TECHNICAL DATA SHEET

MUG 50 MG SUPPLEMENT

FLUOROGENIC DETECTION OF *ESCHERICHIA COLI*

1 INTENDED USE

MUG 50 mg Supplement is used in selective media for the detection and enumeration of coliform bacteria in order to simultaneously detect *Escherichia coli* in samples that may contain it: water, beverages, dairy products and other food products. It can be used in both liquid media (Laurylsulfate-Tryptose Broth) and in solid media (Violet Red Bile Agar, MacConkey agar…).

2 HISTORY

Feng and Hartman used a MUG medium to show that ß-glucuronidase activity involved 96% of *Escherichia coli*, 100% of enterotoxin-producing *Escherichia coli*, 17% of salmonellas and 40% of shigellas, while the other bacteria tested were negative. When gas production by *Escherichia coli* was inhibited by excessive numbers of *Proteus* in the samples, the appearance of fluorescence led to identification in less than 15 hours.

3 PRINCIPLES

The supplement is a freeze-dried reagent composed of 4-methylumbelliferyl-ß-D- glucuronide (MUG). *Escherichia coli* possess a ß-D-glucuronidase and hydrolyze MUG to 4-methyl-umbelliferone and its corresponding glucuronide. 4-methylumbelliferone is a compound with blue fluorescence that can be observed by illuminating with a short-wave UV lamp at 366 nm.

4 TYPICAL COMPOSITION

Per vial :

- 4-methylumbelliferyl-ß-D glucuronide..... 50,0 mg

5 INSTRUCTIONS FOR USE

- Using aseptic techniques, fill the vial of lyophilisate with 5 mL of sterile distilled water.
- Turn end-over-end to dissolve. Avoid frothing the solution.
- The supplement can be added to media before boiling or before autoclaving.

Examples

- Add 1 of supplement to 100 mL of agar media : MacConkey agar, VRBL, VRBG...
- Add 20 mL of rehydrated supplement per liter of Laurylsulfate-Tryptose double concentration broth and 10 mL of rehydrated supplement Laurylsulfate-Tryptose single strength broth.

6 RESULTS

The blue-green fluorescence observed under UV light at 366 nm results from glucuronidase activity, thereby constituting a presumptive test for the presence of *Escherichia coli* in the sample analyzed. Appropriate confirmation tests must be carried out.

NOTES

- It is recommended to determine fluorescence in comparison to a reference.
- The presence of an endogenous glucuronidase in the samples may cause false positives.
- Verify that the type of glass composing the tubes used for the liquid media does not affect the results. Alkali-lime glass is unsuitable.
- In order to avoid false positives, the power of the UV source should not exceed 6 watts.

7 QUALITY CONTROL

Aspect : white lyophilisate, giving a colorless solution after reconstitution.

Typical culture response of fluorescence in Laurylsulfate Tryptose after 48 hours of incubation at 37 °C

Microorganisms		Fluorescence
Escherichia coli	WDCM 00013	Positive
Escherichia coli	WDCM 00179	Positive
Enterococcus faecalis	WDCM 00087	Negative
Enterococcus aerogenes	WDCM 00175	Negative

8 STORAGE / SHELF LIFE

Freeze-dried supplement : 2-8 °C.
The expiration date is indicated on the labels.

Rehydrated supplement (*) : 30 days at 2-8 °C.
(*) Benchmark value determined under standard preparation conditions, following manufacturer's instructions.

9 PACKAGING

10 vials BS02408

10 BIBLIOGRAPHY

Kilian, M., and Bülow, P. 1976. Rapid diagnosis of *enterobacteriaceae* I. Detection of Bacterial Glycosidases. Acta. path. microbiol. Scand. Sect. B, 84: 245-251.

Feng, C.S., and Hartman, P.A. 1982. Fluorogenic Assays for Immediate Confirmation of *Escherichia coli*. Appl. and Envir. Microb., 43 (6): 1320-1329.

Trepeta, R.W., and Edberg, S.C. 1984. Methylumbelliferyl-ß-D-Glucuronide Based Medium for Rapid Isolation and Identification of *Escherichia coli*. Journ. of Clinical Microb., 19 (2): 172-174.

ISO 11866-1 / FIL 170-1. Décembre 2005. Lait et produits laitiers. Dénombrement d'*Escherichia coli* présumés. Partie 1: Technique du nombre le plus probable avec utilisation de 4-méthylumbelliféryl-β-D-glucuronide (MUG).

11 ADDITIONAL INFORMATION

The information provided on the labels take precedence over the formulations or instructions described in this document and are susceptible to modification at any time, without warning.

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