E.C. Broth

Intended Use
E.C. Broth is used for detection of coliform bacteria and *E. coli* at an elevated temperature of 44.5ºC or 45.5ºC.

Summary
E.C. Broth, developed by Hajna and Perry, is recommended for the detection of faecal pollution in samples of water, milk, shellfish and other materials. Tennant *et al.,* reported the use of this medium for the estimation of *E. coli* densities in seawater and shellfish. Fishbein and Surkiewicz used E.C. Broth for the recovery of *E. coli* from frozen foods and nut meats. This medium is also recommended for quantifying Most Probable Number (MPN) in dairy products, water and wastewater and food samples.
E.C. Broth provides information regarding the source of the coliform group (faecal and non-faecal) when used as a confirmatory test. It is included in the Bacteriological Analytical Manual for food testing. It should not be used for the direct isolation of coliforms since prior enrichment in a presumptive medium for optimal recovery of faecal coliforms is required. Gas production in a fermentation tube within 24 hour 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 or 45.5°C for foods.
Transfer a loopful of culture from all the tubes of Lauryl Sulphate Broth 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.

Principle
Tryptone provides nutrients for growth while lactose is the fermentable carbohydrate. Bile salts mixture inhibits the Gram-positive organisms, especially, bacilli and faecal Streptococci. The medium contains a strong potassium phosphate buffering system to control the pH during fermentation of lactose. Sodium chloride maintains osmotic balance.

Formula*

Ingredients	**g/L**
Tryptone	20.0
Lactose	5.0
Bile Salt Mixture	1.5
Dipotassium Phosphate	4.0
Monopotassium Phosphate	1.5
Sodium Chloride	5.0
Final pH (at 25°C)	6.9 ± 0.2

*Adjusted to suit performance parameters.

Storage and Stability
Store dehydrated medium below 30°C in tightly closed container and the prepared medium at 2°C-8°C. Avoid freezing and overheating. Use before expiry date on the label. Once opened keep powdered medium closed to avoid hydration.

Type of specimen
Food and Dairy samples; Water samples; Clinical samples - Faeces

Specimen Collection and Handling
Ensure that all samples are properly labelled. Follow appropriate techniques for handling samples as per established guidelines. Some samples may require special handling, such as immediate refrigeration or protection from light, follow the standard procedure. The samples must be stored and tested within the permissible time duration. After use, contaminated materials must be sterilized by autoclaving before discarding.

Directions

1. Suspend 37.00 g of the powder in 1000 mL purified / distilled water.
2. Boil with frequent agitation to dissolve the powder completely.
3. Dispense in tubes containing inverted Durham's tubes.
4. Sterilize by autoclaving at 121°C (15 psi) for 15 minutes.
5. Adjust the concentration of the medium as per the sample size.

Quality Control

Dehydrated Appearance: Cream to yellow coloured, homogenous, free flowing powder.
Prepared Appearance: Light yellow to amber coloured, clear solution without any precipitate.
Cultural Response: Cultural characteristics observed after an incubation at 42.5°C to 46.5°C for 24 hours.

Organism (ATCC)	Growth	Gas
Escherichia coli (8739)	Good	+
Escherichia coli (25922)	Good	+
Klebsiella pnuemoniae subsp. *pnuemoniae* (10031)	Good	+
Enterococcus faecalis (29212)	Inhibited	-
Bacillus spizizenii (6633)	Inhibited	-
Pseudomonas aeruginosa Strain Boston 41501 (27853)	Good	-
Pseudomonas aeruginosa (9027)	Good	-
Salmonella enterica subsp. *enterica serovar Typhimurium* (14028)	Good	-

Key: For Gas (+) Positive reaction (Bubble formation in Durham's tube)
For Gas (-) Negative reaction (No bubble formation in Durham's tube)

Interpretation of Results

1. Lactose fermenting organisms produce gas, which is detected by the appearance of bubbles in the inverted Durham's tube within 24 hours, which is presumptive evidence of the presence of coliform bacteria.
2. The development of turbidity and gas production within 48 hours at 35ºC or at 45.5ºC indicates the presence of coliforms.

Performance and Evaluation

Performance of the product is dependent on following parameters as per product label claim:

1. Directions
2. Storage
3. Expiry

Precautions/Limitations

This medium should not be used for the direct isolation of coliforms since prior enrichment in a presumptive test medium for optimal recovery of faecal coliforms is required.

Warranty

This product is designed to perform as described on the label and package insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose.

Reference

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. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product description	Pack Size
201050010100	Dehydrated Culture Media	100 g
201050010500	Dehydrated Culture Media	500 g