

A1 Medium

For detecting fecal coliforms in water.

Practical information

Applications	Categories
Detection	Coliforms

Industry: Water / Food

Principles and uses

A1 Medium, also known as A1 Broth, is used for the detection of fecal coliforms in water samples.

The enumeration of coliforms, specifically *Escherichia coli*, has been used to determine water purity by the most-probable-number method. This medium was created to hasten the recovery time of *E. coli* and to reduce the number of false positive cultures. A-1 Medium can be used in a single-step procedure, also in foods, not requiring a previous enrichment step.

Tryptone provides nitrogen, vitamins, minerals and aminoacids. Lactose is the carbon source and in combination with salicin, provides energy for organism growth. Ecosurf is a surfactant and sodium chloride supplies essential electrolytes for transport and osmotic balance.

Gas production is a positive reaction indicating the presence of Coliforms. Gas may be produced inside the Durham tubes or may appear as dissolved gas that forms gas bubbles when slightly agitated.

Formula in g/L

Lactose	5	Salicin	0,5
Sodium chloride	5	Tryptone	20
Ecosurf-EH9	1		

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 tubes with Durham gas collecting tubes and sterilize in autoclave at 121 °C for 15 minutes.

Note: for 10 ml water samples, prepare a double-strength medium.

Instructions for use

Procedure:

- Inoculate the sample into tubes and incubate at 35 °C for three hours.
- Then, incubate at a temperature of 44,5 °C for an additional 21±2 hours.
- Calculate densities using MPN standard methods.

Quality control

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25°C)
w/o rests	Fine powder	Clear beige	Clear pale amber	6,9 ± 0,2

Microbiological test

Incubation conditions: (35±2 °C/3 h; 44,5 °C/ 21±2 h).

Microorganisms	Specification	Characteristic reaction
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Enterobacter aerogenes ATCC 13048
Enterococcus faecalis ATCC 19433
Escherichia coli ATCC 25922
Bacillus subtilis ATCC 6633

Good growth
Partial inhibition
Good growth
Inhibition

Gas 35 °C (+/-), Gas 44,5 °C (-)
Gas 35 °C (-), Gas 44,5 °C (-)
Gas 35 °C (+), Gas 44,5 °C (+)
Gas 35 °C (-), Gas 44,5 °C (-)

Storage

Temp. Min.: 2 °C
Temp. Max.: 25 °C

Bibliography

Standard Methods for the Examination of Water and Wastewater 1 5th Ed. American Public Health Association, Inc, Washington, D.C. 1980. Andrew, W.H.C.D. Diggs, and C.R. Wilson, 1975.