

Sorbitol-MacConkey Agar (SMAC Agar)

Selective Agar for the direct isolation and differentiation of enterohemorrhagic (EHEC) *E. coli* 0157:H7-strains from foodstuffs and stool.



*in vitro diagnosticum –
For professional use only*



Principle

Microbiological method.

General Information

The culture medium complies with the requirements of the DIN Norm 10167 for the detection of *Escherichia coli* (*E. coli*) serotype 0157:H7 in foods as well as with the methods of FDA-BAM for the isolation of enterohemorrhagic *E. coli* (EHEC).

Mode of Action

Bile salts mixture and crystal violet largely inhibit the growth of the Gram-positive microbial flora. The addition of Cefixime Potassium tellurite (CT) Supplement increases the selectivity for *E. coli* 0157:H7 and suppresses the remaining accompanying flora. For the detection of *E. coli* 0157:H7 the CT-SMAC Agar method is superior to the HC Agar (SZABO) method according to the study of WEAGANT (1995).

Sorbitol, together with the pH indicator neutral red, is used to detect sorbitol-positive colonies and turning them red in colour. Sorbitol-negative strains, on the other hand, form colourless colonies.

Typical Composition (g/litre)

Peptone 20.0; sodium chloride 5.0; bile salts No. 3 1.5; sorbitol 10.0; crystal violet 0.001; neutral red 0.03; agar-agar 15.0.

Preparation

SMAC Agar

Suspend 51.5 g in 1 litre of demin. water, autoclave (15 min at 121 °C), pour plates.

pH: 7.1 ± 0.2 at 25 °C.

The plates are clear and red and are stable for up to 6 months when stored at +2-8 °C.

CT-SMAC Agar

Suspend 25.8 g in 500 ml of demin. water, autoclave (15 min at 121 °C).

Dissolve the lyophilisate of one CT Supplement (Cat. No. 1.09202.) in the original vial by adding about 1 ml of sterile distilled water.

Mix gently and add the contents to the sterile, still liquid SMAC Agar cooled below 50 °C. Pour plates.

pH: 7.1 ± 0.2 at 25 °C.

The plates are clear and red and stable for up to 6 months when stored at +2-8 °C.

*See also General Instruction of Use
Warnings and precautions see ChemDAT®
(www.chemdat.info)*

Storage

Usable up to the expiry date when stored dry and tightly closed at +15 to +25 °C. Protect from light.

After first opening of the bottle the content can be used up to the expiry date when stored dry and tightly closed at +15 to +25 °C.

Specimen

e.g. Stool, urine.

Clinical specimen collection, handling and processing, see general instructions of use.

Experimental Procedure and Evaluation

Inoculate 25 g of the food sample in 225 ml mEC broth or mTSB broth and incubate for 18-24 h at 35-37 °C aerobically.

Approximately 0.1 ml of the broth is then streaked on the surface of SMAC Agar or CT-SMAC Agar in such a way to obtain well isolated single colonies.

Incubation: 18 to 24 h at 35 °C aerobically.

Stool specimens are inoculated directly onto the plates as loop smears and incubated at 37 °C for 18-24 h.

Colourless, sorbitol-negative colonies must be subsequently isolated and tested with special antisera.

Literature

DIN Deutsches Institut für Normung e.V.: Nachweis von *Escherichia coli* 0157 in Lebensmitteln. - DIN 10167.

FDA Bacteriological Analytical Manual, 8th Edition 1995, Chapter 4. *Escherichia coli* and the Coliform Bacteria, page 4.20: Isolation Methods for Enterohemorrhagic *E. coli* (EHEC).

WEAGANT, S.D., J.L. BRYANT, and K.G. JINNEMAN, An improved rapid technique for isolation of *Escherichia coli* 0157:H7 from foods. - J. Food Prot., 58; 7-12 (1995).

ZADIK, P.M., P.A. CHAPMAN, and C.A. SIDDONS, Use of tellurite for the selection of verocytotoxigenic *Escherichia coli* 0157. - J. Med. Microbiol., 39; 155-158 (1993).

Ordering Information

Product	Ordering No.	Pack size
Sorbitol-MacConkey Agar (SMAC Agar)	1.09207.0500	500 g
CT-Supplement	1.09202.0001	1 x 16 vials
mEC Broth with Novobiocin	1.14582.0500	500 g
mTSB Broth with Novobiocin	1.09205.0500	500 g

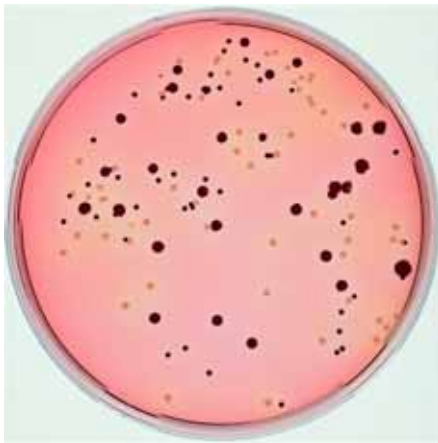
Sorbitol-MacConkey Agar (SMAC Agar)

Quality control SMAC Agar

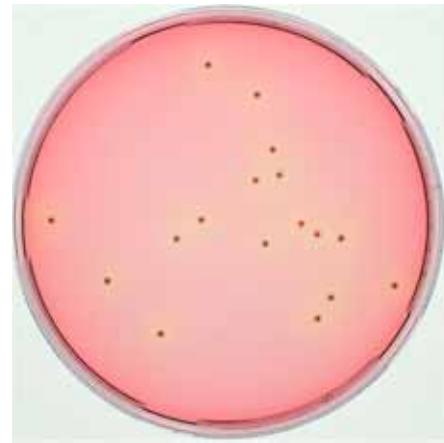
Test strains	Inoculum (cfu/ml)	Recovery rate %	Colony colour	Sorbitol
<i>E. coli</i> 0157:H7 ATCC 35150	$10^3 - 10^5$	≥ 70	colourless	-
<i>E. coli</i> ATCC 11775	$10^3 - 10^5$	≥ 70	red	+
<i>Serratia marcescens</i> ATCC 14756	$10^3 - 10^5$	≥ 70	red	+
<i>Bacillus cereus</i> ATCC 11778	$> 10^5$	≥ 0.01		

Quality control CT-SMAC Agar

Test strains	Inoculum (cfu/ml)	Recovery rate %	Colony colour	Sorbitol
<i>E. coli</i> 0157:H7 ATCC 35150	$10^3 - 10^5$	> 30	colourless	-
<i>E. coli</i> ATCC 11775	$10^3 - 10^5$	≤ 0.01		
<i>E. coli</i> ATCC 87639	$> 10^5$	≥ 0.01		
<i>Serratia marcescens</i> ATCC 14756	$> 10^5$	≥ 0.01		
<i>Bacillus cereus</i> ATCC 11778	$> 10^5$	≥ 0.01		



Colourless colonies: *E. coli* 0157:H7 (EHEC type) /
Red colonies: *E. coli* and *Serratia marcescens*



Colourless colonies:
E. coli 0157:H7 (EHEC type) / No growth of *E. coli* and *Serratia marcescens*