

## EC Medium/Broth (*Escherichia coli* Broth)

356-4764

### DEFINITION

EC broth is a selective enrichment medium for the isolation of coliforms, including *E. coli*.

### STANDARDS

#### FOOD MICROBIOLOGY

- **NF ISO 7251 (July 2005):** Food microbiology - Horizontal method for the detection and enumeration of presumptive *Escherichia coli* - Most Probable Number technique.

### PRINCIPLE

The principle of the medium relies on the ability of lactose-positive bacteria, particularly coliforms and *E. coli*, to ferment lactose. Bile salts partially or totally inhibit all Gram-positive micro-organisms. The medium is buffered by addition of potassium sulfate and osmotic pressure is stabilized by the addition of sodium chloride.

### PRESENTATION

#### Dehydrated

500 g

code 356-4764

### STORAGE

- Dehydrated: + 15°C to 25°C, in carefully-sealed bottles in a cool, dry place.
- Expiration date and batch number are shown on the package.
- Reconstituted medium can be conserved unsealed tubes or bottles for up to 3 months, at 15°C to 25°C in a dark place.

### THEORETICAL FORMULA

Tryptose	20 g
Lactose	5 g
Bile salts N°3	1.5 g
Dipotassium phosphate (K <sub>2</sub> HPO <sub>4</sub> )	4 g
Monopotassium phosphate (KH <sub>2</sub> PO <sub>4</sub> )	1.5 g
Sodium chloride	5 g
Distilled water	1,000 ml
Final pH (25°C) = 6.8 ± 0.2	

### OTHER PRODUCTS REQUIRED (NOT SUPPLIED)

- Diluent(s)
- Distilled water

### EQUIPMENT REQUIRED (NOT SUPPLIED) (non-exhaustive)

- Scales
- Sterile weighing bags
- Grinder
- Mixer-homogenizer
- Test tubes (16 x 160 mm) with autoclave proof stoppers and Durham bell jar
- Sterile pipettes (1 ml, 10 ml, etc)
- Thermostatically-controlled incubator or incubation room precise to ± 0.5°C and ± 1°C.
- All usual laboratory equipment

### PREPARATION OF DEHYDRATED MEDIUM

Dissolve 37 g of powder in 1 liter of distilled water. Wait 10 minutes. Mix until a homogenous suspension is obtained. Dispense 10 ml of medium per tube (16 x 160 mm) containing a Durham bell jar, then autoclave at 121°C for 15 minutes.

If necessary, adjust the pH to 6.8 ± 0.2.

### Reconstitution ratio: 37 g/l

**500 g of powder makes 13.5 liters of single concentration medium.**

### PROTOCOL

#### • Preparation of samples

According to the standards applicable to the product concerned.

#### • Inoculation and incubation

- For each tube of double-strength lauryl sulphate broth showing opacity, cloudiness or any visible gas and for each tube of single strength lauryl sulphate broth medium showing visible gas subculture to a tube containing EC broth with a sampling loop.
- Incubate at 44°C (± 1°C) for 24 hours (± 2 h). If no gaseous emission is observed at this stage, extend the incubation up to a total of 48 hours (± 2 h).

#### • Confirmation

For each EC tube showing any visible gas after incubation, inoculate a tube of indole-free peptone water (codes 355-4175/356-4334) preheated to 44°C, using a sampling loop. Incubate 48h (± 2h). After incubation add 0.5 ml of indole reagent, mix well and examine after 1 min. a red colour in the alcoholic phase indicates the presence of indole.

## READING AND INTERPRETATION

### • Reading

After the incubation period, consider as positive each tube that has given rise to any visible gas in the tube of EC broth and to indole production in the tube of peptone water.

### • Expression of results/Calculation

With the aid of MPN tables, express results according to the specific standard.

## PRECAUTIONS

- Take care to evacuate all air from the Durham bell jar prior to inoculation.
- Comply with Good Laboratory Practice.

## PERFORMANCES / QUALITY CONTROL OF THE TEST

The growth performances of the media are verified with the following strains:

STRAINS	Production of gas after 24-48h incubation at 44°C (±1°C)	
	Growth	Gas
<i>Escherichia coli</i> ATCC 25922	+	+
<i>Ps. aeruginosa</i> ATCC 27853b	-	NA

## QUALITY CONTROL OF MANUFACTURER

Every product manufactured and marketed by Bio-Rad is subject to a quality-assurance procedure at all stages, from the reception of raw materials to the marketing of the end-product. Each batch of finished product undergoes quality control and is marketed only if it satisfies the acceptability criteria.

Documentation relative to the production and control of each batch is kept on file.

## KEY WORDS

EC / *Escherichia coli* / Food products / Water / Bell jar / Durham / Gas / MPN / Broth.

## BIBLIOGRAPHY

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