

## SCHUBERT BROTH

CAT N°: 1282

Coliform confirmatory medium, especially *E.coli*

### FORMULA IN g/l

Peptone	10.00	Sodium Citrate	0.50
Tryptone	10.00	Ammonium Sulfate	0.40
Mannitol	7.50	Tryptophan	0.20
Sodium Chloride	2.00	Glutamic Acid	0.20
Magnesium Sulfate	0.70		

Final pH 7.6 ± 0.2 at 25°C

### 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. The prepared medium should be stored at 2-8°C. The color of the prepared medium is amber, slightly opalescent.

The dehydrated medium should be homogeneous, free-flowing and beige in color. If there are any physical changes, discard the medium.

### USES

SCHUBERT MEDIUM 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.

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.

Inoculate and incubate at 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 a red or pink color in the reagent layer is a positive indication of indole. 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.

### MICROBIOLOGICAL TEST

The following results were obtained from standard strains, after incubation at a temperature of 44°C and observed at 24 hours.

Microorganisms	Growth	Indol
<i>Escherichia coli</i> ATCC 25922	Good	+
<i>Escherichia coli</i> ATCC 8739	Good	+
<i>Staphylococcus aureus</i> ATCC 25923	Inhibited	-
<i>Enterococcus faecalis</i> ATCC 29212	Inhibited	-

## 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.

Oger C. and Leclerc H. 1977. Essais de nouveaux tests "haute température" pour mise en évidence des coliformes fécaux ou des *Escherichia coli* dans les eaux. Microbia. 3:47-

AFNOR. T90-413. Octobre 1985. Essais des eaux - Recherche et dénombrement des coliformes et des coliformes thermo-tolérants. Méthode générale par ensemencement en milieu liquide (NPP).

## STORAGE

Once opened keep powdered medium closed to avoid hydration.

