

Technical Information

EC Broth

Product Code: DM 1127

Application: EC Broth is recommended for the selective enumeration of presumptive *Escherichia coli* by MPN technique.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	20.000
Lactose	5.000
Bile salts mixture	1.500
Dipotassium phosphate	4.000
Monopotassium phosphate	1.500
Sodium chloride	5.000
Final pH (at 25°C)	6.9±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

EC Medium is used for detection of coliforms during bacteriological examination of water, milk and foods. It was originally detailed by Hajna and Perry ⁽¹⁾. This medium was later used by Fishbein and Surkiewicz to carry out *Escherichia coli* confirmatory tests ⁽²⁾. It is also used in MPN methods ⁽³⁾ and is often used for confirmation of coliforms. The procedure adopted the EC Medium provides information regarding the source of the coliform group (fecal or non-fecal) when used as a confirmatory test ⁽⁴⁾. EC Broth should not be used for the direct isolation of coliforms because prior enrichment in a presumptive medium for optimal recovery of fecal coliforms is essential. Casein enzymic hydrolysate provides essential growth nutrients. Lactose is the fermentable sugar. Bile salts mixture inhibit gram-positive bacteria especially bacilli and faecal Streptococci. Phosphates control the pH during fermentation of lactose. Gas production in a fermentation tube within 24 hours or less is a presumptive evidence of the presence of coliform bacteria. This medium can be used at 37°C for the detection of coliform organisms or at 44.5°C for the isolation of *Escherichia coli* from water and shellfish. When using sample more than 10 ml, the medium must be reconstituted at a concentration equivalent to that specified on the directions, once the sample is added, the working procedure is as follows: Transfer a loopful of culture from all the tubes of Lauryl Sulphate Broth (DM1080) showing gas formation within 24 hours and from all the tubes showing bacterial growth within 48 hours to EC Broth tubes. Within 30 minutes from the inoculum, place the tubes in a water bath and incubate at 44°C for 24 hours. Consider the growth showing gas production as positive. Calculate the density of the faecal coliform organisms by using MPN tables. False-negative reactions in recovering coliforms from water supplies can occur due to low pH, refrigeration and formation at 44.5°C, *Escherichia coli*, also other coliform use of bactericidal or bacteriostatic agents ⁽⁵⁾.

Gas formation at 37°C: Coliform bacteria without *Escherichia coli*.

Gas formation at 45°C: *Escherichia coli*, also other coliform.

Methodology

Suspend 37 grams of powder media in 1000 ml distilled water. Shake well & heat if necessary to dissolve the medium completely. Dispense in test tubes containing inverted Durhams tube. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Adjust the concentration of medium in accordance with sample size.

Quality Control

Physical Appearance

Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Yellow coloured, clear solution without any precipitate

Reaction

Reaction of 3.7% w/v aqueous solution at 25°C. pH : 6.9±0.2

pH range: 6.70-7.10

Cultural Response/Characteristics

DM1127: Cultural characteristics observed after an incubation at 44.5°C ± 0.2 for 24 hours.

Organism	Inoculum (CFU)	Growth	Gas
<i>Bacillus subtilis</i> ATCC 6633	≥10 ³	Inhibited	Positive reaction
<i>Escherichia coli</i> ATCC 25922	50-100	good-luxuriant	
<i>Enterobacter aerogenes</i> ATCC 13048	≥10 ³	Inhibited	
<i>Enterococcus faecalis</i> ATCC 29212	≥10 ³	Inhibited	
<i>Klebsiella pneumoniae</i> ATCC 13883	50-100	good-luxuriant	Positive reaction
<i>Pseudomonas aeruginosa</i> ATCC 27853	50-100	Fair to good	Positive reaction

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

Prepared Media: 2-8⁰ in sealable plastic bags for 2-5 days.

Further Reading

1. Hajna A. A. and Perry C. A., 1943, Am. J. Public Health, 33:550.
2. Fishbein M. and Surkiewicz B. F., 1964, Appl. Microbiol., 12: 127.
3. Eaton A. D., Clesceri L. S. and Greenberg A. E., (Ed.), 1998, Standard Methods for the Examination of Water and Waste water, 20th Ed., American Public Health Association. Washington, D.C.
4. Marshall, (Ed.), 1993, Standard Methods for the Examination of Dairy Products, 16th Ed., American Public Health Association, Washington, D.C.
5. Ray B., 1986, J. Food Prot., 49:65 1.

Disclaimer :

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