MUG E.C. O157 AGAR

INTENDED USE

MUG EC O157 Agar is recommended for isolation and differentiation of enterohaemorrhagic *Escherichia coli* O157:H7 from foodstuffs, water and clinical samples by a fluorogenic method.

PRINCIPLE AND INTERPRATATION

MUG EC O157 Agar is recommended[1] for isolation and enumeration of enterohaemorrhagic *Escherichia coli* (EHEC) from foodstuffs, water and clinical samples based on sorbitol utilization and formation of beta-glucuronidase enzyme. The enterohaemorrhagic *E. coli* O157:H7 strains produce toxins, which can result in life threatening extra intestinal complications in the form of the hemolytic uremic syndrome and thrombotic-thrombocytopenic purpura. Due to severe clinical implications, the isolation and detection of *E. coli* O157:H7 strains are of importance.

Sodium deoxycholate inhibits the growth of gram-positive microbes. Sorbitol provides carbon and energy source. Bromothymol blue is the pH indicator. Microorganisms utilizing sorbitol exhibit yellow colonies whereas sorbitol-negative strains (such as *E. coli* O157:H7) grow as greenish colonies. Hydrogen suphide production is detected as black-brown colony colouration due to presence of sodium thiosulphate and ferric ammonium citrate. Thus, *Proteus mirabilis* having similar biochemical characteristics as that of *E. coli* O157:H7 can easily be differentiated. 4-Methylumbelliferyl b-D-glucuronide (MUG) is converted into 4-methylumbelliferone by beta-D-glucuronidase-forming pathogens. 4-methylumbelliferone fluoresces under UV light. All commensal *E. coli* produce beta-glucuronidase. *E. coli* O157:H7 is not capable of forming b-glucuronidas, thus when exposed under long-wave UV light, no fluorescence is observed. The plates were exposed to ammonia fumes to increase fluorescence as suggested by Freir and Hartman[2].

REAGENTS (FORMULA)

Casein peptone	20.0	g
Meat extract	2.0	g
Yeast Extract	1.0	g
Sorbitol	10.0	g
Ferric Ammonium Citrate	0.5	g
Sodium Chloride	5.0	g
Bromothymol blue	0.025	g
Sodium thiosulphate	2.0	g
Sodium deoxycholate	1.120	g
MUG	0.10	g
Agar	13.0	g
Deionized Water	1000.0	ml

QUALITY CONTROL

All lot numbers have been tested and have been found to be acceptable. Customers can test products using the following quality control organisms. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, sample results should not be reported.

Organisms	Results	Color	Flourescent
Enterobacter aerogenes ATCC 13048	Growth	Yellow	Negative
Escherichia coli O157:H7	Growth	Colorless	Negative
Escherichia coli ATCC 25922	Growth	Yellow	Positive
Enterococcus faecalis ATCC 19433	Inhibited	-------	
Proteus mirabilis ATCC 25933	Growth	Brown, may show black	Negative
Salmonella Typhimurium ATCC 14028	Growth	Coloration (H2S production) yellow w/black center	Negative

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Incubation at 35-37°C for 18-24 hours.
Fluorescence can be visualized on addition of NaOH solution or exposure to ammonia fumes.

BIBLIOGRAPHY

1. Szabo R. A., Todd E. C., Jean A., 1986, J. Food Prot., 10:768-772.

2. Freir T.A. and Hartman P.A. (1987) Appl. Env. Microbiol. 53. 1246-1250

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