

MacConkey Agar Base**M1024**

MacConkey Agar Base is recommended for studying fermentation reactions of coliforms by adding carbohydrate.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	17.000
Proteose peptone	3.000
Bile salts	1.500
Sodium chloride	5.000
Neutral red	0.030
Crystal violet	0.001
Agar	13.500
Final pH (at 25°C)	7.1±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 40 grams in 1000 ml distilled water. Add 10 grams of lactose or other carbohydrates of choice. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure for 15 minutes. Mix well and pour into sterile Petri plates.

Principle And Interpretation

MacConkey Agar is the earliest selective and differential medium for cultivation of enteric microorganisms from a variety of clinical specimens (1, 2). MacConkey Agar Base is used for studying carbohydrate fermentation reactions of coliforms by adding carbohydrates either individually or in combination (3).

MacConkey Agar Base has peptic digest of animal tissue and proteose peptone, which provide nitrogen, carbon and vitamin source for the growth of bacteria. This medium does not contain carbohydrates. However for studying fermentation reaction, carbohydrate of interest has to be added while preparing medium. The selective action of this medium is attributed to bile salts and crystal violet, which are inhibitory to most of the species of gram-positive bacteria. Gram-negative bacteria usually grow well on the medium and are differentiated by their ability to ferment carbohydrates. Carbohydrate fermenting strains grow as red or pink and may be surrounded by a zone of acid precipitated bile. The red colour is due to production of acid from carbohydrate, absorption of neutral red and subsequent colour change of the dye when the pH of the medium falls below 6.8. Sodium chloride helps to maintain osmotic balance.

Quality Control**Appearance**

Light yellow to pink homogeneous free flowing powder

Gelling

Firm comparable with 1.35% Agar gel.

Colour and Clarity of prepared medium

Purplish red coloured clear to slightly opalescent gel forms in Petri plates.

Reaction

Reaction of 4.0% w/v aqueous solution at 25°C. pH : 7.1±0.2

Cultural Response

M1024: Cultural characteristics observed with added 1% lactose, after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of Colony		
<i>Escherichia coli</i> ATCC 25922	50-100	luxuriant	≥50%	pink to red with bile precipitate		
<i>Enterobacter aerogenes</i> ATCC 13048	50-100	luxuriant	≥50%	pink to red		
<i>Enterococcus faecalis</i> ATCC 29212	50-100	fair to good	30-40%	pale pink to red		
<i>Proteus vulgaris</i> ATCC 13315	50-100	luxuriant	≥50%	colourless		

<i>Salmonella Paratyphi A</i> ATCC 9150	50-100	luxuriant	>=50%	colourless		
<i>Shigella dysenteriae</i> ATCC 13313	50-100	fair to good	30-40%	colourless		
<i>Salmonella Paratyphi B</i> ATCC 8759	50-100	luxuriant	>=50%	colourless		
<i>Salmonella Enteritidis</i> ATCC 13076	50-100	luxuriant	>=50%	colourless		
<i>Salmonella Typhi</i> ATCC 6539	50-100	luxuriant	>=50%	colourless		
<i>Staphylococcus aureus</i> ATCC 25923	>=10 ³	inhibited	0%			

Reference

1. MacConkey, 1900, The Lancet, ii:20.
2. MacConkey, 1905, J. Hyg., 5:333.
3. Holt, Harris and Teague, 1916, J. Infect. Dis., 18:596.

Storage and Shelf Life

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