EC Medium

Intended Use

EC Medium is a culture medium for the detection of coliform bacteria at 35°C and of *Escherichia coli* at an elevated temperature (44.5 or 45.5°C).

Summary and Explanation

EC Medium was devised by Hajna and Perry[1] and is used for the examination of water, milk, shellfish and other material for evidence of fecal pollution. Tennant et al. reported on the use of this medium for the estimation of *E. coli* densities in seawater and shellfish.[2] Fishbein and Surkiewicz used the EC confirmation test for recovery of *E. coli* from frozen foods and nut meats and reported that the test worked optimally when conducted at 45.5°C with incubation being limited to 24 hours.[3]

EC Medium is recommended for use in the fecal coliform Most Probable Number (MPN) procedure for the examination of water, wastewater and foods.[4,5] The procedure employing EC Medium provides information regarding the source of the coliform group (fecal or nonfecal) when used as a confirmatory test.[6] It should not be used for the direct isolation of coliforms since prior enrichment in a presumptive medium for optimal recovery of fecal coliforms is required.

Principles of the Procedure

EC Medium contains peptone as a source of nutrients. Lactose provides fermentable carbohydrate for the growth of coliforms. Bile salts are inhibitory for gram-positive bacteria, particularly bacilli and fecal streptococci. The medium has a strong potassium phosphate buffering system to control the pH in the presence of considerable fermentative action. Sodium chloride maintains the osmotic balance of the medium.

Formula

Difco™ EC Medium

Approximate Formula* Per Liter		
Tryptose	20.0	g
Lactose	5.0	g
Bile Salts No. 3	1.5	g
Dipotassium Phosphate	4.0	g
Monopotassium Phosphate	1.5	g
Sodium Chloride	5.0	g

**Adjusted and/or supplemented as required to meet performance criteria.*

Directions for Preparation from Dehydrated Product

1. Dissolve 37 g of the powder in 1 L of purified water. Mix thoroughly.
2. Warm slightly to completely dissolve the powder.
3. Dispense into tubes containing inverted fermentation vials.
4. Autoclave at 121°C for 15 minutes.
5. Test samples of the finished product for performance using stable, typical control cultures.

Procedure

Refer to the various compendia for the specific procedures employing EC Medium.[4-8]

Expected Results

Refer to the compendia for the results expected when using this medium for the detection of coliforms and *E. coli*.[4-8]

Limitation of the Procedure

False-negative reactions in recovering coliforms from water supplies can occur due to low pH, refrigeration and use of bactericidal or bacteriostatic agents.[9]

User Quality Control

Identity Specifications

Difco™ EC Medium

Dehydrated Appearance:	Light beige, freeflowing,homogeneous.
Solution:	3.7% solution, soluble in purified water upon warming. Solution is light amber, clear.
Prepared Appearance:	Light amber, clear.
Reaction of 3.7% Solution at 25°C:	pH 6.9 ± 0.2

Cultural Response

Difco™ EC Medium

Prepare the medium per label directions. Inoculate and incubate tubes with fermentation vials at 44.5 ± 0.2°C for 24 ± 2 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY	GAS
Enterococcus faecalis	19433	10^3	Inhibition	–
Escherichia coli	25922	10^3	Good	+
Escherichia coli	8739	10^3	Good	+

Uninoculated Tube

Escherichia coli ATCC™ 25922

References

1. Hajna and Perry. 1943. Am. J. Public Health *33*:550.
2. Tennant, Reid, Rockwell and Bynoe. 1961. Can. J. Microbiol. *1*:733.
3. Fishbein and Surkiewicz. 1964. Appl. Microbiol. *12*:127.
4. 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.
5. Downes and Ito (ed.). 2001. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
6. Wehr and Frank (ed.). 2004. Standard methods for the examination of dairy product, online. American Public Health Association, Washington, D.C.
7. U.S. Food and Drug Administration. 2001. Bacteriological analytical manual, online. AOAC International, Gaithersburg, Md.
8. Horwitz (ed.). 2007. Official methods of analysis of AOAC International, 18th ed., online. AOAC International, Gaithersburg, Md.
9. Ray. 1986. J. Food. Prot. *49*:651.

Availability

Difco™ EC Medium

AOAC BAM CCAM COMPF EPA ISO SMD SMWW

Cat No.	231420	Dehydrated – 100 g
	231430	Dehydrated – 500 g
	231410	Dehydrated – 10 kg