MUG EC HiVeg™ Broth MV1042

MUG EC HiVeg Broth is used for the detection of *Escherichia coli* in water and food samples by a fluorogenic procedure.

Composition ** :

Ingredients	Grams/Litre
HiVeg hydrolysate	20.0
Lactose	5.0
Synthetic detergent No. I	1.5
Dipotassium phosphate	4.0
Monopotassium phosphate	1.5
Sodium chloride	5.0
4-Methylumbelliferyl β-D-Glucuronide (MUG)	0.05

Final pH (at 25°C) 6.9 ± 0.2
** Formula adjusted, standardized to suit performance parameters.

Directions :

Suspend 37 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Dispense in tubes containing inverted Durham's tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 12 - 15 minutes.

Principle and Interpretation :

This medium is prepared by using vegetable peptones in place of animal peptones which makes the medium free of BSE/TSE risks. EC Broth was devised by Hajna and Perry (1) and further modified by addition of the fluorogenic compound MUG. MUG EC HiVeg Broth is the modification of this formulation. MUG permits rapid detection of *Escherichia coli* when the medium is observed for fluorescence using UV Light (2, 3). MUG also detects anaerogenic strains which may not be detected in conventional procedure (2). MUG is hydrolyzed by an enzyme β-glucuronidase possessed *by Escherichia coli* to yield a fluorescent end product 4-Methylumbelliferone.
HiVeg hydrolysate provides essential nutrients. Lactose is the fermentable carbohydrate. Sodium chloride maintains osmotic equilibrium. The medium has a strong buffering system to control the pH in the presence of fermentative action. Synthetic detergent No.I inhibit gram-positive bacteria especially *Bacillus* species and faecal *Streptococci*. Mostly β-glucuronidase activity occurs within 4 hours but some weakly β-glucuronidase-positive strains require overnight incubation (4).
Large number of *Proteus vulgaris* if present, may suppress gas production of *Escherichia coli*, fluorescence permits detection of *Escherichia coli* in pure or mixed cultures within 4 to 24 hours.

Product Profile :

Vegetable based (Code MV)◉	Animal based (Code M)
MV1042 HiVeg hydrolysate Synthetic detergent No. I	**M1042** Casein enzymic hydrolysate Bile salts mixture

Recommended for	:	Detection of *Escherichia coli* in water and food samples by a fluorogenic procedure.
Reconstitution	:	37.0 g/l
Quantity on preparation (500g)	:	13.51 L
pH (25°C)	:	6.9 ± 0.2
Supplement	:	None
Sterilization	:	121°C / 12-15 minutes.

Storage : Dry Medium - Below 30°C, Prepared Medium 2 - 8°C.

Quality Control :

Appearance of powder
Yellow coloured, may have slightly greenish tinge, homogeneous, free flowing powder.

Colour and Clarity
Yellow coloured, clear solution without any precipitate.

Reaction
Reaction of 3.7% w/v aqueous solution is pH 6.9 ± 0.2 at 25°C

Cultural Response
Cultural characteristics observed after an incubation at 35 - 37°C for 4 - 24 hours.

Organisms (ATCC)	Inoculum (CFU)	Growth	Fluorescence
Enterobacter aerogenes(13048)	10^2-10^3	luxuriant	-
Escherichia coli (25922)	10^2-10^3	luxuriant	+ (throughout the tube)
Salmonella serotype Typhi (6539)	10^2-10^3	good	-
Shigella flexneri (12022)	10^2-10^3	good	-
Staphylococcus aureus (25923)	10^2-10^3	inhibited	-

Key : + = fluorescence at 366 nm

References :

1. Hajna and Perry, 1943, Am. J. Public Health, 33:550.
2. Feng P.C.S. and Hartman P.A.S., 1982, Appl. Environ. Microbiol., 43:132.
3. Robinson, 1984, Appl. Environ. Microbiol., 48:285.
4. Eaton A.D., Clesceri L.S. and Greenberg A.E., (Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st ed, APHA, Washington, D.C.

◉ Prepared from GMO free Vegetable proteins replacing Animal based peptones. Freedom from BSE/TSE worries.