

Nutrient Broth (NCM0110)

Intended Use

Nutrient Broth is used for the cultivation of a wide variety of microorganisms. Nutrient Broth is not intended for use in the diagnosis of disease or other conditions in humans.

Description

In the early 1900's, the American Public Health Association (APHA) suggested the formula of Nutrient Agar as a standard culture medium used in water testing. Nutrient Broth is the same formulation as Nutrient Agar, only Agar has been omitted.

Nutrient Broth is used as a pre-enrichment medium when testing certain foods and dairy products for *Salmonella* spp. In dried or processed foods, salmonellae may be sub-lethally injured and in low numbers. The presence of other bacteria and food sample components may hinder growth and recovery of *Salmonella* spp. Pre-enrichment in a nonselective medium such as Nutrient Broth allows for cell damage repair, dilutes toxic or inhibitory substances, and provides a nutritional advantage to *Salmonella* over other bacteria.

Nutrient Broth is included in many standard methods procedures for testing food, dairy products, and other materials.

Typical Formulation

Enzymatic Digest of Gelatin 5.0 g/L

Beef Extract 3.0 g/L

pH: 6.8 ± 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 8 g of the medium in one liter of purified water.
2. Mix thoroughly.
3. Autoclave at 121°C for 15 minutes.

Test Procedure

Direct:

1. Inoculate broth with sample.
2. Incubate aerobically at 35°C for 18 – 24 hours or longer if necessary.

Pre-enrichment:

1. Mix 25 g of the sample with 225 mL of Nutrient Broth.
2. Incubate at 35°C for 18 – 24 hours.
3. Transfer a portion to one or more selective enrichment broths.

Note: Refer to appropriate references for specific recommendations when testing certain foods and dairy products for *Salmonella* spp.

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free flowing, and light beige.

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



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Technical Specification Sheet



Expected Cultural Response: Cultural response in Nutrient Broth incubated aerobically at $35 \pm 2^\circ\text{C}$ and examined for growth after 18 - 24 hours.

Microorganism	Approx. Inoculum (CFU)	Response
<i>Bacillus subtilis</i> ATCC® 9372	10-100	Growth
<i>Escherichia coli</i> ATCC® 25922	10-100	Growth
<i>Salmonella typhimurium</i> ATCC® 14028	10-100	Growth
<i>Staphylococcus aureus</i> ATCC® 25923	10-100	Growth
<i>Pseudomonas aeruginosa</i> ATCC® 27853	10-100	Growth
<i>Enterococcus faecalis</i> ATCC® 29212	10-100	Growth

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

Results

Turbidity indicates good growth.

Expiration

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

Limitation of the Procedure

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

Storage

Dehydrated culture media: Store sealed bottle containing the dehydrated medium at 2 - 30°C. 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. **American Public Health Association.** 2017. Standard methods of water analysis, 23rd ed. American Public Health Association, Washington, D.C.
2. **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.
3. **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.
4. **Marshall, R. T. (ed.).** 2004. Standard methods for the microbiological examination of dairy products, 17th ed. American Public Health Association, Washington, D.C.
5. **Association of Official Analytical Chemists.** 2016. Official methods of analysis of AOAC International, 17th ed. AOAC International, Arlington, VA.
6. www.fda.gov/Food/ScienceResearch/LaboratoryMethods/BacteriologicalAnalyticalManualBAM/default.htm.



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