

MacConkey III Agar | Ready-to-use Media

Effective Date: 20/05/2024



REF FP90M1002

Intended Use:

A selective and differential medium used to detect and isolate gram-negative organisms from clinical, dairy, food, water, pharmaceutical, cosmetic, and other industrial sources.

Principle Of The Procedure:

Peptone supplies nutrients and agar is the solidifying agent. Bile salts are inhibitory to non-intestinal bacteria and help to prevent the swarming of *Proteus spp.* Bile salts and crystal violet inhibit the growth of Gram-positive cocci. Lactose is added as a carbon source. Differentiation of bacteria is achieved by the combination of lactose and the indicator dye neutral red, which is red at acid pH and yellow at alkaline. Bacteria which ferment lactose appear as red - pink-coloured colonies which may be surrounded by zones of precipitated bile salts. Precipitation is caused by the action of the acid produced by lactose fermentation on the bile salts. Bacteria which do not ferment lactose, such as *Salmonella*, usually appear as colourless to straw colonies. Sodium chloride maintains osmotic balance in the medium. Therefore, MacConkey III Agar can be used with clinical specimens likely to contain mixed flora such as urine and wounds as it allows the preliminary grouping of Gram-negative bacteria into lactose fermenters and non-fermenters.

Product Summary:

Lactose fermenters are microorganisms that ferment lactose and those that are unable to ferment lactose are called non-lactose fermenters¹. *Escherichia coli* (*E. coli*) are non-spore forming bacteria that are able to grow in aerobic and anaerobic conditions¹. *Salmonella* is a bacterial pathogen that can be isolated from faeces, blood, bone marrow, bile, urine, food, animal feed and environmental materials. Ingestion of contaminated food and water can cause foodborne infections, including gastroenteritis, typhoid fever, paratyphoid fever or even death in humans. All *Salmonella* serotypes can cause disease in humans². *Acinetobacter baumannii* is a Gram-negative nosocomial pathogen that can persist on dry surfaces longer than any other Gram-negative bacteria. It can persist on moist and dry surfaces for more than 20 days contributes to its widespread in a hospital setting³. *Acinetobacter spp.* are commonly isolated from locations such as hand, groin, toe webs etc⁴. Due to the high antibiotic resistance shown. by this bacterium an early identification is often recommended. *Acinetobacter spp.* have been isolated in connection with community acquired and nosocomial pneumonias, urogenital tract, eye and soft tissue infections and are difficult to treat particularly due to their broad antibiotic resistance.

Formulation*(PER LITER):

Peptones	20.0g	Neutral red	0.03g
Lactose	10.0g	Crystal violet	0.001g
Bile salts No. 3	1.5g	Agar	15.0g
Sodium chloride	5.0g		

pH 7.1 +/- 0.2

*Adjust and/or supplemental as required to meet performance criteria

Procedure

Materials Provided

90mm MacConkey III Agar.

Materials Required But Not Provided

Ancillary culture media, reagents, and laboratory equipment as required.

Test Procedure

1. Streak the specimen as soon as possible after it is received in the laboratory with an aseptic technique.
2. Incubate plates at 35°C ± 2°C for 18 to 24 hours.
3. Observe the result according to user requirements.
4. Dispose of all used reagents and contaminated materials as infectious waste. Laboratories must handle and dispose of all waste safely according to regulations.

Results

After incubation, most plates will show an area of confluent growth. Because the streaking procedure is, in effect, a dilution technique, diminishing numbers of micro-organisms are deposited on the streaked areas.

Quality Control

Inoculate representative samples with the following strains. Incubate the inoculated plates at $35 \pm 2^{\circ}\text{C}$ for 18 to 24 hrs. to allow colonies to develop on the medium.

Strains	ATCC®	Growth Results
<i>Escherichia coli</i>	25922	Pink to red growth
<i>Proteus mirabilis</i>	12453	Growth Colorless Inhibition of swarming
<i>Salmonella choleraesuis subsp. choleraesuis serotype Typhimurium</i>	14028	Growth Colourless
<i>Staphylococcus aureus</i>	25923	No growth
<i>Enterococcus faecalis</i>	29212	No growth
Uninoculated plate	-	No growth

Transportation:

Temperature fluctuations may occur during transportation. However, these fluctuations do not affect the performance, quality, or safety of the media.

Storage And Shelf Life:

Upon receipt, store plates at 2 to 8°C , in their original sleeve wrapping until just before use. Avoid freezing and overheating.

The plates may be inoculated up to the expiration date (see package label) and incubated for the recommended incubation times.

Warning And Precautions:

For in vitro diagnostic use. For Professional Use Only. Do Not Reuse.

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

Limitation Of The Procedure

For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification²⁻⁵.

Reference

- Public Health England. 2015. "Identification of Enterobacteriaceae." UK Standards for Microbiology Investigations. UK SMI ID 16 Issue 4. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/423601/ID_16i4.pdf
- Public Health England. 2021. "Identification of Salmonella species." UK Standards for Microbiology Investigations UK SMI ID 24, Issue 4. Accessed 19 Jan 2022. <https://www.gov.uk/government/publications/smi-id-24-identification-of-salmonella-species>
- Gerner-Smidt, P. (1995). Taxonomy and epidemiology of Acinetobacter infections. Rev Med Microbiol., 6, 186-195.
- Public Health England. 2021. "Identification of Salmonella species." UK Standards for Microbiology Investigations UK SMI ID 24 Issue 4. <https://www.gov.uk/government/publications/smi-id-24-identification-of-salmonella-species>
- Koneman, E.W., S.D. Allen, W.M. Janda, P.C. Schreckenberger, and W.C. Winn, Jr. 1997. Color atlas and textbook of diagnostic microbiology, 5th ed. Lippincott-Raven, Philadelphia.

Packaging Symbol

Symbol	Definition
	Catalogue number
	In Vitro Diagnostic Medical Device
	Batch code
	Date of manufacture
	Temperature limit
	Use-by date
	Keep away from sunlight
	Do not re-use
	Fragile, handle with care
	Consult instructions for use or consult electronic instructions for use
	Do not use if packaging damaged and consult instructions for use
	Manufacturer

Further Information:

For further information please contact your Biomed MDX representative.

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