

A1 Medium

For detection of coliforms in water and foods

Practical information

Applications	Categories
Detection	Coliforms

Industry: Water / Food

Principles and uses

A1 Medium is also known as A1 Broth. It is used for purity analysis (source water, marine water, treated wastewater) and for foods, particularly seafood, using the detection of Coliforms and in particular *Escherichia coli*. This medium was created to reduce the timing of recovery and also to be used without a need of a pre-enrichment step. Furthermore, the use of this medium improves reliability as it reduces the presence of false positives.

Tryptone provides the nitrogen, vitamins, minerals and aminoacids for growth; Lactose is the fermentable carbohydrate providing carbon and, together with Salicin, provides energy for growth; Triton X-100 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 in the inverted vial 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
Triton X-100 (ml)	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 for gas detection and sterilize in autoclave at 121°C for 15 minutes.

Note: for 10 ml water samples, prepare a double-strength medium to ensure the ingredient concentrations are not reduced below those of the standard medium.

Instructions for use

- Inoculate the sample into tubes and incubate at 35°C for three hours.
- Transfer tubes to a 44.5°C water bath and incubate 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) and (44,5 °C/ 21±2 h).

Microrganisms	Specification	Characteristic reaction
<i>Enterobacter aerogenes</i> ATCC 13048	Good growth	Gas 35 °C (+/-), Gas 44,5 °C (+)

Enterococcus faecalis ATCC 19433
Escherichia coli ATCC 25922
Bacillus subtilis ATCC 6633

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 (-)

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.

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