

TECHNICAL PRODUCT INFORMATION

MacCONKEY AGAR

INTENDED USE:

For the detection and isolation of *Shigella* and *Salmonella* from clinical specimens.

HISTORY/SUMMARY:

The formulation used by SnslytiChem USA, Inc. in the manufacturing of this media is a modification of the original formula of MacConkey. This modification has the advantage of supporting the growth of *Salmonella* and *Shigella* much better than the original medium, it also gives better differentiation between the coliforms and non lactose fermenters¹.

Edwards and Ewing recommend the use of this medium, in parallel with others for the isolation of enteric pathogens in feces and other clinical specimens.

PRINCIPLES:

The production of acid, as a result of fermentation of lactose by coliforms, causes precipitation of bile salts around the colonies and absorption of neutral red, which intensely colors the colonies brick red. Gram negative organisms, which do not ferment lactose, do not alter the medium at all; their colonies appear in the medium as small and transparent. Gram positive bacteria are inhibited by the crystal violet and the bile salts.

FORMULA:

Ingredients per liter of demineralized water:

Enzymatic Digest of Gelatin.....	17.0g
Enzymatic Digest of Casein.....	1.5g
Enzymatic Digest of Animal Tissue.....	1.5g
Bile Salts Mixture.....	1.5g
Sodium Chloride.....	5.0g
Agar.....	13.5g
Neutral Red.....	0.03g
Crystal Violet.....	0.001g
Final pH: 7.1 ± 0.2 at 25°C	

PROCEDURE:

Direct plating:

- 1) Emulsify feces sample in saline if necessary.
- 2) Shake off loop before streaking.
- 3) Use moderate inoculum to streak MacConkey Agar plates.
- 4) If swabs are used, roll swabs in a corner of the plate and streak for isolation from this area.

Incubate streaked plates and inoculated enrichment broth 18 to 24 hours at 35°C. If GN Broth is used, check for growth at 6 hours. When growth is apparent, streak to MacConkey plate.

PERFORMANCE TEST:

<u>ORGANISMS</u>	<u>RESULTS w/MacCONKEY AGAR</u>
<i>Escherichia coli</i>	Pink to red colonies, bile precipitate
<i>Salmonella typhimurium</i>	Colorless colonies, no bile precipitate
<i>Enterococcus faecalis</i>	Inhibited
<i>Proteus mirabilis</i>	Colorless colonies, no bile precipitate

Lactose-fermenting organisms grow as pink colonies with or without a zone of precipitated bile. Non-lactose fermenting organisms grow as colorless or clear colonies without precipitated bile.

REFERENCES:

1. Edwards and Ewing. Identification of Enterobacteriaceae. Burgess Publ. Co. Minneapolis, MN 1962.
2. Ibid.
3. Fang, P.D. and P.A. Hartman, 1982. Fluorogenic assays for immediate confirmation of *Escherichia coli*. Appl. Environ. Microbiol. 43:1320-1329.
4. Killian, M, and P. Bulow, 1976. Rapid diagnosis of Enterobacteriaceae. I. Detection of bacterial flycosidases. Acta Pathol. Microbiol. Scand. Sect. 884:245-251.
5. LeMinor, L. 1979, Tetrathionate-reductase. B-glucuronidase ed test of PONPH chez des cultures du genre *Salmonella*, Zentralbl, Bakteriol, Parasitenkd, Infektionskr, Hyg. Abt. 1 Orig Reihe A 243:321-325.
6. Difco & BBL Manual, 2nd Ed., Manual of Microbiological Culture Media, 2009, P. 328
7. Neogen MacConkey Agar Technical Specification Sheet, Catalog No. NCM0017, Revision 2.