homogeneous, free flowing, and pale to light grey-blue to greyish-beige.

Prepared Appearance: Prepared unsupplemented medium is dark blue and clear to slightly hazy. Prepared appearance with 1% Rosolic Acid is trace to slightly hazy and purple to reddish purple to cranberry red.

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foodsafety@neogen.com • foodsafety.neogen.com

Expected Cultural Response: Cultural response incubated aerobically on m-FC Agar at 44.5 ± 0.5°C and examined for growth after 22 - 24 hours.

Microorganism	Approx. Inoculum (CFU)	Expected Results	
		Growth (with Rosolic Acid)	Reaction
Enterobacter faecalis ATCC® 19433	10 - 100	Completely Inhibited	---
Escherichia coli ATCC® 11775	10 - 100	Good	Dark blue colonies
Escherichia coli ATCC® 25922	10 - 100	Good	Dark blue colonies
Salmonella typhimurium ATCC® 14028	10 - 100	Good	Reddish-grey colonies
Staphylococcus aureus ATCC® 25923	1000	Completely Inhibited	---

The organisms listed are the minimum that should be used for quality control testing.

Test 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 a separate waterproof plastic bag. Submerge in waterbath at 44.5 ± 0.5°C; incubate for 22 - 24 hours.

Results

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

Expiration

Refer to expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if medium has changed from the original color. Expiry applies to medium in its intact container.

Limitations of the Procedure

1. Due to varying nutritional requirements, some strains may be encountered that grow poorly or fail to grow.
2. A few non-fecal coliform colonies may be observed on m-FC Agar due to the selective action of the elevated temperature and the addition of rosolic acid. It may be useful to elevate the temperature to 45 ± 0.2°C to eliminate *Klebsiella* strains from the fecal coliform group.

Storage

Store dehydrated culture media at 2-30°C away from direct sunlight. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

References

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