

Schubert Broth

Cat. 1282

Coliform confirmatory medium, especially E.coli

Practical information

Applications	Categories
Detection	Escherichia coli

Industry:

Principles and uses

Schubert Broth is used to confirm the presence of coliforms and Escherichia coli. Biochemical tests are carried out in the same tube: fermentation of mannitol and indole production, which provides a saving of time, handling and space. The tubes with turbidity associated to the production of gas are considered positive.

Indol production can be shown adding one or two drops of Kovac's reagent. Kovacs reagent detects the microorganism capable of cleaving the tryptophan. When these microorganisms are present in the medium they liberate indole that reacts with 4-dimethylaminobenzaldehyde to form a dark red dye.

Peptone and tryptone provide nitrogen, vitamins, minerals and amino acids essential for growth. Mannitol is the fermentable carbohydrate providing carbon and energy. Sodium chloride supplies essential electrolytes for transport and osmotic balance. Magnesium sulfate and Ammonium sulfate are ions required in a big variation of enzymatic reactions, including DNA replication. Sodium citrate partially or completely inhibit Gram-positive organisms, coliforms and Proteus. The addition of tryptophan to the medium allows the performance of the Indole test for further E. coli confirmation.

Formula in g/L

Ammonium sulfate	0,4	L-Glutamic acid	0,2
Magnesium sulfate	0,7	Mannitol	7,5
Peptone	10	Sodium chloride	2
Sodium citrate	0,5	Tryptone	10
Tryptophan	0,2		

Preparation

Suspend 31.5 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Dispense into appropriate containers and sterilize in autoclave at 121°C for 15 minutes.

Instructions for use

- Inoculate an isolated colony in the tube of Schubert Broth.
- Incubate at a temperature of 44 °C during 24 hours.
- For the indole test, add 3 to 4 drops of Kovac's Reagent (Cat. 5205), and shake the tube gently.
- The appearance of red or pink color in the reagent layer is a positive indication of indole.

Quality control

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25°C)
w/o rests	Fine powder	Beige	Amber, slightly opalescent	7,6 ± 0,2

Microbiological test

Incubation conditions: (44 °C / 24 h)

Microrganisms	Specification	Characteristic reaction
Escherichia coli ATCC 25922	Good growth	Indol (+)
Staphylococcus aureus ATCC 25923	Inhibited growth	
Enterococcus faecalis ATCC 29212	Inhibited growth	
Escherichia coli ATCC 8739	Good growth	Indol (+)

Storage

Temp. Min.:2 °C
Temp. Max.:25 °C

Bibliography

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Fennel H. 1972. A single tube confirmatory test for E. Coli at 44°C. Proc. Soc. Wat. Treatm. Exam. 21:13-20.
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