Technical Information

MacConkey Agar w/o CV w/ 0.15% Bile Salts

Product Code: DM 1008

Application: - MacConkey Agar is a differential medium recommended for the selective isolation and differentiation of lactose fermenting and lactose non-fermenting enteric bacilli.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	17.000
Proteose peptone	3.000
Lactose	10.000
Bile salts	1.500
Sodium chloride	5.000
Neutral red	0.030
Agar	15.000
Final pH (at 25°C)	7.1±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

MacConkey Agar is one of the earliest selective and differential medium for cultivation of enteric microorganisms from different type of clinical specimens [1, 2]. There for MacConkey Agar and Broth have been recommended for use in microbiological examination of foodstuffs [3] and for direct plating / inoculation of water samples for coliform counts [4]. These media are also accepted by the Standard Methods for the Examination of Milk and Dairy Products [5] and pharmaceutical preparations [6]. Original medium contains protein, bile salts, sodium chloride and two dyes. MacConkey Agar w/o CV w/ 0.15% Bile Salts is a modification of the original medium with the exception of crystal violet.

The selective action of this medium is due to bile salts, which is inhibitory to most species of gram-positive bacteria. Gram-negative bacteria usually grow well on the medium and are differentiated by their ability to ferment lactose. Lactose fermenting bacteria grow as red or pink colonies. The red colour is due to production of acid from lactose, absorption of neutral red and a subsequent colour change of the dye when the pH of medium falls below 6.8. Lactose non-fermenting bacteria such as *Shigella* and *Salmonella* are colourless and transparent and typically do not alter appearance of the medium. *Yersinia enterocolitica* may appear as small, non-lactose fermenting colonies after incubation at room temperature.

Methodology

Suspend 51.53 grams of medium of powder media in 1000 ml distilled water. Shake well & heat to boiling with gentle swirling to dissolve the agar completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Avoid overheating. Cool to 45 - 50°C and pour into sterile Petri plates. The surface of the medium should be dry when inoculated.

Quality Control

Physical Appearance

Light yellow to pink homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Orange red coloured clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 5.15% w/v aqueous solution at 25°C. pH : 7.1±0.2

pH Range

6.90-7.30

Cultural Response/Characteristics

DM 1008: Cultural characteristics observed after an incubation at 35 - 37°C for 18 - 24 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of Colony
Escherichia coli ATCC 25922	50-100	luxuriant	>=50%	pink to red with bile precipitate pink to red
Enterobacter aerogenes ATCC 13048	50-100	luxuriant	>=50%	pale pink to red
Enterococcus faecalis ATCC 29212	50-100	fair-good	>=50%	colourless
Proteus vulgaris ATCC 13315	50-100	luxuriant	>=50%	colourless
Salmonella Paratyphi A ATCC 9150	50-100	luxuriant	>=50%	colourless
Shigella flexneri ATCC 12022	50-100	fair-good	>=50%	colourless
Salmonella Paratyphi B ATCC 8759	50-100	luxuriant	>=50%	colourless
Salmonella Enteritidis ATCC13076	50-100	luxuriant	>=50%	colourless
Salmonella Typhi ATCC 6539	50-100	luxuriant	>=50%	colourless
Staphylococcus aureus ATCC 25923	>=10^3	inhibited	0%	
Corynebacterium diphtheriae type gravis	>=10^3	inhibited	0%	
Staphylococcus epidermidis ATCC 12228	>=10^3	inhibited	0%	

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.
Prepared Media: 2-8^0 in sealable plastic bags for 2-5 days.

Further Reading

1. MacConkey, 1900, The Lancet, ii:20.
2. MacConkey, 1905, J. Hyg., 5:333.
3. Downes F. P. and Ito K. (Ed.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th ed., APHA, Washington, D.C.
4. Greenberg A. E., Clesceri L. S. and Eaton A. D., (Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st ed., APHA, Washington, D.C.
5. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.
6. The United States Pharmacopoeia XXI and the National Formulary, 16th ed., 1985, United States Pharmacopoeial Convention, Inc., Washington, D.C.

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