m-Endo Agar (NCM0123)

Intended Use
m-Endo Agar is used for the enumeration of coliforms in water by the membrane filtration method in a laboratory setting. m-Endo Agar is not intended for use in the diagnosis of disease or other conditions in humans.

Description
The coliform group, especially *Escherichia coli,* are used as indicators of fecal pollution in water, for assessing the effectiveness of water treatment and disinfection, and for monitoring water quality. m-Endo Agar is prepared according to the formula of McCarthy, Delaney, and Grasso, and used in testing water for coliforms by a two-step membrane filtration procedure. Lauryl Tryptose Broth is used as the preliminary enrichment, resulting in higher coliform counts.

The American Public Health Association (APHA) recommends m-Endo Agar in standard total coliform membrane filtration procedure for testing water, wastewater, and foods. The US EPA specifies using m-Endo Agar in the total coliform methods for testing water. m-Endo Agar is also known as LES (Lawrence Experimental Station) Endo Agar.

Typical Formulation

Lactose	9.4 g/L
Tryptose	7.5 g/L
Enzymatic Digest of Casein	3.7 g/L
Enzymatic Digest of Animal Tissue	3.7 g/L
Sodium Chloride	3.7 g/L
Potassium Phosphate, Dibasic	3.3 g/L
Sodium Sulfite	1.6 g/L
Yeast Extract	1.2 g/L
Potassium Phosphate, Monobasic	1.0 g/L
Basic Fuchsin	0.8 g/L
Sodium Deoxycholate	0.1 g/L
Sodium Lauryl Sulfate	0.05 g /L
Agar	15.0 g/L

Final pH: 7.2 ± 0.2 at 25°C
Formula may be adjusted and/or supplemented as required to meet performance specifications.

Precaution
Refer to SDS

Preparation
1. Suspend 51 g of the medium in 1 liter of purified water containing 20 mL of non-denatured Ethanol.
2. Heat with frequent agitation and boil to completely dissolve the medium.
3. Avoid overheating. DO NOT AUTOCLAVE.

Test Procedure
Enrichment Method
1. Invert the dish and place an absorbent pad in the lid of a Petri dish.
2. Add 1.8 – 2.2 mL of Lauryl Tryptose Broth to each pad.
3. Place a membrane filter, through which the sample has passed, onto the pad of Lauryl Tryptose Broth.
4. Incubate aerobically for 1.5 to 2 hours at 35˚C.
5. Transfer the incubated membrane filter from the Lauryl Tryptose Broth pad to a new pad which 1.8-2.0 mL of m-Endo Agar has been added. Proceed following the Single-Step Method, Step 4.

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Single Step Method
1. Place a membrane filter absorbent pad inside a sterile 60 mm Petri dish.
2. Add 1.8 – 2.0 mL m-Endo Broth to each pad.
3. Filter the sample through a membrane filter.
4. Place membrane filter top side up on the pad using a rolling motion to avoid entrapping air bubbles.
5. Incubate aerobically in an inverted position for 20 – 24 hours at 35 ± 0.5˚C.
6. Observe and count all colonies that are red and have a metallic sheen.

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free flowing, and light purple.

Prepared Appearance: Prepared medium is red to purple and none to trace hazy.

Expected Cultural Response: Cultural response on m-Endo Agar incubated aerobically in a humidified environment at 35 ± 2°C and examined for growth after 18 - 24 hours.

Microorganism	Approx. Inoculum (CFU)	Expected Results	
		Recovery	Reaction
Escherichia coli ATCC® 25922	50-200	>50%	Green, metallic sheen
Enterobacter aerogenes ATCC® 13048	50-200	>50%	Green, metallic sheen
Enterococcus faecalis ATCC® 29212	$>10^4$	Suppressed to inhibited	Colorless
Proteus mirabilis ATCC® 29906	50-200	>50%	Colorless
Salmonella typhimurium ATCC® 14028	50-200	>50%	Pink to red
Staphylococcus aureus ATCC® 25923	$>10^4$	Completely Inhibited	-

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

Results

Following incubation, examine membrane filters for presence of colored colonies. All red colonies that have the characteristic metallic sheen are coliforms. The metallic green-gold sheen can cover all or part of the colony. Report the coliform density in terms of total coliform / 100 mL.

Expiration

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

Limitation of the Procedure

1. If the inoculum is too heavy, the sheen may be suppressed.
2. Occasionally, non-coliform organisms may produce typical sheen colonies. Coliform organisms may also occasionally produce atypical colonies, including dark red or nucleated colonies without sheen.

Storage

Store dehydrated culture media at 2 – 30°C away from direct sunlight. Once opened and recapped, place the 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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