

E. coli Coliforms Chromogenic Broth (CCB)

Cat. 2190

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

Practical information

Applications	Categories
Detection	Coliforms
Detection	Escherichia coli
Industry: Water	



Principles and uses

E. coli Coliforms Chromogenic Broth (CCB) is a selective medium for the detection of E.coli and other coliforms in water and foods.

The interaction of ingredients in the medium, such as peptone, sorbitol, etc., allows a quick colony growth, including infectious Coliforms. Tergitol inhibits Gram-positive bacteria. Sodium chloride maintains the osmotic balance and Phosphate salts act as a buffer system. The chromogenic mixture contains chromogenic substrates such as Salmon-GAL and X-glucuronide. Coliform enzymes produced, such as galactosidase and glucuronidase, cleave these substrates, resulting in the different coloration of certain bacteria colonies. The β -D-galactosidase cleaves Salmon-GAL substrate and gives a salmon to red color to the coliform colonies. E.coli cleaves both substrates Salmon-Gal and X-glucuronide, giving a dark blue to violet color to the colonies, easily distinguishable from other coliform colonies that have a salmon to red color. The addition of tryptophan to the medium allows the performance of the Indole test for further E. coli confirmation.

Formula in g/L

Enzymatic digest of casein	1	IPTG	0,1
Sodium chloride	5	Sodium dihydrogenphosphate	2,2
Sodium pyruvate	1	Sorbitol	1
Tergitol® 15-S-7 surfactant	0,15	Tryptophan	1
Yeast extract	2	Di-sodium hydrogen phosphate	2,7
Salmon GAL	0,2	X-Glucuronide	0,1

Preparation

Suspend 16,45 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. Cool to 45-50 °C and pour into adequate recipients.

Instructions for use

Inoculation method:

- Take the inoculum with a sterile loop.

- Submerge it into the medium and shake gently.
- Incubate at 36±2 °C for 21±3 hours.

Some strains of *E. coli* that are negative β-D-glucuronidase, such as *Escherichia coli* O157, will not be detected as *E. coli*. Those that are positive β-D-galactosidase will appear as coliform bacteria.

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	6,8 ± 0,2

Microbiological test

Condiciones de incubación: (36±2 °C / 21±3 h)

Microorganisms	Specification	Characteristic reaction
<i>Pseudomonas aeruginosa</i> ATCC 10145	Growth	Colorless colonies
<i>Enterobacter aerogenes</i> ATCC 13048	Good growth	Red to pink colonies
<i>Escherichia coli</i> ATCC 25922	Good growth	Violet colonies
<i>Escherichia coli</i> ATCC 8739	Good growth	Violet colonies

Storage

Temp. Min.:2 °C
Temp. Max.:8 °C

Bibliography

ISO 9308-1/2014 Water quality — Enumeration of *Escherichia coli* and coliform bacteria —Part 1: Membrane filtration method for waters with low bacterial background flora.

ISO 7218:2007, Microbiology of food and animal feeding stuffs — General requirements and guidance for microbiological examinations Byamukama D., Kansiime F., Mach R.L., Farnleitner A.H. Determination of *Escherichia coli*. (2) Contamination with Chromocult Coliform Agar Showed a High Level of Discrimination Efficiency for Differing Fecal Pollution Levels in Tropical Waters of Kampala, Uganda. *Appl. Environ. Microbiol.* 2000, 66 pp. 864–868 [3] Geissler K., Manafi M., Amoros I., Alonso J.L. Quantitative determination of total coliforms and *Escherichia coli* in marine waters with chromogenic and fluorogenic media. *J. Appl. Microbiol.* 2000, 88 pp. 280–285 [4] Ossmer R., Schmidt W., Mende U. Chromocult Coliform Agar — Influence of Membrane Filter Quality on Performance. Poster presentation, 1999. Congreso de la Sociedad Española de Microbiología, Granada, Spain (<http://www.univie.ac.at/chromogenic/OSSMER.PDF>) [5] USEPA: 40 CFR Part 141 (sec. 141.21) Federal Register/Vol. 67, No. 209, Tuesday October 29, 2002/Rules and Regulations [6] Lange B., Strathmann M., Ossmer R. Performance validation of chromogenic coliform agar for the enumeration of *Escherichia coli* and coliform bacteria. *Lett. Appl. Microbiol.* 2013, 57 pp. 547–553 (<http://onlinelibrary.wiley.com/doi/10.1111/lam.12147/suppinfo>) [7] http://www.wfcc.info/pdf/WDCM_Reference_Strain_Catalogue.pdf (viewed 03-01-2014)