

44657 ECD MUG Agar (E. coli Direct MUG Agar)

The bile-salt mixture in this E. coli Direct Agar extensively inhibits the non-obligatory intestinal accompanying flora. Fluorescence in the UV and a positive indole test demonstrate the presence of *E. coli* in the colonies.

Composition:

| Ingredients | Grams/Litre |
|--|-------------|
| Casein peptone | 20.0 |
| Lactose | 5.0 |
| Sodium chloride | 5.0 |
| Bile-salts mixture | 1.5 |
| Dipotassium hydrogen phosphate | 4.0 |
| Potassium hydrogen phosphate | 1.5 |
| Tryptophan | 1.0 |
| 4-Methylumbelliferyl- β -D-glucuronide | 0.07 |
| Agar | 15.0 |

Final pH 7.0 +/- 0.2 at 37°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 53.1 g in 1 litre distilled water. Autoclave at 121°C for 15 minutes. Cool to 45-50°C. Mix gently and dispense into sterile Petri dishes or sterile culture tubes.

Check the plates under UV light at about 360-370 nm. Light blue fluorescence indicates the presence of *E. coli*. In addition the indole test can be made with Kovac's reagent (Fluka 60983). Cover a colony with 10-20 μ l Kovac's reagent. A change of color to red after 2-10 seconds shows indole formation.

Principle and Interpretation:

Casein peptone provides the nitrogen, Vitamins, amino acids and other essential growth nutrients. Lactose is the fermentable sugar Bile-salts mixture inhibits gram-positive bacteria especially bacilli and faecal Streptococci. Sodium chloride maintains the osmotic balance of the medium. Potassium phosphates control the pH during fermentation of lactose. Tryptophan improves the indole reaction. β -D-glucuronidase, which is produced by *E. coli*, cleaves 4-Methylumbelliferyl- β -D-glucuronide to 4-methylumbelliferone and glucuronide. The fluorogen 4-methylumbelliferone can be detected under a long wavelength UV lamp. In addition the indole test can be made with Kovac's reagent (Fluka 60983).

Cultural characteristics after 24 hours at 44.5°C.

| Organisms (ATCC) | Growth | Fluorescence | Indole reaction |
|--|---------------|--------------|-----------------|
| <i>Escherichia coli</i> (25922) | +++ | + (MUG) | + |
| <i>Klebsiella pneumoniae</i> (13883) | +++ | - | - |
| <i>Proteus mirabilis</i> (14153) | +++ | - | - |
| <i>Pseudomonas aeruginosa</i> (27853) | +++ | + | - |
| <i>Citrobacter freundii</i> (8090) | +++ | - | - |
| <i>Enterobacter aerogenes</i> (13048) | +++ | - | - |
| <i>Clostridium perfringens</i> (10543) | -/+ (anaerob) | (+) | - |

References:

1. Deutsches Bundesgesundheitsamt, Amtliche Sammlung von Untersuchungsverfahren nach § 35 LMBG, Beuth Verlag Berlin, Köln
2. DIN Deutsches Institut für Normung e.V.: Mikrobiologische Fleischuntersuchung, Bestimmung der Escherichia coli, Fluoreszenzoptisches Koloniezählverfahren unter Verwendung von Membranfiltern/Spatelverfahren (Referenzverfahren), DIN 10110
3. Draft International Standard ISO/DIS 6391, Meat and meat products, Enumeration of Escherichia coli-colony-count technique at 44°C using membranes (1996)