



MacConkey Broth

Differential medium for detection of coliform bacteria.

DESCRIPTION

MacConkey Broth is a liquid medium used for the detection and enumeration of coliforms from water, and milk.

| TYPICAL FORMULA* | (g/l) |
|----------------------------|-------|
| Peptone | 20.0 |
| Lactose | 10.0 |
| Sodium Chloride | 5.0 |
| Bile Salts No.3 | 5.0 |
| Bromocresol Purple | 0.01 |
| Final pH 7.4 ± 0.2 at 25°C | |

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

METHOD PRINCIPLE

Peptone provides amino acids, nitrogen, carbon, vitamins and minerals for organisms growth. Lactose is the fermentable carbohydrate. Sodium Chloride maintain the osmotic balance of the medium. Bile salts inhibit the growth of Gram-positive bacteria. Bromocresol purple is the pH indicator.

PREPARATION

Dehydrated medium

Suspend 40.0 g of the powder in 1 liter of distilled or deionized water. Mix well. Heat to boil shaking frequently until completely dissolved. Dispense into tubes containing Durham tubes. Autoclave at 121°C for 15 minutes.

Ensure there are no air bubbles in the Durham tube prior to use as it may lead to a misinterpretation (false-positive reaction in gas production) of results. If needed, invert the tube to allow the air being released from the Durham tube.

TEST PROCEDURE

For the presumptive coliform examination, inoculate a series of tubes with the test sample and its dilutions and incubate at 35-37°C for 18-24 hours.

The number of total coliforms is estimated by counting the number of tubes giving a positive reaction for acid (yellow colouration of the broth) and gas production and comparing the pattern of positive results with standard charts to find MPN (Most Probable Number) of total 100 ml sample.

For the differential test, subculture from each tube showing positive reaction into a fresh tube of MacConkey Broth. Incubate at 42-44°C for up to 48 h to detect *Escherichia coli*.

INTERPRETING RESULTS

Turbidity of MacConkey Broth indicates microbial growth.

Acid production due to lactose fermentation causes a color change of the medium to yellow. Gas is also produced, collecting in Durham tubes.

The ability to form gas in MacConkey Broth at 44°C is specific for *E. coli*, which is indicative of faecal pollution of the original sample.

Non-fermenting Gram-negative organisms produce good growth but without significant changes in color nor gas formation.

STORAGE

The powder is very hygroscopic, store the powder at 10-30°C, in a dry environment, in its original container tightly closed. Do not use the product beyond its expiry date on the label or if product shows any evidence of contamination or any sign of deterioration.

SHELF LIFE

Dehydrated medium: 4 years.

QUALITY CONTROL

Appearance of Dehydrated Medium: Free-flowing, homogeneous, light beige.

Appearance of Prepared Medium: Clear, purple.

Expected Cultural Response:

| Control strain | Inoculum | Incubation | Growth | Acid | Gas | |
|-------------------------------|--------------------------------------|------------|-------------------|------------|---------------|------|
| <i>Salmonella Typhimurium</i> | WDCM 00031 (ATCC® 14028; NCTC 12023) | ≤100 CFU | 18-24 h / 35-37°C | Good | Neg. (purple) | Neg. |
| <i>Escherichia coli</i> | WDCM 00012 (ATCC® 8739; NCTC 12923) | ≤100 CFU | 18-24 h / 42-44°C | Good | Pos. (yellow) | Pos. |
| <i>Staphylococcus aureus</i> | WDCM 00032 (ATCC® 6538; NCTC 10788) | 1000 CFU | 48 h / 35-37°C | Inhibition | — | — |

Please refer to the actual batch related Certificate of Analysis (CoA).

WARNING AND PRECAUTIONS

For professional use only. Operators must be trained and have certain experience in the laboratory methods. Please read the instructions carefully before using this product. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this document.

Consult the Safety Data Sheet (SDS) for information regarding hazards and safe handling practices.

DISPOSAL OF WASTE

Disposal of waste must be carried out according to national and local regulations in force.

BIBLIOGRAPHY

See the references at the end of this document.

TABLE OF SYMBOLS

See the table of symbols at the end of this document.

The product is available in the configurations listed below. There may be additional product ref. numbers as well. For an updated listing of available products, visit liofilchem.com

| Product | Format | Packaging | Ref. |
|-----------------|-------------------|-----------|--------|
| MacConkey Broth | Dehydrated medium | 100 g | 620171 |
| | | 500 g | 610171 |

Significant changes from previous version:

| Document | Release Date | Change Summary |
|--------------|--------------|-------------------|
| 610171_IFU-0 | 2022-11-04 | Document creation |

This IFU document and the SDS are available from the online Support Center:

liofilchem.com/ifu-sds