

MacConkey Agar

Intended Use

MacConkey Agar is recommended for selective isolation of *Escherichia coli* from pharmaceutical products and is in accordance with harmonized methodology of BP. It is also recommended for selective isolation and differentiation of lactose fermenting and lactose non-fermenting enteric bacteria.



Typical Composition (g/litre)

Peptones (meat and casein) 3.0 ; Pancreatic digest of gelatin 17.0 ;Lactose monohydrate 10.0 ; Bile salts 1.5 ; Sodium chloride 5.0 ; Crystal violet 0.001 ; Neutral red 0.030 ; Agar 13.5

Mode of action

Pancreatic digest of gelatin and peptones (meat and casein) provide the essential nutrients, vitamins and nitrogenous factors required for growth of microorganisms. Bile salts and crystal violet largely inhibit the growth of the Gram-positive microbial flora. Lactose and the pH indicator neutral red are used to detect lactose degradation.

MacConkey Agar is the earliest selective and differential medium for cultivation of coliform organisms and have been recommended for use in microbiological examination of foodstuffs and water samples for coliform counts. This medium is also accepted by the Standard Methods for the Examination of Milk and Dairy Products. British pharmacopoeia has recommended this medium for the subculture and identification of *Escherichia coli*.

Preparation

Suspend 49.53 grams of dehydrated medium in 1000 ml purified/distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

pH after sterilization (at 25°C) 7.1±0.2

Storage

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

Specimen

Clinical specimen collection, handling and processing, see general instructions of use.

Experimental Procedure and Evaluation

Inoculate by spreading the sample material on the surface of the plates. Incubate at 30 – 35°C for 18 – 72 hrs. Gram-negative bacteria usually grow well on the medium and are differentiated by their ability to ferment lactose. Lactose fermenting strains grow as red or pink and may be surrounded by a zone of acid precipitated bile because of pH decrease.

Quality Control

Organism	Inoculum	Growth	Recovery	Colony colour
Escherichia coli ATCC 8739	50 - 100	Luxuriant	>=50 %	Pink-red with bile precipitate
Escherichia coli ATCC 25922	50 - 100	Luxuriant	>=50 %	Pink-red with bile precipitate
Enterobacter aerogenes ATCC 13048	50 - 100	Luxuriant	>=50 %	Pink to red
Enterococcus faecalis ATCC 29212	50 - 100	Fair - good	30 -40 %	Colourless to pale pink
Salmonella Typhimurium ATCC 14028	50 - 100	Luxuriant	>=50 %	Colourless
Staphylococcus aureus ATCC 6538	>=10 ³	Inhibited	0%	-
Staphylococcus aureus ATCC 25923	>=10 ³	Inhibited	0%	-
Salmonella Enteritidis ATCC 13076	50 - 100	Luxuriant	>=50 %	Colourless
Salmonella Paratyphi A ATCC 9150	50 - 100	Luxuriant	>=50 %	Colourless
Salmonella Paratyphi B ATCC 879	50 - 100	Luxuriant	>=50 %	Colourless
Salmonella Typhi ATCC 6539	50 - 100	Luxuriant	>=50 %	Colourless
Salmonella Abony NCTC 6017	50 - 100	Luxuriant	>=50 %	Colourless
Proteus vulgaris ATCC 13315	50 - 100	Luxuriant	>=50 %	Colourless
Shigella flexneri ATCC 12022	50 - 100	Fair - good	30 -40 %	Colourless
Staphylococcus epidermidis ATCC 12228	>=10 ³	Inhibited	0%	-
Corynebacterium diphtheriae type gravis	>=10 ³	Inhibited	0%	-

Reference

1. The United States Pharmacopoeia 2011, The United States Pharmacopoeial Convention. Rockville, MD.
2. European Pharmacopoeia 2011, European Dept. for the quality of Medicines
3. MacConkey, 1905, J. Hyg., 5:333.
4. Eaton A. D., Clesceri L. S. and Greenberg A W.,(Eds.), 2005, Standard Methods for the Examination of Water and
5. Wastewater, 21st ed., APHA, Washington, D.C.
6. Wehr H M and Frank J H., 2004, Standard Methods for the Examination of Dairy Products, 17th ed., APHA Inc., Washington, D.C.
7. Japanese Pharmacopoeia, 2008.