



Formate Ricinoleate Broth

M123

Formate Ricinoleate Broth is recommended for detection of coliform bacteria in milk, water and other material of sanitary importance.

Composition**

Ingredients	Gms / Litre
Gelatin peptone	5.000
Lactose	5.000
Sodium formate	5.000
Sodium ricinoleate	1.000
Final pH (at 25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 16 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. For inoculum volume greater than one ml, use double strength medium. Distribute in tubes with inverted Durhams tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Principle And Interpretation

The existence of coliforms in dairy products is suggestive of unsanitary conditions or practices during production processing or storage. *Escherichia coli* is a member of the coliform group and is used as an indicator organism, presence of which is suggestive of faecal contamination. This is because coliforms including *E. coli* are normally found in the intestinal tracts of humans and many warm blooded animals (1).

Formate Ricinoleate Broth is used for detecting coliforms in milk, water and other material of sanitary importance. This medium was devised by Stark and England (2) and is recommended for use in the manner specified in Standard Methods for the Examination of Water and Wastewater (3) and in Standard Methods for the Examination of Dairy Products (4).

Ordinarily three to five tubes of medium are used for each specimen. Inoculated cultures are incubated for 48 hours at 35°C. Formation of gas within 48 hours is considered evidence of the presence of coliform bacilli.

Gelatin peptone supply essential nitrogenous nutrients to the coliforms for their growth while lactose is the carbon source. Sodium formate maintains buffering conditions of the medium and also accelerates growth and gas production of *Escherichia coli* and related organisms. Sodium ricinoleate is a sodium salt of 11 Hydroxyheptadec-8-ene-1-Carboxylic acid which suppresses the growth of contaminating organisms especially gram-positive bacteria. It is interesting to note that gas production appears earlier in this medium than in other media under same conditions.

Quality Control

Appearance

Light yellow to light brown homogeneous free flowing powder

Colour and Clarity of prepared medium

Whitish opalescent solution with slight precipitate.

Reaction

Reaction of 1.6 % w/v aqueous solution at 25°C. pH : 7.4±0.2

pH

7.20-7.60

Cultural Response

M123: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Gas
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<i>Enterobacter aerogenes</i> ATCC 13048	50-100	good-luxuriant	positive reaction
<i>Escherichia coli</i> ATCC 25922	50-100	good-luxuriant	positive reaction
<i>Salmonella Typhi</i> ATCC 6539	$\geq 10^3$	inhibited	
<i>Staphylococcus aureus</i> ATCC 25923	$\geq 10^3$	inhibited	
<i>Bacillus subtilis</i> ATCC 6633	$\geq 10^3$	inhibited	

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. Alcamo E. I., 2001, Fundamentals of Microbiology, 6th Ed., Jones and Bartlett Publishers.
2. Stark and England, 1935, J. Bact., 29:26.
3. Eaton A. D., Clesceri L. S., Rice E. W. and Greenberg A W.(Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st Ed., APHA, Washington, D.C.
4. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.

Revision : 02 / 2016



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