

MacConkey Broth EP/USP

Cat. 1210

For the detection of coliforms in water, milk and other materials of sanitary importance.

Practical information

Applications	Categories
Selective enrichment	Escherichia coli
Detection	Coliforms

Industry: Water / Pharmaceutical/Veterinary / Clinical / Dairy products

Regulations: USP / European Pharmacopoeia



Principles and uses

MacConkey Broth is used as a presumptive test medium for the presence of coliforms in water and other materials of sanitary importance. It is also used for cultivating Gram negative, lactose-fermenting bacilli in water and foods.

The formation of gas and acid confirms the presence of coliforms, as demonstrated by the change of the medium color from purple to yellow.

Pancreatic digest of gelatin provides nitrogen, vitamins, minerals and amino acids essential for growth. Lactose is a fermentable carbohydrate causing a drop in the pH and subsequently a color change of the pH indicator (Bromocresol purple) and bile precipitation. Ox bile is a selective agent to inhibit the growth of Gram positive organisms.

The European Pharmacopoeia, USP recommends this media in the paragraph 2.6.13: "Microbiological examination of non-sterile products: Test for specified microorganisms" for the growth promoting and inhibitory properties of the media in the test for E.coli. Also, this medium is recommended for the testing of E.coli in products.

Formula in g/L

Bromocresol purple	0,01	Gelatin pancreatic digest	20
Ox Bile	5	Lactose monohydrate	10

Preparation

Suspend 35 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. To analyze 10 ml samples, prepare a double-concentration medium. Dispense 10 ml in tubes with Durham gas collecting tubes for gas detection for samples of 1 ml or less, and sterilize in autoclave at 121°C for 15 minutes.

Instructions for use

» For clinical diagnosis, the type of samples are urine and feces.

- Inoculate the sample in the tube.
- Incubate in aerobic conditions at 35±2 °C for 18-24 hours.
- Reading and interpretation of results.

» For other uses not covered by the CE marking:

Test of specified microorganisms (Enterobacteriaceae) according to European Pharmacopoeia:

- Inoculate and incubate at 30-35 °C for 18-24 h in Trypticasein Soy Broth (TSB) (Cat. 1224).

- Subculture in MacConkey Broth and incubate at 42-44 °C for 24-48 h (Cat. 1210).
- Streak onto a plate of Macconkey Agar.
- Incubate at 30-35 °C for 18-72 hours.
- Growth of colonies with precipitated bile indicates the possible presence of E.coli.
- This is confirmed by identification test.
- The products complies with the test if no colonies are present or if the identification test are negative.

Quality control

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25°C)
w/o rests	Fine powder	Beige	Purple	7,3 ± 0,2

Microbiological test

According to European Pharmacopoeia; Escherichia coli ATCC 8739 and Staphylococcus aureus ATCC 6538:

Incubation conditions: (42-44 °C / 24-48 h).

Inoculation conditions: Productivity (<=100 CFU) / Inhibitory (>=100 CFU).

Rest of strains:

Incubation conditions: (35±2 °C / 18-24 h).

Microorganisms	Specification	Characteristic reaction
Enterobacter aerogenes ATCC 13048	Good growth	Acid (+), Gas (+)
Salmonella enteritidis ATCC 13076	Moderate growth	Acid (-), Gas (-)
Escherichia coli ATCC 25922	Good growth	Acid (+), Gas (+)
Staphylococcus aureus ATCC 25923	Inhibition	
Staphylococcus aureus ATCC 6538	Inhibition	
Escherichia coli ATCC 8739	Good growth	Acid (+), Gas (+)

Storage

Temp. Min.:2 °C

Temp. Max.:25 °C

Bibliography

MacConkey, A. 1905. Lactose-fermenting bacteria in faeces. J. Hyg 5:333-379.

MacConkey, A. 1908. Bile salt media and their advantage in some bacteriological examinations. J. Hyg. 8:322-334.

Chils, E., and L. A. Allen. 1953. Improved methods for determining the most probable number of Bacterium coli and of Enterococcusfaecalis. J. Hyg.Camb. 51:468-477.

European Pharmacopoeia. 9.3.