

TMV 379 - MacCONKEY AGAR (W/ 0.15% BILE SALTS, CV & NaCl)(VEG.)

INTENDED USE

For selective isolation and differentiation of coliform organisms and other enteric bacteria from clinical and non-clinical samples.

PRODUCT SUMMARY AND EXPLANATION

MacConkey agars are slightly selective and differential plating media mainly used for the detection and isolation of gram-negative organisms from clinical, dairy, food, water, pharmaceutical and industrial sources. 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.

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 Macconkey agar (w/ 0.15% bile salts, cv & nacl) (veg.), 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 and for the isolation of *Salmonella* and *Shigella* species in cheese. Other than that this medium is also used for count of coli-aerogenes bacteria in cattle and sheep faeces, the count of coli-aerogenes and non-lactose fermenters in poultry carcasses, bacterial counts on irradiated canned minced chicken and the recognition of coli- aerogenes bacteria during investigations on the genus *Aeromonas*.

MacConkey Agar is the earliest selective and differential medium for cultivation of enteric microorganisms from a variety of clinical specimens. 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.

COMPOSITION

Ingredients	Gms / Ltr
Veg peptone	1.5
Veg hydrolysate	1.5
Veg peptone No. 2	17
Lactose	10
Synthetic detergent	1.5
Sodium chloride	5
Crystal violet	0.001
Neutral red	0.03
Agar	15

PRINCIPLE

Veg Peptone, veg hydrolysate and Veg Peptone No. 2 are sources of nitrogen, carbon, long chain amino acids and other nutrients. Lactose is a fermentable carbohydrate; Sodium chloride maintains the osmotic equilibrium. Bile salts and crystal violet are selective agents that inhibit growth of gram-positive organisms. Neutral red is the pH indicator dye.

INSTRUCTION FOR USE

- Dissolve 51.53 grams in 1000 ml purified/ distilled water.



- Heat to boiling with gentle swirling to dissolve the agar completely.
- Sterilize by autoclaving at 15 psi pressure (121°C) for 15 minutes.
- Avoid overheating. Cool to 45 - 50°C and pour into sterile Petri plates.
- The surface of the medium should be dry when inoculated.

QUALITY CONTROL SPECIFICATIONS

- Appearance of Powder** : Pinkish beige coloured, homogeneous, free flowing powder
- Appearance of prepared medium** : Red coloured, clear to slightly opalescent gel forms in petri plates.
- pH (at 25°C)** : 7.4±0.2

INTERPRETATION

Cultural response was observed after an incubation.

Microorganism	ATCC	Inoculum (CFU/ml)	Growth	Recovery	Colour of colony	Incubation Temperature	Incubation Period
<i>Corynebacterium diphtheriae</i> type <i>gravis</i> <i>Shigella flexneri</i>	12022	$\geq 10^4$	inhibited	0%	-	30-35°C	18-72 Hours
<i>Salmonella</i> Paratyphi A	9150	50-100	luxuriant	$\geq 70\%$	colourless	30-35°C	18-72 Hours
<i>Proteus vulgaris</i>	13315	50-100	luxuriant	$\geq 70\%$	colourless	30-35°C	18-72 Hours
<i>Salmonella</i> Typhi	6539	50-100	luxuriant	$\geq 70\%$	colourless	30-35°C	18-72 Hours
<i>Staphylococcus epidermidis</i>	12228	$\geq 10^4$	inhibited	0%	-	30-35°C	18-72 Hours
<i>Escherichia coli</i>	8739	50 -100	luxuriant	$\geq 70\%$	pink-red with bile precipitate	30-35°C	18-72 Hours
<i>Staphylococcus aureus</i> <i>subsp.aureus</i>	6538	$\geq 10^4$	inhibited	0%	-	30-35°C	18-72 Hours
<i>Salmonella</i> Paratyphi B	8759	50 -100	luxuriant	$\geq 70\%$	colourless	30-35°C	18-72 Hours



<i>Escherichia coli</i>	25922	50 -100	luxuriant	>=70 %	pink to red with bile precipitate	30-35°C	18-72 Hours
<i>Klebsiella aerogenes</i>	13048	50 -100	luxuriant	>=70 %	pink to red	30-35°C	18-72 Hours
<i>Salmonella Typhimurium</i>	14028	50 -100	luxuriant	>=70 %	colourless	30-35°C	18-72 Hours
<i>Enterococcus faecalis</i>	29212	50 -100	none - poor	0-10%	colourless to pale pink	30-35°C	18-72 Hours
<i>Salmonella Enteritidis</i>	13076	50 -100	luxuriant	>=70 %	colourless	30-35°C	18-72 Hours
<i>Staphylococcus aureus subsp.aureus</i>	25923	>=10 ⁴	inhibited	0%	-	30-35°C	18-72 Hours

PACKAGING:

In pack size of 100 gm and 500 gm bottles.

STORAGE

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 25-30°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.

Product Deterioration: Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.

DISPOSAL

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













REFERENCES

1. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23rd ed., APHA, Washington, D.C.
2. Barnes Ella M. and Shrimpton D. H., 1957, J. Appl. Bacteriol., 20(2),273-285.
3. British Pharmacopoeia, 2016, The Stationery Office British Pharmacopoeia.
4. Eddy B. P., 1960, J. Appl. Bacteriol., 23(2).216-249.
5. FDA Bacteriological Analytical Manual, 2005, 18th Ed., AOAC, Washington, D.C.
6. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition
7. MacConkey A., 1905, J. Hyg., 5:333.
8. MacConkey A., 1900, The Lancet, ii:20.
9. Medrek T. F and Barnes Ella M., 1962, J. Appl. Bacteriol., 25(2),159-168
10. Murray P. R, Baron E, J., Jorgensen J. H., Pfaller M. A., Tenover F. C., Tenover R. H., (Eds.), 8th Ed., 2003, Manual of Clinical Microbiology, ASM, Washington, D.C.
11. Salfinger Y., and Tortorello M.L. Fifth (Ed.), 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.



Health Association, Washington, D.C.

12. The United States Pharmacopoeia, 2018, The United States Pharmacopoeial Convention, Rockville, M.D.
13. Thornley Margaret J., 1957, J. Appl. Bacteriol., 20(2), 273-285.
14. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.
15. Williams, (Ed.), 2005, Official Methods of Analysis of the Association of Official Analytical Chemists, 19th Ed., AOAC, Washington, D.C

 GMP Good Manufacturing Practices Certified	 IVD For In Vitro Diagnostic Use	 QTY. Quantity	 LOT/ B. NO. Lot / Batch Number	 REF Catalogue Number	 Manufacturer
 Temperature Unit	 EC REP MedNet GmbH Buckstosse 10, 48163 Moenster, Germany Authorized Representative	 European Conformity	 QR Code	 Consults Instructions for Use	 Best Before

NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling Practices.

***For Lab Use Only**
Revision: 08 Nov., 2019