



PRODUCT SPECIFICATION SHEET

MacConkey Agar Plate (RP009H)

Intended Use

MacConkey Agar Plate (RP009H) medium is recommended for selective isolation and subculture of *Escherichia coli* in compliance with harmonized method of USP/EP/BP/JP.

Product Summary and Explanation

MacConkey Agar is based on the bile salt-neutral red-lactose agar of MacConkey.^(1,2) The original MacConkey medium was used to differentiate strains of *Salmonella typhosa* from members of the coliform group. Formula modifications improved the growth of *Shigella* and *Salmonella* strains. The original medium contains protein, bile salts, sodium chloride and two dyes. These modifications included the addition of 0.5% sodium chloride, decreased agar content, and altered bile salts and neutral red concentrations. The formula improvements gave improved differential reactions between these enteric pathogens and the coliform group. MacConkey Agar is the earliest selective and differential medium for cultivation of enteric microorganisms from a variety of clinical specimens,⁽³⁾ dairy,⁽⁴⁾ food,^(5,6) water,⁽⁷⁾ pharmaceutical^(8,9) and industrial sources.⁽¹⁰⁾ It is also recommended for the selection and recovery of the *Enterobacteriaceae* and related enteric gram-negative bacilli. USP recommends this medium for use in the performance of Microbial Limit Tests.⁽⁸⁾

The medium 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⁽⁵⁾ and for the isolation of *Salmonella* and *Shigella* species in cheese.⁽⁶⁾ Other than that this medium is also used for count of coli-aerogenes bacteria in cattle and sheep faeces,⁽¹¹⁾ the count of coliaerogenes and non-lactose fermenters in poultry carcasses,⁽¹²⁾ bacterial counts on irradiated canned minced chicken⁽¹³⁾ and the recognition of coli-aerogenes bacteria during investigations on the genus *Aeromonas*.⁽¹⁴⁾

Principles of the Procedure

MacConkey Agar Plate contains peptones which are sources of nitrogen and other nutrients. Lactose is a fermentable carbohydrate. The selective action of this medium is attributed to crystal violet and bile salts, which are inhibitory to most species of gram-positive bacteria. Neutral red is the pH indicator dye.

Formula / Liter

Ingredients	Gms / Litre
Pancreatic digest of gelatin	17.00
Casein enzymic hydrolysate	1.50
Peptic digest of animal tissue	1.50
Lactose	10.00
Bile salts	1.50
Sodium chloride	5.00
Neutral red	0.03
Crystal violet	0.001
Agar	15.00

Formula may be adjusted and/or supplemented as required to meet performance specifications

Precautions

1. Prepared plated media are For *in vitro* Diagnostic Use or For Laboratory Use as labeled.
2. Directions for use should be read and followed carefully.
3. If excessive moisture is observed, invert the bottom over an off-set lid and allow to air dry in order to prevent formation of a seal between the top and bottom of the plate during incubation.
4. Observe aseptic techniques and established precautions against microbiological hazards throughout all procedures, since it must be assumed that all specimens/samples collected might contain infectious microorganisms.





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Product Deterioration

Do not use plates if they show evidence of microbial contamination, discoloration, drying, cracking or other signs of deterioration.

Directions

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

Quality Control Specifications

Appearance	Sterile MacConkey Agar w/ 0.15% Bile salts, CV and NaCl Agar in 90 mm disposable plate
Colour	Red with purplish tinge coloured medium
Reaction	6.90-7.30
Quantity of medium	25ml of medium in 90mm plate

Sterility Check: Passes release criteria.

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.

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).

Expected Cultural Response:

Sr. No.	Organisms	Results to be achieved					
		Inoculum (CFU)	Growth	Observed Lot value (CFU)	Recovery	Colour of colony	Incubation Temperature
	Growth Promoting + Indicative						
1.	<i>Escherichia coli</i> ATCC 8739	50-100	good-luxuriant	25-100	≥50 %	pink-red with bile precipitate	18 -72 hrs
2.	<i>Escherichia coli</i> ATCC25922	50-100	good-luxuriant	25 -100	≥50 %	pink-red with bile precipitate	18 -24 hrs
3.	<i>Escherichia coli</i> NCTC 9002	50-100	good-luxuriant	25 -100	≥50 %	pink-red with bile precipitate	18 -24 hrs
4.	<i>Enterobacter aerogenes</i> ATCC 13048	50-100	good-luxuriant	25 -100	≥50 %	pink to red	18 -24 hrs
5.	<i>Enterococcus faecalis</i> ATCC 29212	50-100	fair to good	15-40	30 -40 %	colourless to pale pink	18 -24 hrs
6.	<i>Salmonella typhimurium</i> ATCC 14028	50-100	good-luxuriant	25 -100	≥50 %	colourless	18 -24 hrs
7.	<i>Staphylococcus aureus</i> ATCC 6538	≥10 ³	inhibited	--	0%	--	≥24 hrs
8.	<i>Staphylococcus aureus</i> ATCC 25923	≥10 ³	inhibited	--	0%	--	≥24 hrs
9.	<i>Salmonella enteritidis</i> ATCC 13076	50-100	good-luxuriant	25 -100	≥50 %	colourless	18 -24 hrs



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10.	<i>Salmonella abony</i> NCTC 6017	50-100	good-luxuriant	25 -100	≥50 %	colourless	18 -24 hrs
11.	<i>Proteus vulgaris</i> ATCC 13315	50-100	good-luxuriant	25 -100	≥50 %	colourless	18 -24 hrs
12.	<i>Shigella flexneri</i> ATCC 12022	50-100	fair to good	15-40	30-40%	colourless	18 -24 hrs
13.	<i>Staphylococcus epidermidis</i> ATCC 12228	≥10 ³	inhibited	--	0%	--	≥24 hrs

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

Refer appropriate references for standard test procedures.

Results

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. Refer appropriate references and procedures for interpretation of results.

Storage

On receipt, store plates at 15-25°C. Freezing and overheating must be avoided. Allow the medium to warm to room temperature before inoculation. Media containing dyes should be protected from light.

Expiration

Refer to the expiration date stamped on the pack. Prepared plates stored in their original sleeve wrapping at 2-8°C until just prior to use may be inoculated up to the expiration date and incubated for recommended incubation times, including up to 6 weeks for mycology media and up to 8 weeks for mycobacteriology media.

Product Disposal

After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

Limitations of the Procedure

1. Some diagnostic tests may be performed with the primary plate. However, a pure culture is recommended for the majority of biochemical tests and other identification procedures.
2. Consult appropriate references for further information.

Packaging

Product Name : MacConkey Agar w/ 0.15% Bile Salts, CV and NaCl Plate

Product Code : RP009H

Available Pack sizes : Pack of 10 plates

References

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Further Information

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