

## 62634 LST-MUG Broth (Lauryl Sulfate Tryptose MUG Broth, MUG Lauryl Sulfat Broth)

Fluorescent method for the detection of *E. coli*. Recommended by the German-DIN-Norm 10183 for the examination of milk as well as foods and by ISO/DIS 11886 - 2.2 (1994) for milk and milk products.

### Composition:

Ingredients	Grams/Litre
Tryptose	20.0
Lactose	5.0
Sodium chloride	5.0
Sodium lauryl sulfate	0.1
Dipotassium hydrogen phosphate	2.75
Potassium dihydrogen phosphate	2.75
L-Tryptophan	1.0
4-Methylumbelliferyl- $\beta$ -D-glucuronide	0.1
Final pH 6.8 +/- 0.2 at 25°C	

Store prepared media below 8°C, protected from direct light. Store dehydrated powder, in a dry place, in tightly-sealed containers at 2-25°C.

### Directions:

Dissolve 36.5 g in 1 litre distilled water and fill into tubes which can be optionally fitted out with Durham tubes. Sterilize by autoclaving at 121°C for 15 minutes.

Gas production from lactose fermentation is indicated by using inverted Durham tubes. Inoculate at least 1 ml sample in a tube containing 10 ml of LST-MUG Broth and a Durham tube. Incubate at 37°C for 16-24 hours. In case of gas formation the Durham tubes rise or/and show bubbles. Turbidity of the medium accompanied by formation of gas within 48 hours is a positive presumptive test for the presence of *E. coli* and/or other coliform organisms.

Check the tubes under UV light at 360-370 nm. Light blue fluorescence indicates the presence of *E. coli*. If there is no fluorescence after 24 hours of incubation do NOT add Kovacs reagent (Cat. No. 60983) to check the indole reaction because this alcoholic reagent destroys the growth conditions for cultures. Continue incubation for another 24 hours and check again for fluorescence and indole reaction. For confirmation add Kovacs reagent to the tubes (5 mm layer). If the reagent layer becomes cherry red after 1-2 minutes, the presence of *E. coli* is confirmed.

### Principle and Interpretation:

Tryptose provides the nitrogen, carbon compounds, vitamins and amino acids. Lactose is the fermentable sugar. Sodium lauryl sulphate inhibits organisms other than coliforms. Potassium phosphates control the pH during fermentation of lactose. Lactose-positive bacteria metabolize lactose with gas formation, within 24 hour or less is a presumptive evidence of the presence of coliform bacteria. The addition of tryptophan improves the indole reaction.  $\beta$ -D-glucuronidase, which is produced by *E. coli*, cleaves 4-methylumbelliferyl- $\beta$ -D-glucuronide to 4-methylumbelliferone and glucuronide. The fluorogen 4-methylumbelliferone can be detected under a long wavelength UV lamp.



Cultural characteristics after 16-24 hours at 37°C.

Organisms (ATCC)	Growth	Fluorescence	Gas formation	Indole reaction
<i>Escherichia coli</i> (25922)	+++	+	+	+
<i>Klebsiella pneumonia</i> (13883)	+++	-	-	-
<i>Enterobacter aerogenes</i> (13048)	+++	-	+	-
<i>Staphylococcus aureus</i> (25923)	-/+			
<i>Bacillus cereus</i> (11778)	-/+			
<i>Micrococcus luteus</i> (10240)	-/+			

#### References:

1. L.J. Moberg, et al., Fluorogenic assay for rapid detection of *E. coli* in chilled and frozen foods., J. Assoc. Off. Anal. Chem. 71, 589 (1988)
2. P.R.G Schindler, MUG-Laurylsulfat-Bouillon - ein optimales Nachweismedium für gesamtcoliforme und fäkalcoliforme Bakterien im Rahmen der hygienischen Überprüfung von Badegewässer gemäss der EG-Richtlinie 76/160 EWG, Zbl. Hyg., 191, 438 (1991)
3. Bundesgesundheitsamt: Amtliche Sammlung von Untersuchungsverfahren nach § 35 LMBG, Beuth Verlag Berlin, Köln
4. DIN Deutsches Institut für Normung e.V.: Mikrobiologische Milchuntersuchung, Bestimmung der *Escherichia coli*. Fluoreszenzoptisches Verfahren mit paralleler Bestimmung coliformer Keime, DIN 10183.
5. ISO/DIS 11886 – 2, Milk and milk products; Enumeration of presumptive *E. coli*-MPN technique using MUG (1997)
6. New Zealand Dairy Industry, Microbiological Methods Manual, Section 48: Product Test Methods- Enteric Indicator Organisms, NZTM2; 48.5.1 (1998)
7. Mikrobiologische Untersuchungsverfahren von Badegewässern nach Badegewässerrichtlinie 76/160/EWG, Nachweismethoden für fäkalcoliforme (*E. coli*) und gesamtcoliforme Bakterien, Bundesgesundheitsblatt, 10, 385 (1995)

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

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