Ready Prepared Media

Technical Information

MacConkey Sorbitol Agar Plate

Product Code: PM 1298

Application: MacConkey Sorbitol Agar Plate is used for isolation and identification of enteropathogenic *Escherichia coli* strains associated with infant diarrhea.

Composition**

Ingredients	Gms / Litre
Peptone	17.000
Proteose peptone	3.000
D-Sorbitol	10.000
Bile salts mixture	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

Principle & Interpretation

MacConkey Sorbitol Agar is based on the formulation described by Rappaport and Henigh (1). This medium is recommended for isolation of enteropathogenic *Escherichia coli* O157: H7, which ferments lactose but does not ferment sorbitol, hence produces colourless colonies. This organism has been recognized as a cause of hemorrhagic colitis (2). *E.coli* O157: H7 is a human pathogen associated with hemorrhagic colitis that results from the action of a shiga-like toxin (SLT) (3,4).

On standard MacConkey Agar containing lactose, this strain is indistinguishable from other lactose-fermenting *E.coli*. In MacConkey Sorbitol Agar Base, lactose is replaced by sorbitol. Unlike most *E.coli* strains, *E.coli* O157:H7 ferments sorbitol slowly or not at all (5,6). The growth of *E.coli* O157:H7 on MacConkey Agar with Sorbitol shows colourless colonies and most of the fecal flora ferment sorbitol and appear pink. MacConkey Agar with Sorbitol therefore permits ready recognition of *E.coli* O157:H7 (3,4,7)

Peptone and proteose peptone supply necessary nutrients like nitrogenous and carbonaceous compounds, long chain amino acids, minerals, vitamins and trace ingredients for the growth of organisms. Crystal violet and bile salt mixture present in the medium inhibit growth of gram-positive bacteria. Sodium chloride maintains osmotic equilibrium. Neutral red is an indicator. D-Sorbitol is the fermentable carbohydrate.

Type of specimen

Clinical samples - stool, Food and Dairy samples.

Specimen Collection and Handling

For clinical samples follow appropriate techniques for handling specimens as per established guidelines (5,8). For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (9,10,11). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

In Vitro diagnostic Use only. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations

1. MacConkey Sorbitol Agar however should not be solely used to detect pathogenic *E.coli* O157: H7 strains as some non-toxic strains will also not ferment sorbitol (4).
2. Individual organisms differ in their growth requirement and may show variable growth patterns on the medium
3. Each lot of the medium has been tested for the organisms specified on the COA. It is recommended to users to validate the medium for any specific microorganism other than mentioned in the COA based on the user's unique requirement.
4. It is recommended to store the plates at 24-30°C to avoid condensation.
5. Further biochemical tests must be carried out for further confirmation

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Methodology

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

Quality Control

Appearance

Sterile MacConkey Sorbitol Agar in 90 mm disposable plates with smooth surface and absence of black particles/cracks/ bubbles.

Colour of medium

Purplish red coloured medium

Quantity of medium

25 ml of medium in 90 mm disposable plates.

pH

6.90-7.30

Sterility Check Passes release criteria Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours

Oragnism	Inoculum (CFU)	Growth	Recovery	Colour of colony
Salmonella Typhi ATCC 6539	50-100	luxuriant	>=50%	Pink
Shigella flexneri ATCC 12022 (00126*)	50-100	luxuriant	>=50%	Colourless
Escherichia coli ATCC 25922 (00013*)	50-100	luxuriant	>=50%	Pink
Escherichia coli serotype O11 and O55	50-100	luxuriant	>=50%	Colourless
Escherichia coli O157:H7 NCTC 29900	50-100	luxuriant	>=50%	Colourless

Key : (*) Corresponding WDCM numbers.

Storage and Shelf Life

On receipt store between 20-30°C Use before expiry date on the label. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (5,8).

Further Reading

1. Rappaport F. and Henigh E., 1952, J. Clin. Pathol., 6 : 361.
2. Karmali M. A., Petric M., Lim C. et al, 1985, J. Infect. Dis.,151:775.
3. Centre for Diseases Control, 1991, Morbid. Mortal, Weekly Rep 40:265.
4. March S. B. and Ratnam S., 1986, J. Clin. Microbiol., 23:869.
5. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.
6. Pelczar M. J., Chan E. C. and Kreig M. R., 1986, Microbiology, 5th Ed., McGraw Hill Book Co., New York.
7. Murray P. R., Baron J. H., Pfaller M. A., Tenover F. C. and Yolken R. H. (Ed.), 1999, Manual of Clinical Microbiology, 7th Ed. American Society for Microbiology, Washington, D. C.
8. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
9. American Public Health Association, Standard Methods for the Examination of Dairy Products, 1978, 14th Ed., Washington D.C.
10. 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.
11. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.

Disclaimer

- User must ensure suitability of the product(s) in their application prior to use.
- The product conform solely to the technical information provided in this booklet and to the best of knowledge research and development work carried at **CDH** is true and accurate
- **Central Drug House Pvt. Ltd.** reserves the right to make changes to specifications and information related to the products at any time.
- Products are not intended for human or animal diagnostic or therapeutic use but for laboratory, research or further manufacturing
- of diagnostic reagents extra.
- Statements contained herein should not be considered as a warranty of any kind, expressed or implied, and no liability is accepted for infringement of any patents.
- Do not use the products if it fails to meet specificatons for identity and performens parameters.