Phenol Red Starch Broth

M1016

Phenol Red Starch Broth is used for starch fermentation studies of microorganisms.

Composition**

Ingredients	Gms / Litre
Proteose peptone	10.000
Beef extract	1.000
Sodium chloride	5.000
Starch	5.000
Phenol red	0.018
Final pH (at 25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 21.02 grams in 1000 ml distilled water and mix well. Heat if necessary to ensure complete dissolution. Distribute in fermentation tubes (tubes containing inverted Durham's tubes). Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Principle And Interpretation

Phenol Red Broth Medium is formulated as per Vera (2) and is recommended to determine the fermentation reaction of carbohydrates for the differentiation of microorganisms (3, 4, 5). Phenol Red Broth Medium with various carbohydrates serves as a differential medium by aiding in differentiation of various species and genera by their ability to ferment the specific carbohydrate, with the production of acid or acid and gas (6). Phenol Red Starch Broth is used to study starch fermentation in various bacteria.

Proteose peptone and beef extract serve as sources for carbon and nitrogen. Sodium chloride is the osmotic stabilizer. Phenol red is the pH indicator, which turns yellow at acidic pH i.e. on fermentation of starch. Gas formation is seen in Durhams tubes. All of the *Enterobacteriaceae* grow well in this medium. In addition to producing a pH colour shift, the production of mixed acids, notably butyric acids, often results in a pungent, foul odour from the culture medium (1).

Quality Control

Appearance
Light yellow to pink coloured homogeneous free flowing powder

Colour and Clarity of prepared medium
Red coloured clear solution without any precipitate

Reaction
Reaction of 2.1% w/v aqueous solution at 25°C. pH : 7.4±0.2

pH
7.20-7.60

Cultural Response
M1016: Cultural characteristics observed after an incubation at 35 - 37°C for 18 - 24 hours.

Organism	Growth	Acid	Gas
Cultural Response			
Citrobacter freundii ATCC 8090	luxuriant	Weak reaction	Positive reaction
Escherichia coli ATCC 25922	luxuriant	Negative reaction, no colour change	Negative reaction

Enterobacter aerogenes ATCC 13048	luxuriant	Positive reaction, yellow colour	Negative reaction
Klebsiella pneumoniae ATCC 13883	luxuriant	Weak reaction	Negative reaction
Proteus vulgaris ATCC 13315		Negative reaction, no colour change	Negative reaction
Salmonella Typhi ATCC 6539	luxuriant	Negative reaction, no colour change	Negative reaction
Salmonella Ttyphimurium ATCC 14028	luxuriant	Negative reaction, no colour change	Negative reaction
Serratia marcescens ATCC 8100	luxuriant	Negative reaction, no colour change	Negative reaction
Shigella flexneri ATCC 12022	luxuriant	Positive reaction, yellow colour	Negative reaction

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. Koneman E. W., Allen S. D., Janda W.M., Schreckenberger P.C., Winn W.C. Jr., 1992, Colour Atlas and Textbook of Diagnostic Microbiology, 4th Ed., J. B. Lippinccott Company
2. Vera H. D., 1950, Am. J. Public Health, 40, 1267
3. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification -Maintenanceof Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore.
4. Finegold S. M. and Baron E. J., 1986, Bailey and Scotts Diagnostic Microbiology, 7th Ed., The C.V. Mosby Co., St. Louis.
5. Ewing W. H., 1986, Edwards and Ewings Identification of Enterobacteriaceae, 4th ed., Elsevier Science Publishing Co., Inc., New York.
6. MacFaddin J. F., 2000, Biochemical tests for Identification of Medical Bacteria, 3rd edi., Lippincott, Williams and Wilkins, Baltimore.

Revision : 2 / 2015