

EC Medium ISO

Cat. 1522

For the detection and enumeration of coliform organisms in water foodstuffs and other materials.

Practical information

Applications	Categories
Selective enumeration	Escherichia coli
Detection	Coliforms
Detection	Escherichia coli

Industry: Water / Environmental monitoring / Food

Regulations: ISO 11133 / ISO 7251

Principles and uses

EC Medium was developed by Hajna and Perry, for the selective identification of coliform bacteria and Escherichia coli in water, foodstuffs and other materials. It is recommended by ISO 7251, for the enumeration of E.coli with MPN technique.

This medium improves the detection methods of the coliform group, in particular of E.coli, and is used to investigate drinking water, wastewater treatment systems and generally for water-quality monitoring, as well as shellfish and other foods. It is used in many Standard Methods for Food and Water testing.

The medium can be used at 35±2 °C for detection of coliform organisms or at 44,5 °C for isolation of E. coli.

The bile salts act as selective agent inhibiting Gram-positive bacteria, bacilli and enterococci but allowing E. coli to develop. The potassium salts have a high buffering capacity. Enzymatic digest of casein provides the nutrients for growth and lactose is the fermentable carbohydrate as carbon and energy source. Sodium chloride maintains the osmotic balance.

Formula in g/L

Enzymatic digest of casein	20	Bile salts N° 3	1,5
Lactose	5	Potassium dihydrogen phosphate	1,5
Sodium chloride	5	Potassium monohydrogen phosphate	4

Preparation

Suspend 37 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Dispense in tubes of 10 ml with Durham gas collecting vials for gas detection. Sterilize in autoclave at 121 °C for 15 minutes. DO NOT OVERHEAT.

Instructions for use

For the detection and enumeration of presumptive E. coli according to ISO 7251:

- Inoculate the tubes of selective enrichment broth (Lauryl Tryptose Broth Cat. 1310) with the initial suspension.
- For inoculum of 1 ml or less, use single strength LTB Medium.
- For inoculum of 10 ml or more, use double strength LTB Medium.
- Incubate the tubes of LTB at 37 °C for up to 48 h, and examine the gas production after 24 h and 48 h.
- Each tube of double-strength LTB that has given rise to opacity, cloudiness or gaseous emission, and each tube of single-strength LTB that has given rise to gaseous emission, is subcultured to a tube containing EC Medium (Cat. 1522).
- Incubate the tubes of EC Broth at 44 °C for up to 48 h, and examine the gas production after 24 h and 48 h.
- Each tube of EC Medium that has given rise to gaseous emission is subcultured to a tube containing Indole-Free Peptone Water (Cat. 1403) and incubated at 44 °C for 48 h.
- Tubes showing opacity, cloudiness or gas production in LTB and whose subcultures have produced gas in EC Medium and indole in Peptone water, are considered as positive tubes that containing presumptive E coli.
- Count the total E. coli by the MPN method.

Quality control

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25°C)
w/o rests	Fine powder	Clear beige	Clear amber	6,8 ± 0,2

Microbiological test

According to ISO 11133:

Incubation conditions: (44±1 °C / 24±2-48±2 h).

Inoculation conditions: Productivity qualitative (<100 CFU) / Selectivity (10⁴-10⁶ CFU).

Microorganisms	Specification	Characteristic reaction
Escherichia coli ATCC 25922	Good growth	Turbidity (2) and gas in Durham tube
Pseudomonas aeruginosa ATCC 27853	No growth	
Escherichia coli ATCC 8739	Good growth	Turbidity (2) and gas in Durham tube

Storage

Temp. Min.:2 °C

Temp. Max.:25 °C

Bibliography

Hajna and Perry 1944 A.P.H.A.

Ray B. 1986 Impact of bacterial injury and repair in food microbiology. Its past, present and future J. Food Prot.

ISO 7251 Microbiology -- General guidance for enumeration of presumptive Escherichia coli -- Most probable number technique