

Cefixime-Tellurite Supplement

PRODUCT INFORMATION

C051-25mg - Cefixime, Powder, 25mg

C051-100mg - Cefixime, Powder, 100mg

DESCRIPTION

Sorbitol MacConkey Agar with Cefixime-Tellurite Supplement is a selective and differential medium for the detection of *Escherichia coli* O157.

BACKGROUND

Potassium tellurite (K_2TeO_3) is used together with agar as part of a selective medium for growth of some bacteria (Clauberg medium). *Corynebacteria* and some other species reduce TeO_3^{2-} to elemental Te, which stains the bacteria black.

Cefixime is a third generation cephalosporin antibiotic.

Mechanism of action

APPLICATION IN SORBITOL MACCONKEY AGAR

Escherichia coli O157 is recognised as a cause of haemorrhagic colitis, an illness characterised by bloody diarrhoea and severe abdominal pain, and haemolytic uraemic syndrome (HUS), and as such, it a significant human pathogen.

Sorbitol MacConkey Agar is recommended for the isolation of pathogenic *E. coli* O157. The formulation, based on that described by Rappaport and Henig, 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 Ratnam. 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.

Chapman and co-workers added cefixime and potassium tellurite to Sorbitol MacConkey Agar to improve the selectivity of the medium. The level of potassium tellurite selects serogroup O157 from other *E. coli*

serogroups and inhibits *Providencia* and *Aeromonas* species. Cefixime is inhibitory to *Proteus* spp.

The use of cefixime and tellurite in Sorbitol MacConkey Agar for isolation of *E. coli* O157:H7 is described in the FDA Bacteriological Analytical Manual.

Content concentrations

Typical Formula*	mg/litre
Sorbitol Macconkey Agar	
Peptone	20
Sorbitol	10
Bile salts No.3	1.5
Sodium chloride	5
Neutral red	0.03
Crystal violet	0.001
Agar	15
Final pH 7.1 ± 0.2 @ 25°C	
Cefixime-Tellurite Supplement	
Potassium tellurite	2.5
Cefixime	0.05

* Adjusted as required to meet performance standards

Table 1 - Typical Formula for Sorbitol Macconkey Agar and Cefixime-Tellurite Supplement

METHOD

Preparation

Suspend appropriate amount of Sorbitol Macconkey Agar in distilled water. Bring to the boil to dissolve completely. Sterilise by autoclaving at 121°C for 15 minutes. Allow to cool to 50°C. Reconstitute Cefixime-Tellurite Supplement, according to instruction in the product leaflet. Aseptically add this to cooled medium before pouring into sterile Petri dishes

Protocol

1. Make up the agar according to the preparation and pour into plates. If necessary dry the surface of the agar.
2. Inoculate the plates with a suspension of the test substance (food, faeces, etc) to produce separated colonies.
3. Incubate at 35°C for 24 hours. Doyle and Schoeni reported that 35-37°C is the optimal temperature for growth of *Escherichia coli* O157. At 44 - 45.5°C growth is poor, even after 48 hours incubation.

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. 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.

Quality control

Positive control:

Escherichia coli O157:H7 Non-toxigenic NCTC12900:
Good growth; straw colonies

Negative control:

Escherichia coli ATCC® 25922: Good growth; pink/red colonies

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