LB Agar (Lennox)

Reduced-Salt Bacterial Culture Medium for Molecular Microbiology

Catalogue Number: AS-1268

Application	Medium Type	Typical pH	HS Code
E. coli cloning & cultivation	Non-selective solid agar medium	7.0 ± 0.2 at 25 °C	3821.00.00

Overview

LB Agar (Lennox) is a nutritionally rich, non-selective solid culture medium developed by Lennox in 1955 for the growth and maintenance of *Escherichia coli* in molecular microbiology applications. It is particularly suited to recombinant *E. coli* strains, including K-12 derivatives, which require enriched media for optimal growth and plasmid maintenance.

Compared to LB Agar (Miller), the Lennox formulation contains reduced sodium chloride at 5.0 g/L — half the NaCl of the Miller formulation (10.0 g/L) — providing lower osmolarity and improved control of osmotic conditions. This makes it well suited to salt-sensitive strains and applications where lower ionic strength supports optimal growth, improved transformation efficiency, and stable plasmid propagation.

Principle of the Medium

Tryptone (10.0 g/L)	Pancreatic digest of casein providing peptides, amino acids, nitrogen, and carbon for rapid E. coli growth
Yeast Extract (5.0 g/L)	Supplies B-vitamins, trace elements, nucleotides, coenzymes, and growth factors essential for E. coli K-12
Sodium Chloride (5.0 g/L)	Reduced-salt Lennox formulation — lower osmolarity than Miller for salt-sensitive strains and transformation work
Agar (15.0 g/L)	Solidifying agent providing a firm, clear growth surface suitable for colony isolation and antibiotic selection

Typical Composition (per litre)

Component	CAS Number	Function	Amount

Tryptone (Pancreatic Digest of Casein)	73049-73-7	Nitrogen, carbon, amino acids	10.0 g
Yeast Extract	8013-01-2	Vitamins, growth factors, nucleotides	5.0 g
Sodium Chloride	7647-14-5	Osmotic balance (reduced-salt Lennox)	5.0 g
Agar	9002-18-0	Solidifying agent	15.0 g

Total per litre: 35.0 g | Final pH: 7.0 ± 0.2 at 25 °C

Formulation Comparison — LB Variants

Component	Lennox (AS-1268)	Miller (AS-1267)	Bertani
Tryptone	10.0 g/L	10.0 g/L	10.0 g/L
Yeast Extract	5.0 g/L	5.0 g/L	5.0 g/L
NaCl	5.0 g/L	10.0 g/L	0 g/L
Agar	15.0 g/L	15.0 g/L	15.0 g/L
Total solids	35.0 g/L	40.0 g/L	30.0 g/L
Best for	Salt-sensitive strains, transformation	Standard E. coli — global default	Very low osmolarity

Applications

Molecular Biology & Cloning

- Routine cultivation and maintenance of recombinant E. coli K-12 strains
- Plasmid propagation, transformation recovery, and colony isolation
- Antibiotic selection plates (ampicillin, kanamycin, chloramphenicol, tetracycline)
- Blue–white screening with X-gal and IPTG supplementation
- Salt-sensitive strain culture where lower ionic strength is required

Osmolarity-Controlled Applications

- Growth of E. coli K-12 derivatives sensitive to high NaCl concentrations
- Phage lambda infection studies — reduced NaCl is known to favour lambda propagation

- Applications requiring precise osmotic control and reproducible transformation efficiency

Teaching & General Laboratory Use

- Standard medium for molecular biology and microbiology instruction
- General bacterial cultivation, streak plates, and competent cell preparation

Preparation Instructions

1. Suspend 35.0 g of dehydrated medium in 1 litre of demineralised or purified water.
2. Mix thoroughly and heat with agitation until fully dissolved.
3. Verify and adjust pH to 7.0 ± 0.2 if required using 1 M NaOH or 1 M HCl.
4. Sterilise by autoclaving at 121 °C for 15 minutes.
5. Cool to 45–50 °C.
6. Add filter-sterilised antibiotics or supplements aseptically as required.
7. Dispense 20–25 mL per 90 mm sterile Petri dish.
8. Allow to solidify on a level surface at room temperature before use.

Note: Do not overheat. Add heat-sensitive supplements (antibiotics, X-gal, IPTG) only after cooling to 45–50 °C.

Common Antibiotic Selection Concentrations

Antibiotic	Working Concentration	Stock Concentration	Storage
Ampicillin	100 µg/mL	100 mg/mL in water	−20 °C
Kanamycin	50 µg/mL	50 mg/mL in water	−20 °C
Chloramphenicol	25 µg/mL	25 mg/mL in ethanol	−20 °C
Tetracycline	12.5 µg/mL	12.5 mg/mL in ethanol	−20 °C, protect from light
Gentamicin	10 µg/mL	10 mg/mL in water	−20 °C
Spectinomycin	50 µg/mL	50 mg/mL in water	−20 °C

Incubation & Typical Growth

Inoculate by surface spread or pour plate. Incubate aerobically at 37 °C for 12–18 hours. Colonies are visible within 12–16 hours.

Organism	Expected Result	Incubation
E. coli K-12 DH5α	Good growth — white/cream 1–3 mm colonies	37 °C, 12–16 h
E. coli BL21(DE3)	Good growth — protein expression host	37 °C, 12–16 h
E. coli TOP10	Good growth — high-efficiency cloning host	37 °C, 12–16 h
E. coli JM109	Good growth — compatible with M13/phage work	37 °C, 12–16 h
Salmonella typhimurium ATCC 14028	Good growth	37 °C, 18–24 h

Storage & Stability

Dehydrated powder	Store at 15–30 °C in a cool, dry, tightly closed container
Protect from	Moisture, direct light, and extreme temperatures
Prepared plates (no antibiotics)	2–8 °C, inverted, up to 4 weeks
Prepared plates (with antibiotics)	2–8 °C, use within 1–2 weeks
Shelf life (dehydrated)	As per labelled expiry date
Do not use if	Contamination, colour change, or cracking of agar surface observed

Quality & Compliance

Manufactured under controlled conditions for batch-to-batch consistency. Performance tested against ATCC reference organisms prior to release. Compatible with protocols described in Lennox (1955) Virology 1:190, Sambrook & Russell (Molecular Cloning), and Current Protocols in Molecular Biology.

Reference

Lennox, E.S. (1955). Transduction of linked genetic characters of the host by bacteriophage P1. *Virology*, 1:190–206.

Customs & Trade Information

PRODUCT DESCRIPTION

AS-1268 | LB Agar (Lennox)

www.ausamics.com.au

HS / AHECC Code	3821.00.00
Description	Prepared culture media for the development or maintenance of microorganisms
Country of Origin	Australia

Disclaimer

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