TM 1392 - MUG SORBITOL AGAR

INTENDED USE

For isolation and identification of enteropathogenic *Escherichia coli* associated with infant diarrhoea by fluorogenic method.

PRODUCT SUMMARY AND EXPLANATION

Escherichia coli serotype O157:H7 is a human pathogen associated with hemorrhagic colitis. Most organisms of the faecal flora ferment sorbitol and appear pink on this medium. MUG Sorbitol Agar is a modification of MacConkey Agar using sorbitol instead of lactose. MUG Sorbitol Agar is used for detecting or differentiating enteropathogenic *E. coli* (EPEC) in water by a fluorogenic method. The distinction of EPEC from other groups of pathogenic *E. coli* isolated from patients' stools involves serological and cell culture assays. EPEC causes watery diarrhea and bloody diarrhea. Watery diarrhea is associated with attachment and physical alteration of the integrity of the intestine. Bloody diarrhea is associated with attachment of acute tissue destructive process mediated by a toxin called shiga toxin or verotoxin. Shiga toxin is cell associated rather than excreted. Hence the detection or differentiation of this organism is vital from public health point of view. It has reported that some *Enterobacteriaceae* and *Pseudomonas aeruginosa* are inhibited on this medium when incubated in a CO2-enriched atmosphere. The colour of sorbitol- positive colonies can fade, making them hard to distinguish from sorbitol-negative colonies.

COMPOSITION

Ingredients	Gms / Ltr
Peptic digest of animal tissue	17.000
Proteose peptone	3.000
D-Sorbitol	10.000
Bile salts mixture	1.500
Sodium chloride	5.000
Neutral red	0.030
Crystal violet	0.001
4-Methylumbelliferyl ß-D-Glucuronide (MUG)	0.100
Agar	13.500

PRINCIPLE

Among the other strains of *E. coli.* the enteropathogenic strain lacks the sorbitol degrading ability within 48 hours of incubation. Moreover, it does not synthesize the enzyme glucuronidase and hence there is no fluorescence production by this strain when MUG is present in the medium. Bile salts mixture and crystal violet in the medium inhibit most of the gram- positive organisms, which accompany the specimen many times. Sorbitol, a polyhydric alcohol corresponding to glucose, serves as a substrate to determine the cleavage of sorbitol by sorbitol degrading microorganisms. Sorbitol degrading microorganisms produce pink to red colonies while sorbitol negative colonies are colourless. MUG (4-Methyl-umbellifery ß-D-Glucuronide) is converted into a fluorescent product 4-Methyl-umbelliferone by the ß-D-glucuronidase-producing organisms. However, enteropathogenic *E. coli* (in contrast to commensal *E. coli* strains) does not synthesize this enzyme and thus when its colonies are exposed to long wave UV light, no fluorescence is observed. The plates are exposed to ammonia fumes to increase fluorescence as suggested by Freir and Hartman.

INSTRUCTION FOR USE

- Dissolve 50.13 grams in 1000 ml distilled water.
- Heat to boiling to dissolve the medium completely.

- Sterilize by autoclaving at 15 psi pressure (121°C) for 15 minutes.
- Mix well and pour into sterile Petri plates.

QUALITY CONTROL SPECIFICATIONS

Appearance of Powder : Light yellow to pink homogeneous free flowing powder.
Appearance of prepared medium : Purplish red coloured clear to slightly opalescent gel forms in Petri plates.
pH (at 25°C) : 7.1±0.2

INTERPRETATION

Cultural characteristics observed after an incubation.

Microorganism	ATCC	Inoculum (CFU/ml)	Growth	Recovery	Colour of colony	Sorbitol	Fluorescence (under UV) addition of NaOH	Incubation Temperature	Incubation Period
Escherichia coli	25922	50-100	Good-luxuriant	>=50 %	Pink-red	Positive	Positive	35-37°C	18-24 Hours
Staphylococcus aureus	25923	>=10^3	Inhibited	0%	-	-	-	35-37°C	18-24 Hours

PACKAGING:

In pack size of 500 gm bottles.

STORAGE

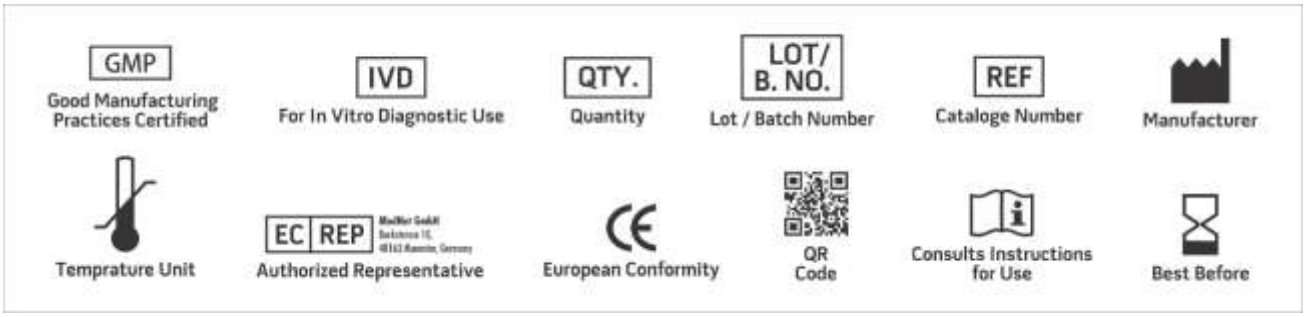
Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 2-8°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.
Product Deterioration: Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.

DISPOSAL

After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

REFERENCES

1. Szabo R. A., Todd E. C. and Jean A., 1986, J. Food Prot., 10:768.
2. Mazura- Reetz, Neblett G. T. and Galperin J. M., 1979, Abstr. C 179, p. 339, Abst. Annu. Med. Am. Soc., Microbiol.
3. Adams, 1991, Clin. Lab. Sci., 4 :19
4. Freir T.A. and Hartman P.A. (1987) Appl. Env. Microbiol. 53. 1246-1250



NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling Practices.

***For Lab Use Only**

Revision: 08 Nov., 2019