



MacConkey Agar Plate (Triple Pack)

MPH081T

For the selection and subculture of *Escherichia coli* in accordance with harmonized method of USP/EP/BP/JP/IP.

Composition**

Ingredients	Gms / Litre
Pancreatic digest of gelatin	17.000
Casein enzymic hydrolysate	1.500
Peptic digest of animal tissue	1.500
Lactose	10.000
Bile salts	1.500
Sodium chloride	5.000
Neutral red	0.030
Crystal violet	0.001
Agar	15.000

**Formula adjusted, standardized to suit performance parameters

Directions

Either streak, inoculate or surface spread the test inoculum (50-100 CFU) aseptically on the plate

Principle And Interpretation

MacConkey agars are slightly selective and differential plating media mainly used for the detection and isolation of gram-negative organisms from clinical (1), dairy (2), food (3,4), water (5), pharmaceutical (6, 14) and industrial sources (7). It is also recommended for the selection and recovery of the *Enterobacteriaceae* and related enteric gramnegative bacilli. USP recommends this medium for use in the performance of Microbial Limit Tests (6).

These agar media are selective since the concentration of bile salts, which inhibit gram-positive microorganisms, is low in comparison with other enteric plating media. The medium M081, which corresponds with, that recommended by APHA can be used for the direct plating of water samples for coliform bacilli, for the examination of food samples for food poisoning organisms (3) and for the isolation of *Salmonella* and *Shigella* species in cheese (2). Other than that this medium is also used for count of coli-aerogenes bacteria in cattle and sheep faeces (8), the count of coliaerogenes and non-lactose fermenters in poultry carcasses (9), bacterial counts on irradiated canned minced chicken (10) and the recognition of coli-aerogenes bacteria during investigations on the genus *Aeromonas* (11).

MacConkey Agar is the earliest selective and differential medium for cultivation of enteric microorganisms from a variety of clinical specimens (13, 12). The original medium contains protein, bile salts, sodium chloride and two dyes.

The selective action of this medium is attributed to crystal violet and bile salts, which are inhibitory to most species of gram-positive bacteria. 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 colonies and may be surrounded by a zone of acid precipitated bile. The red colour is due to production of acid from lactose, absorption of neutral red and a subsequent colour change of the dye when the pH of medium falls below 6.8. Lactose non-fermenting strains, such as *Shigella* and *Salmonella* are colourless, transparent and typically do not alter appearance of the medium.

Peptones are sources of nitrogen and other nutrients. Lactose is a fermentable carbohydrate, bile salts and crystal violet are selective agents that inhibit growth of gram-positive organisms. Neutral red is the pH indicator dye.

Quality Control

Appearance

Sterile MacConkey Agar w/o 15% Bile salts, CV and NaCl Agar in 90 mm disposable plate.

Colour

Red with purplish tinge coloured medium

Quantity of Medium

25ml of medium in 90mm plate.

pH

6.90- 7.30

Cultural Response

Growth Promotion is carried out in accordance with the harmonized method of USP/EP/BP/JP. Cultural response was observed after an incubation at 30-35°C for 18-72 hours. Recovery rate is considered as 100% for bacteria growth on Soyabean Casein Digest Agar.

Growth promoting properties

Growth of microorganism comparable to that previously obtained with previously tested and approved lot of medium occurs at the specified temperature for not more than the shortest period of time specified inoculating 100 cfu (at 30-35°C for 18 hours).

Indicative properties

Colonies are comparable in appearance and indication reaction to those previously obtained with previously tested and approved lot of medium occurs for the specified temperature for a period of time within the range specified inoculating 100 cfu (at 30-35°C for 18-72 hours).

Sterility Test

Passes release criteria

Cultural Response

Organism	Inoculum (CFU)	Growth	Observed Lot value (CFU)	Recovery	Colour of colony	Incubation temperature
Growth Promoting + Indicative						
<i>Escherichia coli</i> ATCC 8739	50 -100	luxuriant	25 -100	>=50 %	pink-red with bile precipitate	18 -72 hrs
Additional Microbiological testing						
<i>Escherichia coli</i> ATCC 25922	50 -100	luxuriant	25 -100	>=50 %	pink to red with bile precipitate	18 -24 hrs
<i>Escherichia coli</i> NCTC 9002	50 -100	luxuriant	25 -100	>=50 %	pink to red with bile precipitate	18 -24 hrs
<i>Enterobacter aerogenes</i> ATCC 13048	50 -100	luxuriant	25 -100	>=50 %	pink to red	18 -24 hrs
<i>Enterococcus faecalis</i> ATCC 29212	50 -100	fair to good	15 -40	30 -40 %	colourless to pale pink	18 -24 hrs
<i>Salmonella Typhimurium</i> ATCC 14028	50 -100	luxuriant	25 -100	>=50 %	colourless	18 -24 hrs
<i>Staphylococcus aureus</i> ATCC 6538	>=10 ³	inhibited		<=0 %		>=24 hrs
<i>Staphylococcus aureus</i> ATCC 25923	>=10 ³	inhibited		<=0 %		>=24 hrs
<i>Salmonella Enteritidis</i> ATCC 13076	50 -100	luxuriant	25 -100	>=50 %	colourless	18 -24 hrs
<i>Salmonella Paratyphi A</i> ATCC 9150	50 -100	luxuriant	25 -100	>=50 %	colourless	18 -24 hrs
<i>Salmonella Paratyphi B</i> ATCC 8759	50 -100	luxuriant	25 -100	>=50 %	colourless	18 -24 hrs
<i>Salmonella Typhi</i> ATCC 6539	50 -100	luxuriant	25 -100	>=50 %	colourless	18 -24 hrs
<i>Salmonella Abony</i> NCTC 6017	50 -100	luxuriant	25 -100	>=50 %	colourless	18 -24 hrs
<i>Proteus vulgaris</i> ATCC 13315	50 -100	luxuriant	25 -100	>=50 %	colourless	18 -24 hrs
<i>Shigella flexneri</i> ATCC 12022	50 -100	fair to good	15 -40	30 -40 %	colourless to pink	18 -24 hrs
<i>Staphylococcus epidermidis</i> ATCC 12228	>=10 ³	inhibited		<=0 %		>=24 hrs
<i>Corynebacterium diphtheriae</i> type gravis	>=10 ³	inhibited		<=0 %		>=24 hrs

Storage and Shelf Life

Store between 15-25°C. Use before expiry date on the label.

Reference

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