

## MACCONKEY AGAR EUROPEAN PHARMACOPOEIA ISO 21567

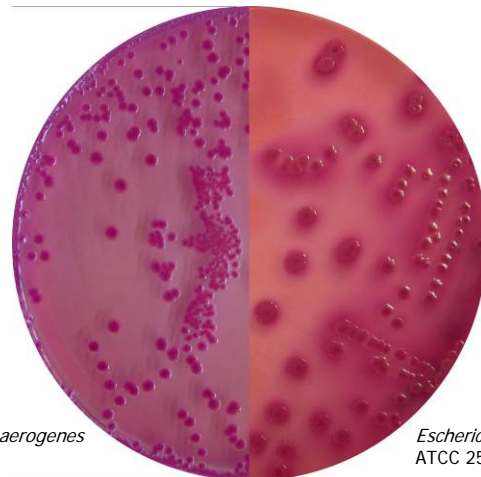
**CAT N°: 1052**

For the isolation and identification of Enterobacteriaceae from feces, urine wastewater and foods

### FORMULA IN g/l

Pancreatic Digest of Gelatin	17.00	Bile Salts	1.50
Lactose Monohydrate	10.00	Neutral Red	0.03
Sodium Chloride	5.00	Crystal Violet	0.001
Peptones (Meat & Casein)	3.00	Bacteriological Agar	13.50

**Final pH 7.1 ± 0.2 at 25°C**



*Enterobacter aerogenes*  
ATCC 13048

*Escherichia coli*  
ATCC 25922

### PREPARATION

Suspend 50 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Sterilize in autoclave at 121°C for 15 minutes. Cool to 45-50°C, mix well and dispense into plates. Allow the plates to solidify and place them upside down to avoid excessive moisture on the surface of the medium. The prepared medium should be stored at 8-15°C. The color is violet-red.

The dehydrated medium should be homogeneous, free-flowing and beige-pink in color. If there are any physical changes, discard the medium.

### USES

MACCONKEY AGAR is used for the selective isolation and identification of Enterobacteriaceae from feces, urine, wastewater and foods. It is also a selective and differential medium for the isolation of enteric Gram-negative bacteria.

The specimen can be streaked directly on the medium or inoculated first into an enrichment broth such as Tetrathionate Broth (Cat. 1114), Selenite Cystine Broth (Cat. 1220), GN Enrichment Broth (Cat. 1248) or MacConkey Broth (Cat. 1210). Subculture the broth tubes on MacConkey Agar and incubate at 30-35°C for 18-72 hours, as indicated by the European Pharmacopoeia.

Pancreatic Digest of Gelatin and Peptones (Meat & Casein) provide nitrogen, vitamins, minerals and amino acids essential for growth. Lactose is the fermentable carbohydrate providing carbon and energy. Sodium chloride supplies essential electrolytes for transport and osmotic balance. Bile salts and crystal violet are the selective agents, and inhibit Gram positive organisms. Neutral red is the pH indicator. when lactose is fermented, the pH of the medium decreases, changing the color of neutral red to pink. Bacteriological agar is the solidifying agent.

The European Pharmacopoeia in the Paragraph 2.6.13 "Microbiological examination of non-Sterile products: test for specified microorganisms", recommends to inoculate and incubate in casein soya bean digest broth TSB Broth (Cat. 1224), at 30-35°C for 18-24 h, to subculture in MacConkey Broth (Cat. 1210) and incubate at 42-44 °C for 24-48 h after subculturing on a plate of MacConkey agar at 30-35 °C for 18-72 h.

Interpretation. Growth of colonies indicates the possible presence of *E. coli*. This is confirmed by identification test. The products complies with the test if no colonies are present or if the identification test are negative.

Isolated colonies of *Escherichia coli* are brick red in color and are surrounded by a zone of precipitated bile. This bile precipitate is due to a local pH drop around the colony due to lactose fermentation.

It is recommended to streak samples onto other selective media such as Eosin Methylene Blue Agar (Cat. 1039), SS Agar (Cat. 1064), XLD Agar (Cat. 1080), Hektoen Enteric Agar (Cat. 1030), Bismuth Sulfite Agar (Cat. 1011), especially for *Salmonella typhi*, and/or Brilliant Green Agar (Cat. 1078), especially for *Salmonella*. See the listings in this manual for these formulations.

## CHARACTERISTICS OF COLONIES

Organisms	Colony Characteristic
<i>Escherichia coli</i>	Red or Pink; Not mucoid; Round; Opaque precipitate of bile salts
<i>Klebsiella</i>	Large, Red, Mucoid
<i>Enterobacter aerogenes</i>	Pink to Red
<i>Serratia</i>	Red to Pink, Not Mucoid
<i>Arizona and Citrobacter</i>	Colorless, Transparent; Red if lactose is fermented
<i>Proteus</i>	Colorless and Transparent
<i>Salmonella</i>	Colorless, Transparent or amber
<i>Shigella</i>	Colorless, Transparent or faintly Pink

## MICROBIOLOGICAL TEST

The following results were obtained in the performance of the medium from type cultures after incubation at a temperature of 35±2°C and observed after 24 hours.

Microorganisms	Growth	Colony Color	Inoculum (cfu/ml)	Recovery Rate %
<i>Enterobacter aerogenes</i> ATCC 13048	Good	Pink-red	10 <sup>3</sup> -10 <sup>5</sup>	≥ 30
* <i>Escherichia coli</i> ATCC 25922	Good	Pink-red (bile precipitate)	10 <sup>3</sup> -10 <sup>5</sup>	≥ 30
* <i>Escherichia coli</i> ATCC 8739	Good	Pink-red (bile precipitate)	10 <sup>3</sup> -10 <sup>5</sup>	≥ 30
<i>Proteus vulgaris</i> ATCC 13315	Good	Colorless	10 <sup>3</sup> -10 <sup>5</sup>	≥ 30
<i>Salmonella enteritidis</i> ATCC 13076	Good	Colorless	10 <sup>3</sup> -10 <sup>5</sup>	≥ 30
<i>Shigella dysenteriae</i> ATCC 13313	Good	Colorless	10 <sup>3</sup> -10 <sup>5</sup>	≥ 30
<i>Staphylococcus aureus</i> ATCC 6538	Inhibited	Colorless	>10 <sup>5</sup>	≤ 0.01

\*According to European Pharmacopoeia 7.0. Incubate at 30-35°C and observed after 18-72 hours.

## BIBLIOGRAPHY

MacConkey J. H. 5:33. 1905. Joseph Md. State. Dept. Health. Procedures, 1960.

European Pharmacopoeia 7.0



## STORAGE

Once opened keep powdered medium closed to avoid hydration.



2°C



25°C