



## INSTRUCTIONS FOR USE – READY-TO-USE BOTTLED MEDIA

BA-254957.02

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For Laboratory Use Only

### BD™ MacConkey Broth

#### INTENDED USE

MacConkey Broth is used for cultivating gram-negative, lactose-fermenting bacilli in water, foods and pharmaceutical raw materials as a presumptive test for coliform organisms.

*Note that this document is valid for all catalogue numbers of the products mentioned above, intended for laboratory use.*

#### PRINCIPLES AND EXPLANATION OF THE PROCEDURE

MacConkey Broth is a modification of the original bile salt broth recommended by MacConkey<sup>1</sup> that contained 0.5% sodium taurocholate and litmus as an indicator. In later publications,<sup>2,3</sup> MacConkey suggested variations of this formulation using neutral red indicator instead of litmus. Childs and Allen<sup>4</sup> demonstrated the inhibitory effect of neutral red and substituted the less inhibitory brom cresol purple. Oxgall in the medium replaces the original sodium taurocholates to inhibit growth of gram-positive organisms. MacConkey Broth is used for the detection of coliforms in milk, and water and is mentioned in the European Pharmacopoeia (EP) and the USP for the microbiological examination of non-sterile products.<sup>5,6</sup>

In **BD MacConkey Broth**, peptone provides amino acids and other growth factors. Lactose is a carbon and energy source for gram-negative lactose-fermenting bacilli. Oxgall inhibits the growth of gram-positive organisms. Brom cresol purple is the pH indicator to show lactose fermentation.

#### REAGENTS

##### BD MacConkey Broth

Approximate Formula\* Per Liter Purified Water

<b>Bacto™</b> Peptone	20.0
<b>Bacto</b> Oxgall	5.0 g
Lactose	10.0
Brom Cresol Purple	0.01

pH 7.3 +/- 0.2

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

#### PRECAUTIONS

For laboratory use only.

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

Consult **GENERAL INSTRUCTIONS FOR USE** document for aseptic handling procedures, biohazards, and disposal of used product.

#### STORAGE AND SHELF LIFE

On receipt, store containers in the dark at 5 to 25° C until just prior to use. Avoid freezing and overheating. The containers may be inoculated up to the expiration date and incubated for the recommended incubation times.

#### USER QUALITY CONTROL

Inoculate samples of this medium with the test strains mentioned below. Following the EP and USP, inoculate the medium with <100 cfu of *E. coli*. The inhibitory potential may be challenged by using 1000 to 10000 cfu of *S. aureus*. Loosen caps to allow air exchange. Incubate *E. coli* for 24 h and *S. aureus* for 48 h, at 42 to 44° C. Eventually, subculture to suitable plated media.

Test strains		Growth Results
<i>Escherichia coli</i>	ATCC™ 8739	Growth good to excellent (= visible turbidity at 24 h incubation)*
<i>Staphylococcus aureus</i>	ATCC 6538	No growth at 48 h incubation
Uninoculated		Purple, clear

\* Color change of the pH indicator from purple to yellowish may appear after 24 h with *E. coli* but usually occurs only after 48 h incubation. Color change at 24 h is not required according to EP and USP.<sup>5,6</sup>

## PROCEDURE

### Materials Provided

**BD MacConkey Broth**, prepared bottled medium.

### Materials Not Provided

Ancillary culture media, reagents and laboratory equipment as required.

### Test Procedure

Collect samples in sterile containers or with sterile swabs and transport immediately to the laboratory in accordance with recommended guidelines.<sup>5,6</sup> Process, inoculate and incubate each sample as appropriate. Screw caps should be loosened during incubation to allow air exchange; closures with septa should be fitted with venting units.

### Results

Lactose-fermenting, Gram negative rods grow well in MacConkey Broth and produce acid, causing the medium to turn yellow after sufficient incubation time. Non-fermenting Gram negative organisms produce good growth but will not produce acid.

## LIMITATIONS OF THE PROCEDURE

For the enrichment of bacteria other than *Enterobacteriaceae*, nonselective media such as Tryptic Soy Broth should be used.

Growth obtained in this medium must be subcultured onto appropriate solid media to obtain pure cultures which afterwards can be identified with methods appropriate for the isolate(s).

## REFERENCES

1. MacConkey, A. 1901. Centr. Bakt. 29:740.
2. MacConkey, A. 1905. Lactose-fermenting bacteria in faeces. J. Hyg. 5:333-379.
3. MacConkey, A. 1908. Bile salt media and their advantage in some bacteriological examinations. J. Hyg. 8: 322-334.
4. Childs, E., and L. A. Allen. 1953. Improved methods for determining the most probable number of *Bacterium coli* and of *Streptococcus faecalis*. J. Hyg. Camb. 51:468-477.
5. Council of Europe. European Pharmacopoeia, *current edition*. European Pharmacopoeia Secretariat. Strasbourg/France.
6. U.S. Pharmacopeial Convention, Inc. The U.S. Pharmacopeia /The national formulary *Current edition*. U.S. Pharmacopeial Convention, Inc., Rockville, Md

## PACKAGING/AVAILABILITY

**BD MacConkey Broth** Ready-to Use Bottled Media

**REF** 254957: Sirup Bottle 125 ml with screw cap; fill volume 100 ml; 25 bottles

**BD MacConkey Broth** may be available in different containers, fill volumes, and package sizes. For details on the available products, contact your local BD representative.

## FURTHER INFORMATION

For further information please contact your local BD representative.



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