Presence-Absence Broth (i23150)

Presence-Absence (PA) Broth is used for detecting coliforms in treated water.

Industry: Water

Principles & Uses

Presence-Absence Broth is a crucial tool for the detection of *coliforms* in water, particularly for ensuring the safety of drinking and recreational water. This medium, which aligns with EPA standards, serves as a qualitative indicator for the presence or absence of *coliforms*, vital indicators of water quality. It is especially valuable in detecting potential contamination of treated water, where the absence of *coliforms* is a strong indication of safety.

The medium contains a carefully balanced set of components: peptones and beef extract provide essential nutrients, including nitrogen, vitamins, minerals, and amino acids necessary for bacterial growth. Lactose acts as a fermentable carbohydrate, while sodium chloride maintains osmotic balance. Sodium lauryl sulfate, a selective agent, inhibits many contaminating organisms, ensuring the accuracy of the test.

A pH indicator, bromocresol purple, reveals the fermentation of lactose by *coliforms*, typically resulting in a color change from purple to yellow. This distinctive alteration, sometimes accompanied by gas production, signals the presence of *coliforms*. The Presence-Absence test, which simplifies traditional methods, is adept at detecting *coliforms*, even in samples containing diverse microorganisms. It's a vital tool for monitoring water quality and ensuring public health by quickly identifying potential contamination issues.

Composition (gr/L)

Peptones 5, Meat Extract 3, Tryptose 9.8, Lactose 7.46, Sodium Chloride 2.46, Dipotassium Hydrogen Phosphate 1.35, Potassium Dihydrogen Phosphate 1.35, Sodium Lauryl Sulfate 0.05, Bromocresol Purple 8.5 mg.

Final pH at 25°C 6.8 ± 0.2

Preparation from dehydrated Powder

Suspend 91.5 g of the powder in 1 Litre of purified water for the preparation of the triple strength concentrated broth. Mix thoroughly. Dispense 50 mL amounts into screw cap 250 mL milk dilution bottles. Autoclave at 121°C for 12 minutes.

Quality Control

Dehydrated Appearance: Beige, free-flowing, homogeneous.

Prepared Appearance: Purple, clear to very slightly opalescent, without significant precipitate.

Reaction of 3.05% Solution at 25°C: pH 6.8 ± 0.2

Cultural Response

Prepare Presence-Absence Broth in triple strength solution (9.15%). Sterilize in 50 mL quantities in milk dilution bottles with capacity greater than 150 ml. Add 100 mL of drinking water after medium is sterilized and cooled to room temperature. Inoculate bottles with the test organisms. Incubate bottles at 35 ± 0.5°C for 18-48 hours.

Organism (ATCC*)	Recovery	Color Change
Escherichia coli (25922)	Good	Yellow with or without gas production
Escherichia coli (13762)	Good	Yellow with or without gas production
Enterococcus faecalis (29212)	None to poor	No change
Pseudomonas aeruginosa (27853)	Partial inhibition to fair	No change

*ATCC is a registered trade mark of the American Type Culture Collection.

3X concentration (left). 1X concentration (middle). The medium turns yellow due to the presence of *E. coli* and *coliform* bacteria (right).

Storage

Keep the container at 15-30 °C. Store prepared medium at 2-8 °C.