MUG Brilliant Green Bile Broth, Modified

M1705

MUG Brilliant green Bile Broth, Modified is recommended for the detection of *Escherichia coli* in water and food samples by the fluorogenic assay procedure.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	10.000
Lactose	10.000
Oxgall	20.000
Brilliant green	0.0133
MUG	0.100
L-Trptophan	1.000
Final pH (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 41.11 grams in 1000 ml distilled water. Heat if necessary to ensure completely solution. Dispense 10 ml amounts in test tubes containing inverted Durham's tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. For testing larger quantities of sample prepare concentrated medium to accommodate volume of the test sample.

Principle And Interpretation

MUG Brilliant Green Bile Broth, Modified is a modification of Brilliant Green Bile Broth which is one of the most widely used medium for the detection of coliform bacteria in water, wastewater, foods, and milk and dairy products. This medium is formulated as per APHA (1, 2, 3) for the presumptive identification and confirmation of coliform bacteria (4, 5).

Pancreatic digest of gelatin serves as a source of essential nutrients. Lactose is the fermentable carbohydrate. Tryptophan helps in indole detection. Ox gall inhibits gram-positive bacteria whereas the gram-negative bacteria are inhibited by brilliant green. Production of gas from lactose fermentation is detected by incorporating inverted Durham's tube, which indicates the positive evidence of faecal coliform since non faecal coliforms growing in this medium do not produce gas. Gram-positive spore formers may produce gas if the bile or brilliant green inhibition is weakened by reaction with food material. The fluorogenic compound, MUG (4-Methylumbelliferyl-®-D-glucuronide) in the medium permits the rapid detection of *E.coli* which produces a blue fluorescence when hydrolyzed by the enzyme ®-glucuronidase and is observed using a long -wave UV light source. The plates are exposed to ammonia fumes to increase fluorescence as suggested by Freir and Hartman (6). During examination of water samples, growth from presumptive positive tubes showing gas in Lactose Broth (M026) or Lauryl Tryptose Broth (M080) is inoculated in Brilliant Green Bile Broth 2% (M121). Gas formation within 48 ± 2 hours confirms the presumptive test (1).

Quality Control

Appearance
Light yellow to light green homogeneous free flowing powder

Colour and Clarity of prepared medium
Emerald green clear solution without any precipitate

Reaction
Reaction of 4.11% w/v aqueous solution at 25°C. pH : 7.2±0.2

pH
7.00-7.40

Cultural Response

M1705: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth at 35°C	Growth at 44°C	Gas at 35°C	Gas at 44°C	Fluorescence at 366nm
Cultural Response						
Escherichia coli ATCC 25922	50-100	luxuriant	luxuriant	positive	positive	positive
Enterobacter aerogenes ATCC 13048	50-100	luxuriant	none-poor	positive	negative	negative
Citrobacter freundii ATCC 8090	50-100	luxuriant	none-poor	positive	negative	negative
Enterococcus faecalis ATCC 19433	50-100	inhibited	inhibited			
Staphylococcus aureus ATCC 25923	>=10^3	inhibited	inhibited			
Bacillus cereus ATCC 10876	>=10^3	inhibited	inhibited			

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

Reference

1.Greenberg A. E., Eaton A. D. and Clesceri L. S., (Eds.), 1998, Standard Methods for the Examination of Water and Wastewater, 20th ed., APHA, Washington, D.C.
2.Downes F. P. and Ito K. (Eds.) 2001, Compendium of Methods for the Microbiological Examination of Food. 4th Ed, APHA, Washington, D.C.
3.Richardson G., (Ed.), 1985, Standard Methods for the Examination of Dairy Products, 15th Ed, APHA, Washington, D.C.
4.McCrady and Langerin, 1932, J. Dairy Science, 15:321.
5.McCrady, 1937, Am. J. Publ. Health, 27:1243.
6.Freir T.A. and Hartman P.A. (1987) Appl. Env. Microbiol. 53. 1246-1250

Revision : 2 / 2015