Eijkman Lactose Broth

M086

Eijkman Lactose Broth is used for the detection and differentiation of *Escherichia coli* from other coliform organisms on the basis of their ability to grow and liberate gas from lactose.

Composition**

Ingredients	Gms / Litre
Tryptose	15.000
Lactose	3.000
Dipotassium phosphate	4.000
Monopotassium phosphate	1.500
Sodium chloride	5.000
Final pH (at 25°C)	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 28.5 grams in 1000 ml distilled water. For examination of 10 ml portions of water samples, use 57 grams per 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Dispense into tubes with inverted Durhams fermentation tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Principle And Interpretation

Coliform organism is a term used to designate the lactose-fermenting Enterobacteria such as *Escherichia coli* and *Enterobacter* . *Enterobacteriaceae* forms a large group of gram-negative bacteria that inhabit intestinal tract of warm-blooded animals. Therefore they constitute the major microbial flora of human faeces. Since coliforms are readily isolated and identified, they are used as indicator organisms to check faecal contamination of food, water and other samples (1). *E. coli* is one of the common organisms involved in gram-negative sepsis and endotoxin-induced shock (2).

Eijkman (3) described a method for selective isolation of *E. coli* from faeces of warm-blooded and cold-blooded animals. This method had limitations due to the inability to obtain growth after subculturing from positive tubes incubated at 46°C, as acidity and high temperature resulted in death of the culture within 24-48 hours. Perry and Hajna (4) modified Eijkmans original method by decreasing carbohydrate content and adding a phosphate buffer enabling to subculture *E. coli* after incubation at 46°C for 96 hours or longer where pH was 5.6 unlike 4.5 of Eijkman Medium. Perry (5) modified Eijkman Medium using lactose for isolation of *E. coli* . This medium can also be used for bacteriological examination in water filtration control work (6).

Tryptose and lactose in the medium are the energy and the carbon sources respectively. *E. coli* ferment lactose to form acid and gas. The gas produced gets trapped in the form of gas bubbles in the inverted Durhams tubes. Phosphates buffer the medium whereas sodium chloride helps to maintain the osmotic equilibrium of the medium.

Quality Control

Appearance
Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium
Light yellow coloured, clear solution without any precipitate

Reaction
Reaction of 2.85% w/v aqueous solution at 25°C. pH : 6.8±0.2

pH
6.60-7.00

Cultural Response
M086: Cultural characteristics observed after an incubation at 45.5 to 46ºC for 24 - 48 hours.

Organism	Inoculum (CFU)	Growth	Gas
Escherichia coli ATCC 25922	50-100	luxuriant	positive reaction
Enterobacter aerogenes ATCC 13048	50-100	poor	negative reaction

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

Reference

1. Norton C. F., 1940, Microbiology, 2nd Ed., Addison Wesley Publishing Company.
2. Koneman E. W., Allen S. D., Janda W. M., Schreckenberger P. C., Winn W. C. Jr., 1992, Colour Atlas and Textbook of Diagnostic Microbiology, 4th Ed, J. B. Lippincott Company.
3. Eijkman, 1904, Centr. Bakt., 11th Abst., 37:742.
4. Perry C. A., 1939, Food Research, 4:381.
5. Perry C. A. and Hajna A. A., 1933, J. Bacteriol., 26:419.
6. Standard Methods for the Examination of Water and Wastewater, 11th Ed., 1960, APHA, N.Y.

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