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Phenol Red Lactose Broth

A broth medium that is recommended for lactose fermentation studies and detection of coliform bacteria.

REF: BS-1/PRL01-100-0100 100 Gram | REF: BS-1/PRL01-250-0250 250 Gram

CLINICAL SIGNIFICANCE

Phenol Red Broth is a general-purpose differential test medium typically used to differentiate gram negative enteric bacteria depending on their ability to ferment a certain type of sugar. Examination of water, food ingredients and raw materials, for the presence of marker groups such as coliforms, is one of the most common tests in a microbiology laboratory, somewhat because of the relative simplicity and speed with which these tests can be accomplished. Where it is claimed that drinking water has been treated 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. Lactose Broth is recommended by APHA in the routine and confirmation of the presumptive test for coliform bacteria in water, food and milk. This medium was originally listed as an alternative to Lauryl Sulfate Broth in the presumptive Standard Total Coliform Multiple-Tube (MPN) Test for water analysis.

METHOD PRINCIPLE

Carbohydrate fermentation is a process that microorganisms use to produce energy. Most microorganisms convert glucose to pyruvate during glycolysis; however, some organisms change pathways. A fermentation medium consists of a basal medium containing a single carbohydrate (glucose, lactose, sucrose, mannitol etc.) for fermentation. In addition to a color indicator to detect the production of acid from fermentation, a Durham tube is placed in each tube to capture gas produced by metabolism. The carbohydrate fermentation patterns shown by different organisms are useful in differentiating between bacterial groups or species.

MEDIA COMPOSITION

Item	Formula per liter of medium
Peptone	10 gm
Beef Extract	1 gm
Sodium Chloride	5 gm
Lactose	5 gm
Phenol Red	0.018 gm

PRECAUTIONS AND WARNINGS

Media to be handled by entitled and professionally educated person. Do not ingest or inhale.

Good Laboratories practices using appropriate precautions should be followed in:

- Wearing personnel protective equipment (overall, gloves, glasses,).
- Do not pipette by mouth.
- In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice immediately.
- Respect country requirement for waste disposal.
  S56: dispose of this material and its container at hazardous or special waste collection point.
  S57: use appropriate container to avoid environmental contamination.
  S61: avoid release in environment.

For further information, refer to the Phenol Red Lactose Broth material safety data sheet.

STORAGE AND STABILITY

BioScien Phenol Red Lactose Broth should be stored between 10-30°C in a firmly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to avoid lump development due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in a dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Final pH 7.4±0.2 at 25°C

PREPARATION

Suspend 21 grams in 1000 ml distilled water, mix well. Heat if necessary to ensure complete solution. Distribute in tubes containing inverted Durham's tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Deterioration

The color of ***BioScien*** Phenol Red Lactose Broth is light yellow to pink colored homogeneous free flowing powder. Prepared Media is red in color without any precipitate. If there are any physical changes for powder or signs of deterioration (shrinking, cracking, or discoloration), and contaminations for hydrated media, discard the medium.

SPECIMEN

Water samples, food samples and dairy products.

EQUIPMENT REQUIRED NOT PROVIDED

- Durham Tubes
- Sterile Test tubes
- Incubator
- Autoclave

Performance Characteristics

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

I. Acid Production:

- **Positive Result:** Yellow Color is observed, due to a drop in pH which results from lactose fermentation and acid production.
- **Negative Result:** Red Color will remain unchanged (i.e. bacteria couldn't ferment the lactose).

II. Gas Production:

- **Positive Result:** A bubble is seen in the inverted Durham tube.
- **Negative Result:** No bubble formation in the inverted Durham tube (i.e. bacteria that don't produce gas are termed anaerogenic)

Microorganisms	Growth	Acid	Gas
Citrobacter freundii (ATCC 8090)	luxuriant	+	+
Enterobacter aerogenes (ATCC 13048)	luxuriant	+	+
Escherichia coli (ATCC 25922)	luxuriant	+	+
Klebsiella pneumoniae (ATCC 13883)	luxuriant	+	+
Proteus vulgaris (ATCC 13315)	luxuriant	-	-
Salmonella typhimurium (ATCC 14028)	luxuriant	-	-
Salmonella typhi (ATCC 6539)	luxuriant	-	-
Serratia marsecense (ATCC 8100)	luxuriant	-	-
Shigella flexneri (ATCC 12022)	luxuriant	-	-

QUALITY CONTROL

To ensure adequate quality control, it is recommended that positive and negative control included in each run. If control values are found outside the defined range, check the system performance. If control still out of range please contact ***BioScien*** technical support.

REFERENCES

1. Eaton A. D., Clesceri L. S., Rice E. W. and Greenberg A W. (Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st Ed., APHA, Washington, D.C.
2. Downes F. P. and Ito K., (Eds.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., APHA, Washington, D.C.
3. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.
4. 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
5. Vera H. D., 1950, Am. J. Public Health, 40, 1267
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SYMBOLS IN PRODUCT LABELLING			
IVD	For in-vitro diagnostic use	Σ	Number of <n> test in the pack
LOT	Batch Code/Lot number		Caution
REF	Catalogue Number		Do not use if package is damaged
	Temperature Limitation		Consult Instruction for use
	Expiration Date		
	Manufactured by		

EC REP

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