

Elliker Broth

Intended Use

Elliker Broth, also known as Lactobacilli Broth, is used for cultivating streptococci and lactobacilli, particularly in dairy procedures.

Summary and Explanation

Testing for lactic acid bacteria in dairy products may be useful for various reasons.¹ These include determining the cause of acid defects in dairy products, evaluating lactic starter cultures and controlling the quality of cured cheese, cultured milks and uncultured products.¹ Lactic acid bacteria found in dairy products are primarily *Streptococcus*, *Lactococcus*, *Leuconostoc* and *Lactobacillus*.¹

Elliker Broth is prepared according to the formulation of Elliker, Anderson and Hannesson,² and modified by McLaughlin.³ This slightly acidic medium contains nutrients to support the growth of streptococci and lactobacilli.

A modification of Elliker Broth, Lactic (Elliker) Agar is recommended for general purpose enumeration of lactic acid bacteria.¹

Principles of the Procedure

Peptone and gelatin provide the nitrogen and amino acids in Elliker Broth. Yeast extract is the vitamin source in this formula. Dextrose, lactose and saccharose are the fermentable carbohydrates. Sodium chloride maintains the osmotic balance of the medium, and ascorbic acid is added to create a proper environment for organism growth. Sodium acetate is a selective agent against gram-negative bacteria.

Formula

Difco™ Elliker Broth

Approximate Formula* Per Liter	
Pancreatic Digest of Casein	20.0 g
Yeast Extract	5.0 g
Gelatin.....	2.5 g
Dextrose	5.0 g
Lactose	5.0 g
Saccharose.....	5.0 g
Sodium Chloride	4.0 g
Sodium Acetate	1.5 g
Ascorbic Acid.....	0.5 g

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

Directions for Preparation from Dehydrated Product

1. Suspend 48.5 g of the powder in 1 L of purified water. Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.

User Quality Control

Identity Specifications

Difco™ Elliker Broth

Dehydrated Appearance:	Light to medium beige, free-flowing, homogeneous.
Solution:	4.85% solution, soluble in purified water upon boiling. Solution is light to medium amber, clear.
Prepared Appearance:	Light to medium amber, clear.
Reaction of 4.85% Solution at 25°C:	pH 6.8 ± 0.2

Cultural Response

Difco™ Elliker Broth

Prepare the medium per label directions. Inoculate and incubate at 35 ± 2°C for 18-48 hours except *Streptococcus cremoris* which is incubated at 30 ± 2°C for 18-48 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
<i>Lactobacillus casei</i>	7469	10 ² -10 ³	Good
<i>Lactobacillus delbrueckii</i> subsp. <i>lactis</i>	8000	10 ² -10 ³	Good
<i>Lactobacillus</i> sp.	11506	10 ² -10 ³	Fair
<i>Streptococcus cremoris</i>	9596	10 ² -10 ³	Good

3. Autoclave at 121°C for 15 minutes.
4. Test samples of the finished product for performance using stable, typical control cultures.

Procedure

For a complete discussion on the isolation and identification of streptococci and lactobacilli, refer to standard methods in food testing.^{1,4-6}

Expected Results

Refer to appropriate references and procedures for results.

References

1. Wehr and Frank (ed.). 2004. Standard methods for the examination of dairy products. 17th ed. American Public Health Association, Washington, D.C.
2. Elliker, Anderson and Hannesson. 1956. J. Dairy Sci. 39:1611.
3. McLaughlin. 1946. J. Bacteriol. 51:560.
4. Marshall (ed.). 1993. Standard methods for the examination of dairy products, 16th ed. American Public Health Association, Washington, D.C.
5. U.S. Food and Drug Administration. 2001. Bacteriological analytical manual, online. AOAC International, Gaithersburg, Md.
6. 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™ Elliker Broth

SMD

Cat. No. 212183 Dehydrated – 500 g