

Technical Data Sheet

CE MacConkey Agar

acc. harm. EP/USP/JP

Ordering number: 1.05465.0500 / 1.05465.5000

MacConkey is a selective agar for the isolation of *Salmonella*, *Shigella* and *coliform* bacteria from faeces and urine, etc. according to MacConkey (1950).

This medium complies with the specifications given by the harmonized methods of EP, USP, JP for Microbial Examination of Non-sterile Products: Tests for Specified Microorganisms.

IVD in vitro diagnosticum - For professional use only

Mode of Action

Bile salts and crystal violet largely inhibit the growth of the gram-positive microbial flora. Lactose and the pH indicator neutral red are used to detect lactose degradation. Bacteria degrading lactose to acids grow in pink to red colored colonies. Additionally, *Escherichia coli* and other acid forming bacteria will show a zone of precipitated bile salt around the colonies. Bacteria not degrading Lactose will grow colorless.

Due to its ability to support the growth of pathogenic Gram-positive cocci (e.g. staphylococci and enterococci) as well as Enterobacteriaceae, MacConkey Agar is particularly recommended for the cultivation of pathogens which may be present in a variety of specimens such as urine, faeces and wound swabs. Whilst it is only slightly selective it does not suppress a mixed bacterial flora to the same extent as other inhibitory media. It provides a number of other diagnostic indications in addition to bile tolerance, such as colony morphology and chromogenesis. MacConkey Agar should be used in parallel with other selective indicator media such as Leifson Agar, Bismuth Sulfite Agar, and BRILA Broth as well as a non-selective medium like Blood Agar.

Typical Composition

Peptone from Gelatin	17 g/l
Peptone from Casein	1.5 g/l
Peptone from Meat	1.5 g/l
NaCl	5 g/l
Lactose	10 g/l
Bile Salt Mixture	1.5 g/l
Neutral Red	0.03 g/l
Crystal Violet	0.001 g/l
Agar-Agar	13.5 g/l

Preparation

Suspend 50 g/l. Autoclave (15 min at 121 °C). Pour plates.

The appearance of the medium is clear and red-brown to dark-red.

The pH value at 25 °C is in the range of 6.9-7.3.

Specimen

e.g. Stool, urine.

Clinical specimen collection, handling and processing, see general instructions of use.

Experimental Procedure and Evaluation

Inoculate by spreading the sample material on the surface of the plates.

Incubation: 18-24 hours at 30-35 °C aerobically.

Lactose-negative colonies are colorless. Lactose-positive colonies are red and surrounded by a turbid zone which is due to the precipitation of bile acids as a result of pH decrease.

Appearance of Colonies	Microorganisms
Colourless, translucent	<i>Salmonella</i> , <i>Shigella</i> and others
Large, red, surrounded by turbid zone	<i>Escherichia coli</i>
Large, pink, mucoid	<i>Enterobacter</i> , <i>Klebsiella</i>
Very small, opaque, isolated colonies	<i>Enterococci</i> , <i>Staphylococci</i> and others

Growth of colonies indicates the possible presence of *E. coli*. This is confirmed by identification tests. The product complies with the test if colonies are not present or if the confirmatory identification tests are negative. For microbiological identification chromogenic media such as TBX (Tryptone Bile X-Glucuronide) agar (article number 116122) detecting β -glucuronidase may be used. More than 94% of *E. coli* strains are β -glucuronidase-positive and will grow as blue colored colonies on TBX Agar. Typical reactions for detection of *E. coli* are a positive indole-reaction as well as a negative oxidase- and catalase-reaction.

Storage

The product can be used for sampling until the expiry date if stored upright, protected from light and properly sealed at +15 °C to +25 °C.

After first opening of the bottle the content can be used up to the expiry date when stored dry and tightly closed at +15 to +25° C.

Disposal

Please mind the respective regulations for the disposal of used culture medium (e.g. autoclave for 20 min at 121 °C, disinfect, incinerate etc.).



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Quality Control

Control Strains	ATCC #	Inoculum CFU	Incubation	Expected Results
<i>Escherichia coli</i>	8739	10-100	18 h at 30-35 °C	Recovery ≥ 50 %, red colonies, red medium color, precipitation
<i>Salmonella</i> Typhimurium	14028	10-100	18 h at 30-35 °C	Recovery ≥ 30 %, colonies colorless, yellow medium color
<i>Salmonella dublin</i>	15480	10-100	18 h at 30-35 °C	Recovery ≥ 30 %, colonies colorless, yellow medium color
<i>Shigella sonnei</i>	11060	10-100	18 h at 30-35 °C	Recovery ≥ 30 %, colonies colorless, yellow medium color
<i>Proteus mirabilis</i>	29906	10-100	18 h at 30-35 °C	Recovery ≥ 30 %, colonies colorless, yellow medium color
<i>Bacillus cereus</i>	11778	> 10 ⁴	24 h at 30-35 °C	No growth
<i>Staphylococcus aureus</i>	6538	> 10 ⁴	24 h at 30-35 °C	No growth
<i>Enterococcus hirae</i>	8043	> 10 ⁴	24 h at 30-35 °C	No growth
<i>Enterococcus faecalis</i>	19433	> 10 ⁴	24 h at 30-35 °C	No growth
<i>Enterococcus faecalis</i>	29212	> 10 ⁴	24 h at 30-35 °C	No growth

Please refer to the actual batch related Certificate of Analysis.

Literature

EU GMP Medicinal Products for Human and Veterinary use (2008): Annex1 Manufacture of Sterile Medicinal Products.

European Directorate for the Quality of Medicines and Healthcare. (2014): The European Pharmacopoeia. 8th Ed. Chapter 2.6.13 Microbiological examination of non-sterile products: Test for specified products. Strasbourg, France.

Japanese Ministry of Health, Labour and Welfare. (2011): The Japanese Pharmacopoeia. 16th Ed. Chapter 4.05 Microbial Limit Test II. Microbiological examination of non-sterile products: Test for specified products. Japanese Ministry of Health, Labour and Welfare. Tokyo, Japan.

MacConkey, A. (1905): Lactose-fermenting bacteria in faeces. J. Hyg. **8**: 333-379.

MacConkey, A. (1908): Bile salt media and their advantages in some bacteriological examinations. J. Hyg. **8**: 322-334.

United States Pharmacopoeia 38 NF 33 (2015): <62> Microbiological examination of non-sterile products: Tests for specified microorganisms.



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Ordering Information

Product	Cat. No.	Pack size	Other pack sizes available
MacConkey Agar	1.05465.0500	500 g	5 kg
MacConkey Agar - LI 30 ml	1.46022.0020	20 x 90 mm	120 x 90 mm
MacConkey Broth	1.05396.0500	500 g	
Tryptic Soy Broth	1.05459.0500	500 g	5 kg, 25 kg
TBX (Tryptone Bile X-glucuronide) Agar	1.16122.0500	500 g	
LEIFSON Agar (Deoxycholate Citrate Agar acc. to LEIFSON, modified)	1.02896.0500	500 g	
Bismuth sulfite agar acc. to WILSON-BLAIR	1.05418.0500	500 g	5 kg
BRILA (Brilliant-green bile Lactose) broth	1.05454.0500	500 g	5 kg
Blood agar (base)	1.10886.0500	500 g	

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