

MacConkey Broth (i23104)

MacConkey Broth is used for the detection of *coliform* organisms in milk and water.

Industry: Dairy products / Water / Clinical / Veterinary / Pharmaceutical / Final product Quality Control

Principles & Uses

MacConkey Broth serves as a widely used differential medium, employed for the detection and quantification of *coliforms* in diverse samples, including clinical specimens, food, and water. This differentiation relies on the specific color change of the medium induced by the indicator used. Its composition includes peptone as a nitrogen source and lactose as a fermentable carbohydrate.

The medium's selectivity is attributed to bile salts, inhibiting most gram-positive bacteria while permitting the growth of gram-negative counterparts. The distinguishing factor is their ability to ferment lactose, causing a color shift when the pH falls below 6.8. Lactose fermenters, like *Escherichia coli*, alter the medium's color to yellow, whereas non-fermenting strains, such as *Shigella* and *Salmonella*, leave it unchanged.

This medium is valuable for detecting and quantifying lactose-fermenting enteric bacteria in milk and water using the membrane filter technique. When used for water testing, the formation of gas and acid confirms the presence of *coliforms*, evident through the medium's transition from purple to yellow.

Composition (gr/L)

Peptone from Casein 20, Lactose 10, Oxgall 5, Bromocresol purple 0.01.

Final pH at 25°C 7.1 ± 0.2

Preparation from dehydrated Powder

Dissolve 35 g of the powder in 1 Liter of purified water. For testing 10 mL samples, prepare double strength. Dispense in test tubes containing Durham tubes. Autoclave at 121°C for 15 minutes.

Quality Control

Dehydrated Appearance: Light beige, free-flowing, homogeneous.

Prepared Appearance: Purple, clear.

Reaction of 3.5% Solution at 25°C: pH 7.1 ± 0.2

Cultural Response

Inoculate and incubate at 35 ± 2°C for 18-24 hours. For *E. coli* ATCC 8739 and *S. aureus* ATCC 6538, inoculate 100 mL bottles and incubate at 43-44°C for 18-48 hours.

Organism (ATCC*)	Recovery	Acid	Gas
<i>Enterococcus faecalis</i> (29212)	inhibition	-	-
<i>Escherichia coli</i> (25922)	Good	+	+
<i>Salmonella enterica</i> subsp. <i>Enterica</i> serotype choleraesuis (12011)	Good	-	-
<i>Escherichia coli</i> (8739)	Growth (at 24 hours)	N/A**	N/A
<i>Staphylococcus aureus</i> (6538)	No Growth (at 48 hours)	N/A	N/A

*ATCC is a registered trade mark of the American Type Culture Collection.

** Not Applicable



Prepared purple-colored culture medium (left). *E. coli* growth causes the medium to turn yellow, and gas accumulates in the Durham tube.

Storage

Keep the container at 15-30 °C. Store prepared medium at 2-8 °C.