

Lactose Peptone Broth

Intended Use

Lactose Peptone Broth is used for the detection of coliform organisms in water.

Summary and Explanation

Lactose Peptone Broth is based on the Lactose Peptone Broth formula described in German Standard Methods and German Drinking Water Regulations.¹ Lactose Peptone Broth is recommended as a nonselective broth enrichment and detection medium for *E. coli* and other coliform bacteria present in water. Lactose fermentation and gas production at $36 \pm 1^\circ\text{C}$ are used as the basis for this presumptive coliform test.

Principles of the Procedure

Lactose Peptone Broth contains peptones, which provide the carbon and nitrogen sources required for good growth of a wide variety of organisms. Lactose is provided as a source of fermentable carbohydrate. Sodium chloride is present in the medium to provide a suitable osmotic environment. Bromcresol purple is used as a colorimetric indicator to show the production of acid from the fermentation of lactose.

Formula

Difco™ Lactose Peptone Broth

Approximate Formula* Per Liter

Pancreatic Digest of Casein	17.0	g
Soy Peptone.....	3.0	g
Lactose	10.0	g
Sodium Chloride	5.0	g
Bromcresol Purple	0.02	g

*Adjusted and/or supplemented as required to meet performance criteria.

Directions for Preparation from Dehydrated Product

1. Suspend 35 g (single strength) or 105 g (triple strength) of the powder, depending upon the test procedure, in 1 L of purified water. Mix thoroughly.
2. Warm slightly to completely dissolve the powder.
3. Dispense 50 mL into tubes or bottles containing a Durham tube.
4. Autoclave at 121°C for 15 minutes.
5. Test samples of the finished product for performance using stable, typical control cultures.

Procedure¹

Direct Broth Method

1. Add 100 mL of sample to 50 mL of triple strength Lactose Peptone Broth.
2. Incubate at $36 \pm 1^\circ\text{C}$ for 24-48 hours.
3. Examine tubes or bottles for evidence of acid formation and gas production.

Membrane Filtration Broth Method

1. Filter 100 mL of sample through a sterile 0.45 micron membrane filter.
2. Remove filter and place in 50 mL of single strength Lactose Peptone Broth.

User Quality Control

Identity Specifications

Difco™ Lactose Peptone Broth

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	3.5% (single strength) and 10.5% (triple-strength) solution, soluble in purified water. Solution is dark reddish-purple, clear to slightly opalescent.
Prepared Appearance:	Dark reddish-purple, clear to slightly opalescent.
Reaction of 10.5% Solution at 25°C :	pH 7.4 ± 0.2

Cultural Response

Difco™ Lactose Peptone Broth

Prepare the medium per label directions. Inoculate and incubate at $35 \pm 2^\circ\text{C}$ for 40-48 hours.

ORGANISM	ATCC™	INOCULUM CFU	ACID	GAS
<i>Escherichia coli</i>	25922	10^2 - 10^3	+	+
<i>Salmonella enterica</i> subsp. <i>enterica</i> serotype Typhimurium	14028	10^2 - 10^3	-	-

3. Incubate at $36 \pm 1^\circ\text{C}$ for 24-48 hours.
4. Examine tubes or bottles for evidence of acid formation and gas production.

Expected Results

Acid formation is demonstrated by a change in the color of the medium from reddish-purple to yellow. Gas production is demonstrated by the displacement of the medium from the Durham tube. Production of both acid and gas is a presumptive indication of the presence of coliform organisms.

Subculture presumptive positives onto Endo Agar and MacConkey Agar. Incubate at $35 \pm 2^\circ\text{C}$ for 24 hours. Examine plates for the presence of typical coliform colonies. Further biochemical testing is necessary to confirm the presence and identify coliforms. Consult appropriate references for further information on identification of coliforms.^{2,3}

Limitation of the Procedure

Detection of coliform bacteria in Lactose Peptone Broth using this method is only a presumptive test.

References

1. DIN Deutsches Institut für Normung. 1991. e.V.: Deutsche Einheitsverfahren zur Wasser-, Abwasser- und Schlammuntersuchung: Mikrobiologische Verfahren (Gruppe k), Nachweis von *Escherichia coli* und coliformen Keimen (K6). Reference Method DIN 38411.
2. Forbes, Sahm and Weissfeld. 2007. Bailey & Scott's diagnostic microbiology, 12th ed. Mosby, Inc., St. Louis, Mo.
3. Murray, Baron, Jorgensen, Landry and Pfaller (ed.). 2007. Manual of clinical microbiology, 9th ed. American Society for Microbiology, Washington, D.C.

Availability

Difco™ Lactose Peptone Broth

Cat. No.	266520	Dehydrated – 500 g
	266510	Dehydrated – 10 kg