Lysine Indole Motility Medium, Modified

M1977

Intended Use:

It is used as an aid for the identification of members of *Enterobacteriaceae* on the basis of lysine decarboxylase, indole production and motility.

Composition**

Ingredients	g / L
Peptone	12.800
Yeast extract	3.000
L-Tryptophan	0.500
L-Lysine	10.000
Dextrose (Glucose)	1.000
Bromocresol purple	0.020
Agar	2.700
Final pH (at 25°C)	6.7±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 30.02 grams in 1000 ml purified / distilled water. Heat to boiling to dissolve the medium completely. Dispense into tubes in 5 ml amounts. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool the tubes in an upright position.

Principle And Interpretation

Lysine Indole Motility Medium, Modified is a semisolid medium used for the differentiation of *Enterobacteriaceae* group by lysine decarboxylation, indole production and motility(1).

Peptone and yeast extract supply amino acids and other complex nitrogenous substances. Dextrose (Glucose) is a source of energy. A small amount of agar is added for demonstration of motility along the stab line of inoculation. Growth of motile organisms extends out from the line of inoculation, while non-motile organisms grow only along the stab line. Bromocresol purple serves as the pH indicator.

When inoculated with an organism that ferments dextrose, acids are produced that lower the pH, causing the indicator in the medium to change from purple to yellow. The acidic pH also stimulates decarboxylase enzyme activity. Organisms that possess a specific decarboxylase degrade the amino acid provided in the medium, yielding a corresponding amine. Lysine decarboxylation yields cadaverine. The production of these amines elevates the pH and causes the medium in the bottom portion of the tube to revert to a purple color. The medium in the upper portion of the tube remains acidic because of the higher oxygen tension. If the organism being tested does not produce the required decarboxylase, the medium remains yellow (acidic) throughout or yellow with a purple or red reaction near the top. Indole is produced in this medium by organisms that possess the enzyme tryptophanase. Tryptophanase degrades typtophan,yielding indole. It can be detected in the medium by adding Kovac's reagent to the agar surface. Indole combines with the p-dimethylaminobenzaldehyde of Kovac's reagent and produces a red complex.

Cultures under study are stab-inoculated and incubated at 37°C for 18-24 hours. Motility, lysine deamination and lysine decarboxylation reactions can be read simultaneously prior to addition of Kovac's reagent for studying indole reaction as it causes the colour of the medium to change to yellow. Therefore positive lysine decarboxylase reaction could be misinterpreted as negative.

Type of specimen

Pus isolate

Specimen Collection and Handling:

For isolated microorganism samples follow appropriate techniques for handling specimens as per established guidelines (2,3). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

In Vitro diagnostic Use only. For professional use only. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations

1. This medium is general purpose medium and may not support the growth of fastidious organisms.
2. Lysine decarboxylation test may be misinterpretated because of Kovac's reagent.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance

Cream to greenish yellow homogeneous free flowing powder

Gelling

Semisolid, comparable with 0.27% Agar gel.

Colour and Clarity of prepared medium

Reddish purple coloured clear to slightly opalescent gel forms in tubes as butts

Reaction

Reaction of 3.00% w/v aqueous solution at 25°C. pH : 6.7±0.2

pH

6.50-6.90

Cultural Response

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

Organism	Motility	Indole production	Lysine decarboxylase
#Klebsiella aerogenes ATCC 13048 (00175*)	positive, growth away from stabline	negative reaction	positive reaction, purple colour
Escherichia coli ATCC 25922 (00013*)	positive, growth away from stabline	positive, red ring at the interface of the medium on addition of Kovac's reagent	positive reaction, purple colour
Klebsiella pneumoniae ATCC 13883 (00097*)	negative, growth along the stabline	occasional reaction	positive reaction, purple colour
Proteus mirabilis ATCC 25933	positive, growth away from stabline	negative reaction	negative reaction
## Proteus hauseri ATCC 13315	positive, growth away from stabline	positive reaction, red ring at the interface of the medium on addition of Kovac's reagent	negative reaction
Salmonella Enteritidis ATCC 13076 (00030*)	positive, growth away from stabline	negative reaction	positive reaction, purple colour

Shigella flexneri ATCC 12022 (00126*)	negative, growth along the stabline	occasional reaction	negative reaction

Key : (*) Corresponding WDCM numbers.

Formerly known as *Enterobacter aerogenes* ## Formerly known as *Proteus vulgaris*

Storage and Shelf Life

Store between 10-30°C in a tightly 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 prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in 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.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (2,3).

Reference

1. Igarashi.H et al.(1969)A new differential medium for enteric pathogens, lysine-indole-motility medium.
2. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
3. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

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HiMedia Laboratories Pvt. Limited,
Plot No.C-40, Road No.21Y,
MIDC, Wagle Industrial Area,
Thane (W) -400604, MS, India

EC REP
CEpartner4U, Esdoornlaan 13,
3951DB Maarn, NL
www.cepartner4u.eu

IVD ***In vitro* diagnostic medical device**

CE Marking

10°C 30°C **Storage temperature**

Do not use if package is damaged