



M-MacConkey Broth

M1125

Intended Use:

Recommended for detection of lactose fermenting and non fermenting enteric bacteria using membrane filtration technique.

Composition**

Ingredients	g / L
Peptone	10.000
Bile salts	4.000
Sodium chloride	5.000
Lactose	30.000
Bromocresol purple	0.120
Final pH (at 25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 49.12 grams in 1000 ml purified/distilled water. Heat if necessary to dissolve the medium completely. Dispense into tubes with inverted Durham's tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Principle And Interpretation

MacConkey broth is widely used as a differential medium for detection and enumeration of coliforms from wide variety of clinical samples, food, water etc. which can be identified by colour change of the medium specific to the indicator used (1,2). Peptone provides necessary nitrogen source. Lactose serves as fermentable carbohydrate source. Sodium chloride maintains osmotic balance of the cells. The selective action of this medium is attributed to 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. The colour change of the medium shown by lactose fermentors is due to production of acid from lactose 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* do not alter the appearance of the medium. Due the presence of bromocresol purple in the medium, *Escherichia coli* changes the colour of the medium to yellow due to lactose fermentation and colourless to slight purple in case of nonfermenters.

M-MacConkey Broth is recommended for the detection and enumeration of lactose fermenting enteric bacteria from milk and water using membrane filter technique (3). Saturate sterile absorbent cotton - pads with M-MacConkey Broth. The membrane filter is then aseptically placed on the saturated sterile absorbent cotton pads.

Type of specimen

Food and dairy samples; Water samples

Specimen Collection and Handling:

For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (4,5). For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.(6) After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

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 specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations

1. Although this medium is selective for gram negative organisms, biochemical identification and serological testing using pure cultures is recommended for complete identification.
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.

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.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Purple coloured clear solution without any precipitate

Reaction

Reaction of 4.91% w/v aqueous solution at 25°C. pH : 7.4±0.2

pH

7.20-7.60

Cultural Response

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

Organism	Inoculum (CFU)		Colour of colony (on membrane filter)
<i>Escherichia coli</i> ATCC 25922 (00013*)	50-100	luxuriant	yellow
# <i>Klebsiella aerogenes</i> ATCC 13048 (00175*)	50-100	luxuriant	yellow
<i>Salmonella</i> Typhimurium ATCC 14028 (00031*)	50-100	fair - good	colourless to slightly pink
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> ATCC 25923 (00034*)	≥10 ⁴	inhibited	

Key : * Corresponding WDCM numbers. # Formerly known as *Enterobacter aerogenes*

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 15-30°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. 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 sample must be decontaminated and disposed of in accordance with current laboratory techniques (7,8).

Reference

1. MacConkey, 1900, The Lancet, ii:20.
2. MacConkey, 1905, J. Hyg., 5:333.
3. Harrigan W.F. and McCance M.E. (Eds.), 1976, Laboratory Methods in Food and Dairy Microbiology, Academic Press, London.
4. Salfinger Y., and Tortorello M.L., 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.
5. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.
6. Lipps WC, Braun-Howland EB, Baxter TE, eds. Standard methods for the Examination of Water and Wastewater, 24th ed. Washington DC:APHA Press; 2023.
7. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
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.

Disclaimer :

User must ensure suitability of the product(s) in their application prior to use. Products conform solely to the information contained in this and other related HiMedia™ publications. The information contained in this publication is based on our research and development work and is to the best of our knowledge true and accurate. HiMedia™ Laboratories 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 or therapeutic use but for laboratory, diagnostic, research or further manufacturing use only, unless otherwise specified. 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.