Presence-Absence Broth

Cat. 2061

For the detection of coliforms in treated water.

Practical information

Aplications	Categories
Detection	Coliforms

Industry: Water

Principles and uses

Presence-Absence Broth is used for the detection of coliforms in treated water.

The Presence-Absence (P-A) test is a presumptive detection for coliforms in water. The test is a simple modification of the multiple-tube procedure. One test sample (100 mL) is inoculated into a single culture bottle to obtain qualitative information on the presence or absence of coliforms, through the presence or absence of lactose fermentation. This test is based on the principle that coliforms and other pollution indicator organisms should not be present in a 100 mL water sample.

Comparative studies with the membrane filter procedure indicate the P-A test may maximize coliform detection in samples containing many organisms that could overgrow coliform colonies and cause problems in detection. The P-A test is described in standard methods for water testing by US EPA.

Pancreatic digest of casein, peptone, proteose peptone and beef extract provides nitrogen, vitamins, minerals and amino acids essential for growth. Lactose is the fermentable carbohydrate as carbon and energy source. Sodium chloride supplies essential electrolytes for transport and osmotic balance. Sodium lauryl sulfate is the selective agent used to inhibit organisms other than coliforms. Bromocresol purple is a pH indicator. The potassium salts have a high buffering capacity lactose-fermenting organisms turn the medium from purple to yellow with or without gas production.

Formula in g/L

Bromocresol purple	0,0085	Dipotassium phosphate	1,35
Lactose	7,46	Beef extract	3
Monopotassium phosphate	1,35	Pancreatic digest of casein	5,9
Peptone	5	Sodium chloride	2,46
Sodium lauryl sulfate	0,05	Peptone Proteose Nº3	3,93

Preparation

Suspend 30,5 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. Distribute and sterilize in autoclave at 121 ºC for 12 minutes. Total time in the autoclave should not exceed 30 minutes.

Instructions for use

- Collect water samples as described in recommended procedures.
- Inoculate 50 ml of a triple strength sterile Presence-Absence Broth with 100 ml of the water sample.
- Invert the bottle a few times in order to mix well the sample and the medium.
- Incubate at a temperature of 35±0,5 ºC for 18-48 hours.
- Inspect for acid or gas production after 24-48 h of incubation.

Quality control

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

Microbiological test

Incubation conditions: (35±0,5 ºC / 18-48 h).
Inoculation conditions: (10^2-10^3 CFU).

Microrganisms	Specification	Characteristic reaction
Escherichia coli ATCC 25922	Good growth	Yellow medium with or w/o gas production
Pseudomonas aeruginosa ATCC 27853	Growth partially inhibited	Medium w/o changes
Enterococcus faecalis ATCC 29212	Growth partially inhibited	Medium color w/o changes/light yellow
Escherichia coli ATCC 8739	Good growth	Yellow medium with or w/o gas production

Storage

Temp. Min.:2 ºC
Temp. Max.:25 ºC

Bibliography

Clesceri, Greenberg and Eaton (ed.). 1998. Standard methods for the examination of water and Wastewater, 20th ed. American Public Health Association, Washington, D.C.
Federal Register. 1989. National primary drinking water regulations; total coliforms (including fecal coliforms and E. coli). Fed. Regist. 54:27544.