

PRODUCT INFORMATION

Product Type: PETRI DISHES 90mm

Cat No. PD070 - SORBITOL MACCONKEY AGAR

Intended Use:

Sorbitol MacConkey Agar is a selective and differential medium for the detection of *Escherichia coli* O157 in faecal and urine samples.

Principle and Uses:

Escherichia coli O157 is recognized as a cause of haemorrhagic colitis, an illness characterized by bloody diarrhea, severe abdominal pain and hemolytic uremic syndrome (HUS)^{1,2} and as such, is a significant human pathogen. The intestinal tract of ruminants is the prime reservoir for *E.coli* O157 and other enterohaemorrhagic *E.coli* (EHEC) strains, therefore meat derived from cattle, sheep, goat and deer can be expected to be contaminated. Foods implicated in human illness related to *E. coli* include meats, dairy products, vegetables, salads, apple juice and water³. Sorbitol MacConkey Agar is recommended for the isolation of pathogenic *E. coli* O157. The formulation, based on that described by Rappaport and Henig⁴, is identical to MacConkey Agar No. 3, except that lactose has been replaced with sorbitol. *E.coli* O157 does not ferment sorbitol and, therefore, produces colourless colonies. In contrast, most *E. coli* strains ferment sorbitol and form pink colonies. The efficiency of Sorbitol MacConkey Agar has been confirmed by March and Ratnam⁵. These workers reported a sensitivity of 100% and a specificity of 85%, and recommended the medium as a simple, inexpensive, rapid and reliable means of screening for *E. coli* O157.

Peptone is present in the medium as a nitrogen and nutrient source. **Sodium chloride** is added to maintain the osmotic balance and **agar** is a solidifying agent.

Gram-positive microorganisms are inhibited by the combination of **bile salts** and crystal violet. **Neutral red** is added as a pH indicator. **Sorbitol** is a fermentable carbohydrate; sorbitol non- fermenters produce straw/colourless colonies and sorbitol fermenters produce red colonies.

Limitations

Delay in reading plates beyond 24 hours should be avoided because the colour intensity of sorbitol-fermenting colonies fades, reducing the contrast with non-fermenting colonies. Strains of other organisms that do not ferment sorbitol (such as *Escherichia hermannii*) may grow on Sorbitol MacConkey Agar. Other Gram-negative organisms including *Pseudomonas*, *Proteus* and *Klebsiella* species are able to grow on Sorbitol MacConkey Agar, but may generally be differentiated by the appearance of their colonies. Although most *Escherichia coli* O157 strains are typical in appearance some strains are atypical. Sorbitol MacConkey Agar cannot be used on its own to detect VTEC strains of *Escherichia coli* as some non-toxigenic strains will not ferment sorbitol. Identification is presumptive and suspect colonies should be confirmed using appropriate biochemical, molecular or serological methods.

Reference

1. Karmali M A, Petric M, Lim C, Fleming P C, Arbus G S, Lior H. (1985) Infect Dis. 151(5):775-82.
2. Karmali M A, Steele B T, Petric M, Lim C. 1983. Lancet; 19(1): 619-620.
3. Desmarchelier P M, Grau, F H (1997) *Escherichia coli* in Foodborne microorganisms of public health significance. 5th ed, pp.231– 264. A D Hocking (Ed) AIFST (NSW Branch) Food Microbiology Group Australia.
4. Rappaport F and Henig E (1952) J. Clin. Path. 5. 361-362.
5. March S B and Ratnam S (1986) J. Clin. Microbiol. 23. 869-872.

Composition

Peptone - 20.0 g/L
Sorbitol - 10.0 g/L
Bile salts No.3 - 1.5 g/L
Sodium chloride - 5.0 g/L
Neutral red - 0.03 g/L
Crystal violet - 0.001 g/L
Agar - 15.0 g/L

Storage: 2-8°C

Appearance: Clear, Light Red

pH Range: 7.0 - 7.4

Package contents: 10 plates in a package

Exp. Date: Printed on label and on the item.

Required materials not supplied: Laboratory equipment as required.

Warning and Precautions - For professional use only. Follow good microbiological lab practices while handling specimens and culture. Do not use Petri dishes if they show evidence of microbial contamination, discoloration, drying, cracking, or other signs of deterioration. Avoid freezing and overheating. The Petri Dishes may be used / inoculated up to the expiration date and incubated for the recommended incubation times. After use and prior to discarding, specimen containers and all contaminated material, including the used culture media and contaminated culture containers, must be sterilized or incinerated by validated procedures. Since the nutritional requirements of organisms vary, some strains may be encountered that fail to grow or grow poorly on this medium.

If excessive moisture is observed, invert the bottom over an off-set lid and allow to air dry in order to prevent formation of a seal between the top and bottom of the plate during incubation. Storage Instructions: On receipt, store plates in the dark at 2–8 °C. Avoid freezing and overheating. Do not open until ready to use.

Waste Disposal

After interpretation all plates should be destroyed by standard incineration methods.

Performance Testing Results:

GPT: inoculum 10-100 cfu

Inhibitory properties: inoculum 10000 cfu

TEST	ATCC	Incubation Temp. (°C)	Incubation Cond.	Reaction 1	
<i>Escherichia coli</i>	25922	33-37 °C	Aerobic, 24 hours	Growth	Pink
<i>Escherichia coli</i> O157	700728	33-37 °C	Aerobic, 24 hours	Growth	Colorless
<i>Klebsiella pneumoniae</i>	13883	33-37 °C	Aerobic, 24 hours	Growth	Pink mucoid
<i>Shigella flexneri</i>	29903	33-37 °C	Aerobic, 24 hours	Growth	Colorless
<i>Proteus mirabilis</i>	4630	33-37 °C	Aerobic, 24 hours	Growth	Colorless
<i>Staphylococcus aureus</i>	25923	33-37 °C	Aerobic, 24 hours	Inhibited	