Boric Acid Broth

M216

Intended use

For the detection and presumptive identification of *Escherichia coli* on the basis of this organism to grow at 43°C and form gas in the presence of boric acid

Composition**

Ingredients	Gms / Litre
Proteose peptone	10.000
Lactose	5.000
Dipotassium hydrogen phosphate	12.200
Potassium dihydrogen phosphate	4.100
Boric acid	3.250
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 34.55 grams in 1000 ml purified/distilled water. Dispense in test tubes with inverted Durham's tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. For inocula larger than one ml, the medium should be prepared in proportionately greater concentration. A pH indicator may be added if desired.

Principle And Interpretation

Boric acid has been used as a medium for the detection of *E.coli* from foods and water. This medium has been suggested by Levine et.al (5). When isolates from agar slant or samples are inoculated into lactose broth and boric acid broth. Only *E.coli* grow and produce gas in both the broths, while *Aerobacter* species grow only in lactose broth (1).

Proteose peptone supplies carbon, nitrogen substances, long chain amino acids, vitamins and other growth supplements to the microorganisms. Lactose is the fermentable carbohydrate. Phosphates buffer the medium. Boric acid allows the growth of *E.coli*.

Type of specimen

Food samples; Water samples.

Specimen Collection and Handling

For food samples, follow appropriate techniques for sample collection and processing as per guidelines (6).
For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards (2).
After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions :

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

1. Further biochemical testing is required for complete identification.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance
Cream to pink homogeneous free flowing powder

Colour and Clarity of prepared medium
Light amber coloured clear solution

Reaction
Reaction of 3.46% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH
6.80-7.20

Cultural Response
Cultural characteristics observed after an incubation at 43°C for 18 - 24 hours.

Organism	Inoculum (CFU)	Growth	Gas
Escherichia coli ATCC 25922 (00013*)	50-100	luxuriant	Positive reaction
# Klebsiella aerogenes ATCC 13048 (00175*)	50-100	inhibited	Negative reaction
Salmonella Typhi *ATCC 6539*	50-100	inhibited	Negative reaction

Key : (#) Formerly known as *Enterobacter aerogenes* (*) correspondind WDCM numbers

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 15-25°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition Seal the container tightly after use. Use before expiry date on the label.
Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (3,4).

Reference

1. A. Njoku-Obi and C. E. Skinner. Boric Acid Lactose Broth as a Medium for the Detection of Fecal Coliform Bacteria. Appl Microbiol. 1957 March; 5(2): 80–82.

2. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23rd ed., APHA, Washington, D.C.

3. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.

4. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

5. Levine, M., Epstein S.S.,1934. Differential reactions in the colon group of bacteria. American Journal of Public Health.24-505-510

6. Salfinger Y., and Tortorello M.L. Fifth (Ed.), 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.

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