B.D.G - Broth Hajna

M205

B.D.G - Broth Hajna (Buffered Deoxycholate Glucose Broth) is a selective enrichment or presumptive test medium used for the detection of enteric bacilli from food and in treated drinking water.

Composition**

Ingredients	Gms / Litre
Tryptose	20.000
Dextrose	5.000
Sodium chloride	5.000
Sodium deoxycholate	0.100
Dipotassium phosphate	4.000
Monopotassium phosphate	1.500
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 35.60 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Dispense in tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Principle And Interpretation

Examination of water for the presence of marker groups such as enteric bacilli is one of the most common tests in a microbiology laboratory, partly because of the relative ease and speed with which these tests can be accomplished. Where it is claimed that drinking water has been processed for safety, the finding of such organism demonstrates a failure of the process. It is a valuable bacterial indicator for determining the extent of fecal contamination of recreational surface waters or drinking water (1). B.D.G.-Broth, Hajna (Buffered Deoxycholate Glucose Broth) is a selective enrichment or presumptive test medium used for the detection of all enteric bacilli in drinking water.

This medium is prepared according to the formula of Hajna and Damon (2). These authors reported a higher number of positive coliform findings from water and food samples using this media than with the use of standard methods media (Lactose Broth, etc.) B.D.G. Broth supports excellent growth of gram-negative enteric bacilli other than coliforms and may be used for the detection of lactose non-fermenting organisms.

While testing treated water, tubes showing no gas and very little or no growth are considered as negative. Tubes with growth are sub cultured on MacConkey Agar (M081), SS Agar (M108) or Bismuth Sulphite Agar (M027) and suspected cultures are differentiated and identified(3). Authors reported recovery of a number of organism including Proteus from water samples showing growth but no gas in the presumptive medium. B.D.G. Broth contains sodium deoxycholate, which inhibits the development of spore formers and other gram-positive organism without affecting growth of coliform organisms and gram-negative bacilli. For sample checking it was suggested that 10 ml of the medium should be used for sample volume of 1 ml or less. For the examination of larger amounts of water, the medium should be prepared in multiple strength. For example, 10 ml of the inoculum is added to 10 ml of double strength medium. Tubes showing gas formation following incubation at 35-37°C are transferred for confirmation.

Hajna (4) also recommended the use of BDG Broth for the performance of the Methyl Red test and Voges Proskaur test.

Tryptose provides the essential nutrition required for the bacteria. Dextrose is the carbon source. Sodium deoxycholate inhibits all gram-positive bacteria and coliforms but allows gram-negative bacilli to grow. Sodium chloride provides essential ions. Dipotassium and monopotassium phosphates provide buffering to the medium.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium
Light yellow coloured, clear solution without any precipitate

Reaction
Reaction of 3.56% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH
6.80-7.20

Cultural Response
M205: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth
Cultural Response		
Bacillus subtilis ATCC 6633	>=10^3	inhibited
Escherichia coli ATCC 25922	50-100	luxuriant
Proteus vulgaris ATCC 13315	50-100	luxuriant
Salmonella Typhi ATCC 6539	50-100	luxuriant
Shigella flexneri ATCC 12022	50-100	luxuriant
Staphylococcus aureus ATCC 25923	>=10^3	inhibited

Storage and Shelf Life
Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

Reference
1. Corry J. E. L., Curtis G. D. W. and Baird R. M., Culture Media For Food Microbiology, Vol. 34, Progress in Industrial Microbiology, 1995, Elsevier, Amsterdam.
2. Hajna A. A. and Damon S. R., 1955, J. Am. Water Works Assoc. 47:631.
3. Public Health Lab, 1951, 9:23.
4. Personal Communication, 1953.

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