

Technical Data

Lead Acetate Agar

M180

Lead Acetate Agar is recommended for the detection of hydrogen sulphide producing enteric bacteria.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	15.000
Proteose peptone	5.000
Dextrose	1.000
Lead acetate	0.200
Sodium thiosulphate	0.080
Agar	15.000
Final pH (at 25°C)	6.6±0.2

^{**}Formula adjusted, standardized to suit performance parameters

Directions

Suspend 36.28 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Dispense into test tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Allow the tubes to cool in a slanted position to obtain slants with generous butts. Inoculate pure culture by surface streaking the slant and stabbing the butt.

Principle And Interpretation

Salmonella, Shigella, Yersinia species and certain strains of Escherichia coli cause severe gastroenteritis and lifethreatening systemic illness in human (1, 2). Of these, Salmonella Typhi can be differentiated due to their ability to form hydrogen sulphide (3). Lead Acetate Agar is the modification of the original formulation of Spray (4). This medium was successfully used to study hydrogen sulphide production (4, 5). Lead Acetate Agar can also be used to differentiate between Salmonella Paratyphi A and Salmonella Paratyphi B (6). The latter produces hydrogen sulphide, observed as browning of the medium, within 18-24 hours, whereas the former fails to produces hydrogen sulphide.

Peptic digest of animal tissue, proteose peptone and dextrose provide all the essential nutrients for the growth of bacteria. Bacteria capable of using sulphur from sodium thiosulphate in their metabolic activities produce hydrogen sulphide. Lead acetate acts as an indicator of hydrogen sulphide production observed as browning of the medium. Dextrose is the fermentable carbohydrate source. Production of gas from dextrose is indicated by the presence of bubbles in the butt.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

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

Reaction

Reaction of 3.63% w/v aqueous solution at 25°C. pH: 6.6±0.2

рH

6.40-6.80

Cultural Response

M180: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Gas Production	H2S production
Cultural Response Escherichia coli ATCC 25922	50-100	luxuriant	positive reaction	negative reaction

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Enterobacter aerogenes ATCC 13048	50-100	luxuriant	positive reaction	negative reaction
Salmonella Paratyphi A ATCC 9150	50-100	luxuriant	negative reaction	negative reaction
Salmonella Paratyphi B	50-100	luxuriant	negative	positive
ATCC 8759			reaction	reaction,
				browning of the medium
Salmonella Typhi ATCC	50-100	luxuriant	variable	positive
6539			reaction	reaction,
				browning of the medium
Salmonella Typhimurium	50-100	luxuriant	negative	positive
ATCC 14028			reaction	reaction,
				browning of the
				medium
Shigella dysenteriae ATCC	50-100	luxuriant	negative	negative
13313			reaction	reaction
Shigella flexneri ATCC	50-100	luxuriant	negative	negative
12022			reaction	reaction

Storage and Shelf Life

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

Reference

- 1. Balows A., Hausler W. J. Jr., Hermann K. L., Isenberg H. D., Shadomy H. J., (Eds.), Manual of Clinical Microbiology, 5th Ed., ASM, Washington, D.C.
- 2. Murray P. R., Baron J. H., Pfaller M. A., Jorgensen J. H. and Yolken R. H., (Ed.), 2003, Manual of Clinical Microbiology, 8th Ed., American Society for Microbiology, Washington, D.C.
- 3. Orlowski, 1897, Dissert, St. Petersburg.
- 4. Spray R. S., 1936, J. Bacteriol., 32:135.
- 5. Morrison L. E. and Tanner F. W., 1922, J. Bacteriol., 7:343.
- 6. Jordan E. O. and Victorson R., 1917, J. Infect. Dis., 21:554.

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