

MacConkey Agar (Eur. Pharm)

Used for the study of coliform organisms

Formula in grams per liter:

Pancreatic Digest of Gelatin	17,00	Lactose monohydrate	10,00
Sodium Chloride	5,00	Peptone Mixture	3,00
Bile Salts N° 3	1,50	Neutral Red	0,03
Crystal Violet	0,001	Bacteriological Agar	13,50

Final pH: 7,1 ± 0,2 at 25 °C

Preparation:

Suspend 50 grams of the medium in one liter of distilled water. Mix well until a uniform suspension is obtained. Heat with frequent gentle agitation and boil for one minute. Sterilize in autoclave at 121° C (15 lbs. sp) for 15 minutes. Cool to 45 °C, and pour into Petri dishes. Allow the plates to solidify and place them upside down to avoid excessive moisture in the surface of the medium.

Uses:

For the selective isolation and identification of enterobacteria from feces, urine, wastewater and foods. MacConkey Agar is a selective and differential medium for the isolation of enteric gram negative bacilli.

The specimen can be streaked directly on the medium or inoculated first into an enrichment broth such as Tetrathionate Broth, Selenite Cystine Broth, or GN Broth. Incubate the plates and broth tubes at 35°C for 18 to 24 hours. Subculture the broth tubes onto MacConkey Agar and reincubate.

It is recommended to streak samples onto other selective media such as Eosin Methylene Blue Agar, SS Agar, XLD Agar, Hektoen Enteric Agar, Bismuth Sulfite Agar (especially for Salmonella typhi), and/or Brilliant Green Agar, especially for salmonellas. See the listings in this manual for these formulations.

Other organisms not belonging to the enterobacteria such as Pseudomonas and Aeromonas grow on MacConkey Agar. Enterococci can also grow as small pinpoint red colonies as well as some strains of Staphylococci, whose weak pink colonies are small and opaque. This medium can also be used for the differentiation of mycobacteria.

CHARACTERISTICS OF THE COLONIES:

Escherichia coli: Red to pink. Not mucoid. Can be round with an opaque precipitate of bile salts. Klebsiella: Large, red, mucoid. Enterobacter: Large, red. Not mucoid. Serratia: Red to pink. Not mucoid. Arizona and Citrobacter: Colourless, transparent. Red if lactose is fermented. Proteus: Colourless and transparent. Pseudomonas: Colourless to greenish-brown. Characteristic sweet odor. Salmonella: Colourless, transparent or amber. Shigella: Colourless, transparent or very faintly pink. Staphylococcus: Punctiform, pale pink, opaque and scanty. Enterococcus: Scanty, punctiform, red, opaque with a clear zone about 1 mm in diameter around the colony.

Microbiological Tests:

Microorganisms	Growth	Colony color
<i>Enterobacter aerogenes</i> ATCC 13048	Good	Pink-red
<i>Escherichia coli</i> ATCC 25922	Good	Pink-red (biliar precipitate)
<i>Proteus vulgaris</i> ATCC 13315	Good	Colorless
<i>Salmonella enteritidis</i> ATCC 13076	Good	Colorless
<i>Shigella dysenteriae</i> ATCC 13313	Good	Colorless
<i>Sthaphylococcus aureus</i> ATCC 25923	Inhibited	colorless

