

TECHNICAL DATA SHEET

Article No. 8796

MacConkey Agar Ph. Eur.

SPECIFICATION

Solid selective and differential medium used in isolation and identification of Salmonella and coliforms according to Ph.Eur./USP harm. and ISO 21150, ISO 21567.

FORMULA* IN G/L

Pancreatic digest of gelatin	17.00
Meat peptone	1.50
Casein peptone	1.50
Lactose monohydrate	10.00
Bile salts	1.50
Sodium chloride	5.00
Neutral red	0.03
Crysal violet	0.001
Agar	15.00

Final pH 7.1 ±0.2 at 25 °C

*Adjusted and/or supplemented as required to meet performance criteria.

DIRECTIONS

Suspend 51.5 g of powder in 1 l of distilled water. Heat to boiling until completely dissolved and sterilize by autoclaving at 121 °C for 15 minutes.

DESCRIPTION

At the beginning of the last century, MacConkey made the original formulation and included ox bile as inhibitor of Gram positive bacteria and litmus as an indicator of acid production from lactose sugar. More recently litmus has been substituted by a phenol red indicator making interpretations easier and more precise. Advancements in the understanding of bacterial physiology has meant that the medium has now been adapted to facilitate the detection of coliforms. The two most significant modifications to the original formulation are as follows:



- The substitution of ox bile by purified bile salts that improve the selectivity and avoid the inherent turbidity, which is due to the fat composition of bile. The efficiency of the inhibition due to bile salts is variable and depends on the relative concentration of cholate and taurocholate.

- The inclusion of supplementary inhibitors such as crystal violet and/or brilliant green. A popular formulation in America, but not in Europe where lower selectivity is preferred.

Lactose positive bacteria grown on this medium form red colonies due to acid production resulting from lactose fermentation and thus *Escherichia coli* colonies can be easily distinguished as they also form a small precipitation zone of bile salts around them.

Some enterococci may also grow, but they are easy to distinguish from coliforms, as they form smaller colonies and have no precipitation zone.

TECHNIQUE

Prepare 10-fold serial dilutions of the sample and take 1 ml aliquots from each dilution (in duplicates) and put them into sterile Petri plates. Pour 15 ml of molten medium at 45 °C into every plate and mix carefully. After solidification, a second layer of another 5 ml of sterile medium is poured into every plate to seal the surface and facilitate enumeration of colonies.

For enumeration, after an incubation of 24 hours at 35 °C, select plates with 30-150 colonies. The characteristic colonies must be confirmed as coliforms by gas production from lactose in a broth culture.

QUALITY CONTROL

- Incubation temperature: 30-35 °C
- Incubation time: 18-72 h
- Inoculum: Practical range 100 ±20 CFU. Min. 50 CFU (productivity)/10⁴-10⁶ CFU (selectivity), according to Ph. Eur. and ISO 11133:2014/Amd 1:2018.

Microorganism	Growth	Remarks
<i>Staphylococcus aureus</i> ATCC® 6538	Inhibited	Selectivity
<i>Enterococcus faecalis</i> ATCC® 29212	Inhibited	Selectivity
<i>Escherichia coli</i> ATCC® 8739	Productivity >0.50	Dark violet colonies with precipitate zone
<i>Escherichia coli</i> ATCC® 25922	Productivity >0.50	Dark violet colonies with precipitate zone
<i>Salmonella typhimurium</i> ATCC® 14028	Productivity >0.50	Colourless colonies without precipitate
<i>Salmonella abony</i> NCTC® 6017	Productivity >0.50	Colourless colonies without precipitate
<i>Pseudomonas aeruginosa</i> ATCC® 9027	Good	Colourless colonies without precipitate

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STORAGE

Keep tightly closed, away from light, in a dry place (4-30 °C).

SHELF LIFE

5 years from date of production.

updated: 20.06.2023

