Lactose Broth (NCM0005)

Intended Use
Lactose Broth is used for the cultivation of *Salmonella* and coliform bacteria from food, dairy, and water products in a laboratory setting. Lactose Broth is not intended for use in the diagnosis of disease or other conditions in humans.

Description
Lactose Broth is frequently used as a pre-enrichment medium when testing foods and dairy products for *Salmonella* spp. In dried or processed foods, *Salmonella* species may be sub-lethally injured and in low numbers. The presence of other bacteria as well as components of the food sample may hinder growth and recovery of *Salmonella*. Pre-enrichment in a non-selective medium such as Lactose Broth allows for repair of cell damage, dilutes toxic or inhibitory substances, and provides a nutritional advantage to *Salmonella* over other bacteria. Lactose Broth is widely used and is included in many procedures for testing foods, dairy products and other materials.

Lactose Broth is also used for the detection of coliform organisms in water, dairy products, and other materials.

Typical Formulation
Enzymatic Digest of Gelatin	5.0 g/L
Beef Extract	3.0 g/L
Lactose	5.0 g/L

Final pH: 6.9 ± 0.2 at 25°C
Formula may be adjusted and/or supplemented as required to meet performance specifications.

Precaution
Refer to SDS

Preparation
1. Dissolve 13 g of the medium in one liter of purified water.
2. Mix thoroughly.
3. Distribute into test tubes containing Durham tubes.
4. Autoclave at 121°C for 15 minutes.

Test Procedure
Lactose Broth is used in the pre-enrichment phase of the preparation of food samples for isolation of *Salmonella* spp. Consult appropriate references for specific procedures for each type of material being tested.
1. Transfer a 25 g or 25 mL sample of test material into a container. Add 225 mL of sterile Lactose Broth.
2. Mix as necessary to make a homogeneous suspension. Incubate at 35°C for 24 hours.
3. To isolate Salmonella from most foods, transfer 1 ml of suspension to 10 mLTetrathionate Broth (NCM0092) and 0.1 ml of suspension to 10 mL Rapport Vassiliadis Medium (NCM0114). Incubate RV Medium at 42°C for 24 hours and TT Broth at 43°C for 24 hours.
4. Transfer a loopful of suspension to appropriate selective agar media, such as Hektoen Enteric Agar (NCM0006), XLD Agar (NCM0021) and Bismuth Sulfite Agar (NCM0086). Incubate at 35°C for 24 hours.

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Quality Control Specifications
Dehydrated Appearance: Powder is homogeneous, free flowing, and light-beige.

Prepared Appearance: Prepared medium is pale to light yellow and clear with no to light precipitate.

Expected Cultural Response: Cultural response in Lactose Broth at 33-38°C and examined for growth after 24-48 hours of incubation.

MICROORGANISM	ATCC	APPROX. INOCULUM (CFU)	EXPECTED RESULTS	
			Growth	Gas
Enterococcus faecalis	29212	10-100	Good	Negative
Escherichia coli	25922	10-100	Good	Positive
Klebsiella pneumoniae	13883	10-100	Good	Positive
Pseudomonas aeruginosa	27853	10-100	Poor to Fair	Negative
Salmonella typhimurium	14028	10-100	Good	Negative

The organisms listed are the minimum that should be used for quality control testing.

Results
Pre-enrichment, selective enrichment and selective plating increase the likelihood of isolating *Salmonella* from foods and other materials.

Expiration
Refer to expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedures
Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.

Storage
Store dehydrated culture media at 2-30°C away from direct sunlight. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

References

1. **Vanderzant, C., and D. F. Splittstoesser (eds.).** 2015. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
2. **Marshall, R. T. (ed.).** 2004. Standard methods for the microbiological examination of dairy products, 17th ed. American Public Health Association, Washington, D.C.
3. **www.fda.gov/Food/ScienceResearch/LaboratoryMethods/BacteriologicalAnalyticalmanualBAM/default.htm.**
4. **Cunnif, P. (ed.).** 2016. Official methods of analysis AOAC International, 20th ed. AOAC International, Arlington, VA.
5. **Eaton, A.D., L.S. Clesceri, and A.E. Greenberg (eds.).** 2017. Standard methods for the examination of water and wastewater, 23rd ed. American Public Health Association, Washington, D.C.

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