

# Lactose Broth

## Intended Use

Lactose Broth is used for detection of the presence of coliform organisms, as a pre-enrichment broth for salmonellae and in the study of lactose fermentation of bacteria in general.

## Summary and Explanation

Lactose Broth was formulated in accordance with recommendations of the American Public Health Association (APHA) and the American Water Works Association for testing dairy products and water for the presence of coliform organisms.<sup>1,2</sup> This medium was, but no longer is, listed as an alternative to Lauryl Sulfate Broth in the presumptive portion of the Standard Total Coliform Multiple-Tube (MPN) Test for water analysis provided that it had been demonstrated not to increase the frequency of false-positives nor mask coliforms.<sup>3</sup> It is one of the recommended media in the *Compendium of Methods for the Microbiological Examination of Foods* for pre-enrichment when *Salmonella* organisms are suspected in foods.<sup>4</sup>

## Principles of the Procedure

The peptone and beef extract provide essential nutrients for bacterial metabolism. Lactose provides a source of fermentable carbohydrate for coliform organisms. Growth with the formation of gas is a presumptive test for coliforms.

## Formula

### Difco™ Lactose Broth

Approximate Formula\* Per Liter

Beef Extract.....	3.0	g
Peptone .....	5.0	g
Lactose .....	5.0	g

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

## Directions for Preparation from Dehydrated Product

1. Suspend 13 g of the powder in 1 L of purified water. Mix thoroughly.
2. Warm gently until solution is complete.
3. Dispense in test tubes containing inverted Durham tubes, in 10 mL amounts for testing samples of 1 mL or less. For testing 10 mL quantities of samples, dissolve 26 g of the powder in

## User Quality Control

### Identity Specifications

#### Difco™ Lactose Broth

Dehydrated Appearance:	Light beige to light tan, free flowing, homogeneous.
Solution:	1.3% solution, soluble in purified water upon slight warming. Solution is light amber, clear.
Prepared Appearance:	Light amber, clear.
Reaction of 1.3% Solution at 25°C:	pH 6.9 ± 0.2

### Cultural Response

#### Difco™ Lactose Broth

Prepare the medium per label directions. Inoculate and incubate at 35 ± 2°C for 18-48 hours. After incubation, add 1-2 drops of 1% phenol red solution to observe acid production.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY	ACID	GAS
<i>Enterobacter aerogenes</i>	13048	30-300	Good	+	+
<i>Escherichia coli</i>	25922	30-300	Good	+	+
<i>Enterococcus faecalis</i>	19433	30-300	Good	+	—
<i>Salmonella enterica</i> subsp. <i>enterica</i> serotype Typhi	6539	30-300	Good	—	—



- 1 L of purified water and distribute in 10 mL amounts. The concentration of the medium should be varied according to the size of the test samples. The concentration of broth plus sample should approximate 1× for proper performance. (In broth concentrations higher than 2×, a reduction in clarity may be noticed.)
- Autoclave at 121°C for 15 minutes.
  - After autoclaving, cool the broth as quickly as possible.
  - Test samples of the finished product for performance using stable, typical control cultures.

## Procedure

Refer to the official test procedures for the detection of coliforms in the compendia of methods for the microbiological examination of foods.<sup>4</sup>

## Expected Results

After incubation at 35 ± 2°C for 24 ± 2 hours, examine tubes for turbidity and for gas production in the Durham tubes. If no gas has formed and been trapped in the inverted tube, reincubate and reexamine after 48 ± 3 hours.

Turbidity of the medium accompanied by formation of gas in any amount in the Durham tubes within 48 ± 3 hours is a positive presumptive test for the presence of coliforms in the sample. The result should be confirmed by additional standard testing.

## References

- American Public Health Association. 1946. Standard methods for the examination of water and sewage, 9th ed. APHA, New York, N.Y.
- American Public Health Association. 1948. Standard methods for the examination of dairy products, 9th ed. APHA, New York, N.Y.
- Rand, Greenberg and Taras (ed.). 1976. Standard methods for the examination of water and wastewater, 14th ed. American Public Health Association, Washington, D.C.
- Downes and Ito (ed.). 2001. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.

## Availability

### Difco™ Lactose Broth

**AOAC BAM CCAM COMPF SMD**

Cat. No.	243000	Dehydrated – 100 g
	211835	Dehydrated – 500 g
	241000	Dehydrated – 2 kg
	242000	Dehydrated – 10 kg
	290701	Prepared Bottles, 90 mL (Wide Mouth) – Pkg. of 10*

### Europe

Cat. No.	256668	Prepared Bottles, 90 mL – Pkg. of 10*
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\*Store at 2-8°C.