



Peptone Iron Agar

M440

Peptone Iron Agar is used for detection of hydrogen sulfide production by microorganisms.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	15.000
Proteose peptone	5.000
Ferric ammonium citrate	0.500
Sodium glycerophosphate	1.000
Sodium thiosulphate	0.080
Agar	15.000
Final pH (at 25°C)	6.7±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 36.58 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Dispense in test tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Allow the tubed medium to cool in an upright position or in a slanting position to form slants.

Principle And Interpretation

The ability of certain bacterial species to liberate sulfur from sulfur-containing amino acids or other compounds in the form of hydrogen sulphide is an important characteristic for their identification. Hydrogen sulphide production can be detected by incorporating a sulfur source and an H₂S indicator system in the medium (1). Peptone Iron Agar which is modification of Levin's original formula (2, 3) is used to detect H₂S production by organisms. This medium utilizes sodium thiosulphate, an inorganic compound as a supplemental source of sulfur and ferric ammonium citrate as the H₂S indicator in the medium. Peptone Iron Agar scores over Lead Acetate Agar, a medium to detect H₂S, in giving clear and early results (4). This is because ferric ammonium citrate is a better indicator of hydrogen sulphide, as compared to lead acetate.

Peptic digest of animal tissue and proteose peptone provide carbonaceous and nitrogenous compounds, including trace elements. Sodium thiosulphate and ferric ammonium citrate form the H₂S detecting system. Sulphide is released from thiosulphate due to the action of bacterial enzymes. This sulphide then couples with a hydrogen ion to form H₂S, which then reacts with the ferric ions from ferric ammonium citrate to produce insoluble heavy metal sulphides that appear as a black precipitate (1). Sodium glycerophosphate buffers the medium.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Light amber coloured clear to slightly opalescent gel forms in tubes as slants

Reaction

Reaction of 3.66% w/v aqueous solution at 25°C. pH : 6.7±0.2

pH

6.50-6.90

Cultural Response

M440: Cultural characteristics observed after an incubation at 35-37°C for 18-48 hours.

Organism	Inoculum (CFU)	H ₂ S production
----------	-------------------	--------------------------------

Cultural Response

<i>Escherichia coli</i> ATCC 25922	50-100	negative reaction, no blackening of medium
<i>Enterobacter aerogenes</i> ATCC 13048	50-100	negative reaction, no blackening of medium
<i>Salmonella Typhi</i> ATCC 6539	50-100	positive reaction, blackening of medium
<i>Salmonella Enteritidis</i> ATCC 13076	50-100	positive reaction, blackening of medium

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. Lippincott Company, Philadelphia.
2. Levine M., Vaughn R., Epstein S. S. and Anderson D., 1932, Proc. Soc. Exp. Biol. Med. 29:1022.
3. Levine M., Epstein S. S. and Vaughn R., 1934, Am. J. Public Health 24 :505.
4. Tittler R. P. and Sandholzer L. A., 1937, Am. J. Public Health 27:1240.

Revision : 2 / 2015

Disclaimer :

User must ensure suitability of the product(s) in their application prior to use. Products conform solely to the information contained in this and other related HiMedia™ publications. The information contained in this publication is based on our research and development work and is to the best of our knowledge true and accurate. HiMedia™ Laboratories Pvt Ltd reserves the right to make changes to specifications and information related to the products at any time. Products are not intended for human or animal or therapeutic use but for laboratory, diagnostic, research or further manufacturing use only, unless otherwise specified. Statements contained herein should not be considered as a warranty of any kind, expressed or implied, and no liability is accepted for infringement of any patents.