E. coli-Coliforms Chromogenic Medium

Cat. 1340

Selective medium for the simultaneous detection of E.coli and other coliforms in water and food samples

Practical information

Aplications	Categories
Detection	Coliforms

Industry: Water / Food

Principles and uses

E. coli-Coliforms Chromogenic Medium is a selective media for the detection of E.coli and other coliforms in waters and foods. The recovery and enumeration of Escherichia coli and coliforms are important indicators of environmental and food hygiene.

The interaction of ingredients in the medium, such as peptone, sorbitol and pyruvate, grants a quick colony growth, including infectious coliforms and also permits the recovery of sublethal thermally injured coliforms. Tergitol-7 inhibits Gram positive bacteria and some Gram negative without affecting the coliform bacteria. Sodium chloride maintains the osmotic balance and phosphate salts act as a buffer system. Bacteriological agar is the solidifying agent.

Detection of ß-glucuronidase is widely used to differentiate Escherichia coli, as the enzyme is present in E. coli but not in other member of coliform group. The chromogenic mixture contains chromogenic substrates: Salmon-GAL and X-glucuronide. Coliform enzymes produced, ß-D-galactosidase and ß-D-glucuronidase, cleave these substrates resulting in the different coloration of bacteria colonies. The ß-D-galactosidase cleaves Salmon-GAL substrate, and gives a salmon-red color to the coliform colonies. The ß-D-glucuronidase, enzyme characteristic of E. coli, cleaves X-glucuronide, giving a blue color to these colonies. E. coli has the two enzymes and cleaves both chromogenic substances giving dark blue to violet colonies. Total coliforms are the sum of E. coli colonies plus salmon-red colonies. The addition of tryptophan to the medium allows the performance of the Indole test for further E. coli confirmation.

Note: Some Shigella strains contains the enzyme ß-D-glucuronidase and can grow aslight blue colonies. The negative E. coli b-ß-glucuronidase colonies are Salmon, e.g. E. coli O157:H7.

Formula in g/L

Bacteriological agar	10	Bacteriological peptone	3
Chromogenic mixture	0,36	Sodium chloride	5
Sodium pyruvate	1	Sorbitol	1
Tergitol® 15-S-7 surfactant	0,1	Tryptophan	1
Phosphate buffer	4,9		

Preparation

Suspend 26,4 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. AVOID OVERHEATING. DO NOT AUTOCLAVE. Allow to cool at 45-50 ºC and dispense in Petri dishes.

Instructions for use

Pour plate technique:
- Deposit 1 ml of the initial suspension and/or diluted sample in an empty Petri dish.
- Add 12-15 ml per plate of agar cooled to 44 - 47ºC in each Petri dish.
- Invert the plates and incubate at 35±2 ºC for 18-24 hours.

Surface plating technique:
- Inoculate 0,1 ml of the initial suspension and/or diluted sample.
- Spread the inoculum on the surface of the agar plate.
- Invert the plates and incubate at 35±2 ºC for 18-24 hours.

Filter-membrane technique:
- Filter an appropriate volume of sample through the membrane.

- Place the membrane onto the surface of an agar plate, avoiding the formation of air bubbles.
- Invert the plates and incubate at 35±2 ºC for 18-24 hours.

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
w/o rests	Fine powder	Beige	Amber	6,8±0,2

Microbiological test

Incubation conditions: (35±2 ºC / 18-24 h)

Microrganisms	Specification	Characteristic reaction
Salmonella enteritidis ATCC 13076	Good growth	Colorless colony
Enterococcus faecalis ATCC 19433	Inhibited growth	
Escherichia coli ATCC 25922	Good growth	Blue-dark violet colony
Citrobacter freundii ATCC 8090	Good growth	Salmon colony
Escherichia coli ATCC 8739	Good growth	Blue-dark violet colony

Storage

Temp. Min.:2 ºC
Temp. Max.:25 ºC

Bibliography

Alonso, J.L. Soriano, K., Amoros I., Ferrus, M.A. 1998 Cevartitatine determination of E. coli and fecal coliforms in water using a chromogenic medium. J. Environ. Sci Health 33.