

Fluorocult® E. coli 0157:H7 Agar

Selective agar for the isolation and differentiation of enterohemorrhagic (EHEC) *Escherichia coli* 0157:H7-strains from foodstuffs.

General Information

Four different intestinal-pathogenic *E. coli* types are presently known: besides the infant-pathogenic (EPEC), the enterotoxin-forming (ETEC), and the entero-invasive (EIEC) *E. coli* types, in 1982 the so-called enterohemorrhagic (EHEC) 0157:H7 *E. coli* strains were first detected following the ingestion of hamburgers in the United States. Enterohemorrhagic *E. coli* lead to the formation of toxins - following their passage from the intestine into the blood circulation - resulting in life-threatening extraintestinal complications in the form of the hemolytic uremic syndrome (HUS) and thrombotic-thrombocytopenic purpura (TTP) in 3-20 % of all cases.

In contrast to most other *E. coli* strains, *E. coli* 0157:H7 shows the following characteristics:

- No sorbitol-cleavage capacity within 48 h.
- No formation of glucuronidase (MUG-negative/nofluorescence).

Mode of Action

Sodium deoxycholate inhibits the growth of the Gram-positive accompanying flora for the greater part. Sorbitol serves, together with the pH indicator bromothymol blue, to determine the degradation of sorbitol which, in the case of sorbitol-positive microorganisms, results in the colonies turning yellow in colour. Sorbitol-negative strains, on the other hand, do not lead to any change in the colour of the culture medium and thus proliferate as greenish colonies. Sodium thiosulfate and ammonium iron(III) citrate result in black-brown discolouration of the agar for colonies, in the presence of hydrogen-sulfide-forming pathogens, precipitating iron sulfide.

Proteus mirabilis in particular, which displays biochemical properties similar to those of *E. coli* 0157:H7, can thus be very easily differentiated from *E. coli* 0157:H7 on account of the brownish discolouration. 4-methylumbelliferyl- β -D-glucuronide (MUG) is converted into 4-methylumbelliferone by β -D-glucuronidase-forming pathogens; 4-methylumbelliferone fluoresces under UV light. The activity of β -D-glucuronidase is a highly specific characteristic of *E. coli*. In contrast to most *E. coli* strains, *E. coli* 0157:H7 is not capable of forming β -D-glucuronidase. When irradiated with long-wave UV light, no fluorescence is formed.

Typical Composition (g/litre)

Peptone from casein 20.0; meat extract 2.0; yeast extract 1.0; sorbitol 10.0; ammonium iron(III) citrate 0.5;

4-methylumbelliferyl- β -D-glucuronide 0.1; sodium chloride 5.0; bromothymol blue 0.025; sodium thiosulfate 2.0; sodium deoxycholate 1.12; agar-agar 13.0.

Preparation

Suspend 55 g in 1 litre of demin. water and autoclave (15 min at 121 °C).

pH: 7.4 $\pm$ 0.2 at 25 °C.

The plates are clear and blue-green.

Incubation: 24 h at 35 °C aerobically.

Literature

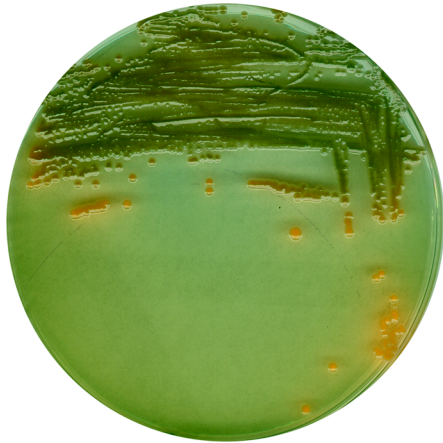
SZABO, R.A., TODD, E.C., EAN, A.: Method to isolate *E. coli* 0157:H7 from food. - J. Food Prot., 10; 768-772 (1986).

Ordering Information

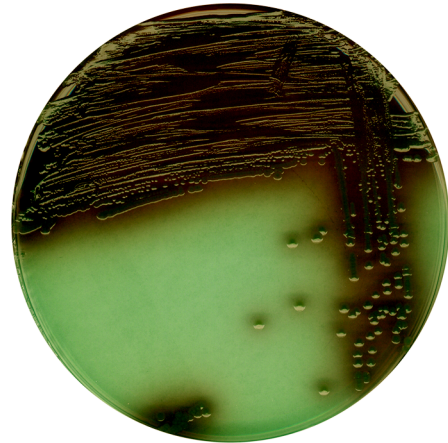
Product	Ordering No.	Pack size
Fluorocult® E. coli 0157:H7 Agar	1.04036.0500	500 g
Laurylsulfate Broth	1.10266.0500	500 g
UV Lamp (366 nm)	1.13203.0001	1 ea

Quality control

Test strains	Growth	Colony colour	MUG	Sorbitol
Escherichia coli 0157:H7 (427 – 36/89)	good / very good	colourless	-	-
Escherichia coli ATCC 25922	fair / good	yellow	+	+
Proteus mirabilis ATCC 14273	good / very good	brown	-	-
Shigella sonnei ATCC 11060	good / very good	colourless	+	-
Enterobacter aerogenes ATCC 13048	good / very good	yellow	-	+
Salmonella typhimurium ATCC 14028	good / very good	yellow with black centre	-	+
Enterococcus faecalis ATCC 19433	none			



Escherichia coli ATCC 25922



Proteus mirabilis ATCC 14273