MacCONKEY SORBITOL AGAR

- For in vitro use only - Catalogue No. PM19

Our MacConkey Sorbitol Agar is a selective, differential medium used in the detection of sorbitol-negative *Escherichia coli* such as serotype O157:H7.

The majority of outbreaks of hemorrhagic colitis have been caused by *Escherichia coli* serotype O157:H7. Our MacConkey Sorbitol Agar is a modification on the formulation of Rappaport and Henig and its usefulness for differentiating *E. coli* O157:H7 from other non-hemorrhagic *E. coli* was later confirmed by March and Ratnam.

Escherichia coli serotype O157:H7 rapidly ferments lactose and is indistinguishable from most other *E. coli* on traditional lactose-containing media. However, unlike approximately 80% of other *E. coli*, nearly all isolates of serotype O157:H7 ferment D-sorbitol slowly, or not at all. Sorbitol-MacConkey Agar was developed to take advantage of this characteristic by substituting the carbohydrate sorbitol for lactose in MacConkey agar and is the medium of choice for the isolation of *E. coli* O157:H7. *E. coli* O157:H7 does not ferment sorbitol and forms opaque, colorless colonies on the medium while most other *E. coli* strains ferment sorbitol to form typical pink colonies.

Like classical MacConkey agar the selectivity of the medium is due to the presence of bile salts and crystal violet. These two selective agents are potent inhibitors of gram-positive bacteria including staphylococci and enterococci. Other more selective formulations are also available for testing foods such as MacConkey Sorbitol Agar with Cefixime and Tellurite [CTSMAC] (Dalynn PM22).

Formula per Litre of Medium

Pancreatic digest of gelatin	15.5 g
Pancreatic digest of animal tissue	3.0 g
D-Sorbitol	10.0 g
Bile Salts	1.5 g
Sodium chloride	5.0 g
Agar	15.0 g
Neutral red	0.03 g
Crystal violet	0.001 g

pH 7.1 ± 0.2

Recommended Procedure

1. Allow medium to adjust to room temperature prior to inoculation.
2. Inoculate fecal specimens and rectal swabs on a small area and streak for isolation.
3. A nonselective medium should also be inoculated to increase the chance of recovery of gram-negative organisms (when present in low numbers) and to characterize other organisms present in the sample.
4. Incubate plates aerobically at 35°C.
5. Examine plates after 18 to 24 hours.

Interpretation of Results

Escherichia coli serotype O157:H7 does not ferment sorbitol and therefore produces colorless colonies on MacConkey Sorbitol Agar.

Other *E. coli* strains will ferment sorbitol and produce pink colonies.

Additional biochemical and/or serological tests should be performed on isolated colonies from pure culture in order to complete identification.

- *Prolonged incubation can result in fading of pink-colored sorbitol-positive colonies making interpretation more difficult*

- *Upon prolonged incubation, some strains of E. coli O157:H7 can ferment sorbitol and produce pink colored colonies*

- *Although most non-O157:H7 E. coli ferment sorbitol, about 6% of the isolates do not. These atypical strains along with other sorbitol non-fermenting bacteria such as Morganella and Hafnia appear identical to O157:H7 colonies and therefore confirmatory tests may be necessary*

Quality Control

After checking for correct pH, colour, depth, and sterility, the following organisms are used to determine the growth performance of the completed medium.

Organism	Expected Result
Escherichia coli ATCC 35150 (O157:H7)	Growth, colorless colonies
Escherichia coli ATCC 25922	Growth, pink colonies
Staphylococcus aureus ATCC 25923	Inhibition

Storage and Shelf Life

Our MacConkey Sorbitol Agar should be stored away from direct light at 4°C to 8°C. The medium side should be uppermost to prevent excessive accumulation of moisture on the agar surface. Under these conditions this medium has a shelf life of 12 weeks from the date of manufacture.

Ordering Information

Cat#	Description	Format
PM19	MacConkey Sorbitol Agar [Standard 15x100-mm plate]	10/pkg

References

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4. Isenberg HD, Ed. Clinical microbiology procedures handbook, Vol 1. Washington, DC: ASM, 1992.
5. Zadik PM, Chapman PA, Siddons CA. Use of tellurite for the selection of verocytotoxigenic *Escherichia coli* O157. J Med Microbiol 1993; 39:155-8.
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7. Fey PD, Wickert RS, Rupp ME, Safranek TJ, Hinrichs SH. Prevalence of non-O157:H7 shiga toxin-producing *Escherichia coli* in diarrheal stool samples from Nebraska. Emerg Infect Dis 2000; 6:530-3.
8. FDA. Bacteriological analytical manual, 2002. Retrieved January 27, 2003, from FDA website: http://www.cfsan.fda.gov/~ebam/bam-toc.html

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