m-TEC Agar

Cat. 2216

For the isolation and enumeration of thermotolerant Escherichia coli in water by the membrane-filtration technique.

Practical information

Aplications	Categories
Selective enumeration	Escherichia coli
Selective isolation	Escherichia coli

Industry: Water

Principles and uses

m-TEC Agar is recommended for rapid isolation, differentiation and enumeration of thermotolerant E. coli from water by membrane filtration. TEC (Thermotolerant E. coli) is a parameter widely used as an indicator of faecal contamination in water.

In 1981 Dufour et al. developed a simple membrane filtration technique for rapid enumeration of E. coli, which quantified E. coli within 24 hours without requiring subculturing and identification of isolates.

Enzymatic digest of animal tissue provides nitrogen, carbon, and minerals essential for growth.Yeast extract is a source of vitamins, particularly of the B-group. Lactose is the fermentable carbohydrate providing carbon and energy. Potassium Phosphate is a buffering agent. Sodium desoxycholate inhibit growth of gram positive bacteria. Sodium lauryl sulphate partially inhibits organisms other than coliforms. Bromcresol purple and bromphenol red are pH indicators. Sodium chloride supplies essential electrolytes for transport and osmotic balance. Bacteriological agar is the solidifying agent.

Formula in g/L

Bacteriological agar	15	Bromocresol purple	0,08
Lactose	10	Monopotassium phosphate	4,3
Sodium chloride	7,5	Sodium deoxycholate	0,1
Sodium lauryl sulfate	0,2	Yeast extract	3
Enzymatic digest of animal tissues	5	Bromphenol red	0,08

Typical formula g/L * Adjusted and/or supplemented as required to meet performance criteria.

Preparation

Suspend 45,3 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 121ºC for 15 minutes.

Urea substrate:
Combine 2 g urea and 10 mg of phenol red in 100 ml distilled water. Adjust pH to 5,0±0,3.

Instructions for use

Filter-membrane technique:
- Filter an appropriate volume of sample through a 0,45 µm membrane.
- Place the membrane onto the surface of an agar plate, avoiding the formation of air bubbles.
- Invert the plates and incubate at 44,5 ±0,5 ºC for 22±2 hours
- Place a sterile absorbent pad into petri dish.
- Add approximately 2 mL of urea substrate to pad (pad should be saturated with urea substrate without any standing liquid in petri dish).
- Transfer countable membrane filters to the pads saturated with urea substrate.
- After 15 - 20 minutes, count all yellow, yellow-green, to yellow-brown colonies

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)

Slightly hazy	Fine powder	Light grey-green beige	Dark blue	7,3±0,2

Microbiological test

Incubation conditions: (44,5 ±0,5 ºC / 22±2 hours) + (15-20 min at room temperaure with urea substrate)

Microorganisms	Specification	Characteristic reaction
Escherichia coli ATCC 25922	Good growth	Urease reaction (-): yellow, yellow-green to yellow brown colonies
Pseudomonas aeruginosa ATCC 27853	Partial inhibition	Colorless
Enterococcus faecalis ATCC 29212	Partial inhibition	
Escherichia coli ATCC 8739	Good growth	Urease reaction (-): yellow, yellow-green to yellow brown colonies

Storage

Temp. Min.:2 ºC
Temp. Max.:25 ºC

Bibliography

Clesceri L. S., Greenberg A. E. and Eaton A. D., (Ed.), 1998, Standard Methods for the Examination of Water and Waste water, 20th Ed., American Public Health Association, Washington, D.C.
Dufour A. P., Strickland E. R. and Cabelli V. J., 1981, Appl. Environ. Microbiol., 41: 1152