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# Lauryl Sulfate Broth w/MUG
## SKU: 700003169, 700003170, 700003171, 700003172
## NCM0071

**Intended Use**

Lauryl Sulfate Broth W/ MUG is used for the detection of coliforms and the fluorogenic detection of *Escherichia coli* in a laboratory setting. Lauryl Sulfate Broth W/ MUG is not intended for use in the diagnosis of disease or other conditions in humans.

**Description**

The coliform group of bacteria includes aerobic and facultative anaerobic, Gram-negative, non-sporeforming bacilli that ferment lactose and form acid and gas at 35°C within 48 hours. Members of the *Enterobacteriacae* comprise the majority of this group, but organisms such as *Aeromonas* spp. may also be included. Procedures to detect and confirm coliforms are used in testing water, foods, dairy products, and other materials.

Lauryl Sulfate Broth, also referred to as Lauryl Tryptose Broth, is prepared according to the formula of Mallmann and Darby. During their investigation, Sodium Lauryl Sulfate produced the best results for inhibition of organisms other than coliforms. Feng and Hartman developed a rapid assay for *E. coli* by incorporating 4-methylumbelliferyl-β-D-glucuronide (MUG) at a final concentration of 100 µg/mL into Lauryl Sulfate Broth. Incorporating MUG into Lauryl Sulfate Broth (LSB) permits the detection of *E. coli* among the coliform colonies.

LSB W/ MUG is recommended by the American Public Health Association (APHA) and the Association of Official Analytical Chemists (AOAC).

**Typical Formulation**

| | |
|---|---|
| Enzymatic Digest of Casein | 20.0 g/L |
| Lactose | 5.0 g/L |
| Monopotassium Phosphate | 2.75 g/L |
| Disodium Phosphate | 2.75 g/L |
| Sodium Chloride | 5.0 g/L |
| Sodium Lauryl Sulfate | 0.1 g/L |
| 4-Methylumbelliferyl-β-D-glucuronide | 0.05 g/L |

Final pH: 6.8 ± 0.2 at 25°C
Formula is adjusted and/or supplemented as required to meet performance specifications.

**Precaution**

Refer to SDS

**Preparation**

1. Dissolve 35.7 g of the medium in one liter of purified water.
2. Mix thoroughly.
3. Distribute into tubes containing inverted Durham tubes.
4. Autoclave at 121°C for 15 minutes.

**Quality Control Specifications**

**Dehydrated Appearance:** Powder is homogeneous, free flowing, and white to off-white.

**Prepared Appearance:** Prepared medium is yellow to gold and clear to trace hazy.

**Expected Cultural Response:** Cultural response in Lauryl Sulfate Broth W/ MUG incubated aerobically at 35 ± 2°C and examined for growth gas production and fluorescence after 24 ± 2 hours incubation.

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| Microorganism | Approx. Inoculum (CFU) | Expected Results | | |
|---|---|---|---|---|
| | | Growth | Gas | Fluorescence |
| *Enterobacter aerogenes* ATCC® 13048 | 10 - 300 | Growth | + * | -- |
| *Escherichia coli* ATCC® 25922 | 10 - 300 | Growth | + | + |
| *Salmonella typhimurium* ATCC® 14028 | 10 - 300 | Growth | -- | -- |
| *Staphylococcus aureus* ATCC® 25923 | 10 - 300 | Inhibited | N/A | N/A |

The organisms listed are the minimum that should be used for quality control testing.
* Gas production positive within 48 hours.

**Test Procedure**
Refer to appropriate references for specific procedures using Lauryl Sulfate Broth W/ MUG.

**Results**
After incubation of the tubes at 35°C for 24 hours, examine for turbidity, gas production, and fluorescence. Positive MUG reactions exhibit a bluish fluorescence under long-wave (approximately 366 nm) UV light. Typical strains of *E. coli* are positive for both gas production and fluorescence. Non-*E. coli* coliforms that grow may exhibit fluorescence but will not produce gas.

**Expiration**
Refer to expiration date stamped on container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

**Limitation of the Procedure**
Strains of *E. coli* that fail to grow in LSB W/ MUG, fail to produce gas, or fail to produce glucuronidase may infrequently be encountered. Strains of *Salmonella*, *Shigella,* and *Yersinia* that produce glucuronidase may be encountered. These strains must be distinguished from *E. coli* on the basis of other parameters; gas production, growth at 44°C.

**Storage**
Store sealed bottle containing the dehydrated medium at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

**References**

1. Marshall, R. T. (ed.). 2004. Standard methods for the examination of dairy products, 17th ed., American Public Health Association, Washington, D.C.
2. Eaton, A. D., L. S. Clesceri, and A. E. Greenberg (eds.). 2017. Standard methods for the examination of water and wastewater, 23rd ed. American Public Health Association, Washington, D.C.
3. Vanderzant, C., and D. F. Splittstoesser (eds.). 2015. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
4. www.fda.gov/Food/ScienceResearch/LaboratoryMethods/BacteriologicalAnalytical manualBAM/default.htm.
5. Mallmann, W. L., and C. W. Darby. 1941. Uses of a lauryl sulphate tryptose broth for the detection of coliform organisms. Am J. Public Health. 31:127.
6. Feng, P. C. S., and P. A. Hartman. 1982. Fluorogenic assays for immediate confirmation of *Escherichia coli*. Appl. Environ. Microbiol. 43:1320-1329.
7. Cunnif, P. (ed.). 2016. Official Methods of Analysis AOAC International, 20th ed. AOAC International, Gaithersburg, MD.