Litmus Lactose Agar

M114

Intended Use:

Recommended for differentiation of lactose fermenting and lactose non fermenting microorganisms.

Composition**

Ingredients	Gms / Litre
HM peptone#	5.000
HM peptone B $	3.000
Lactose	10.000
Litmus	1.000
Agar	10.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters
Equivalent to Meat peptone
$ Equivalent to Beef extract

Directions

Suspend 29.0 grams in 1000 ml purified / distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C. Mix well and pour into sterile Petri plates.

Principle And Interpretation

Numerous plating media are in use today for the differentiation of lactose-fermenters and lactose non-fermenters. Some of these are selective, whereas others are differential. Some lactose fermenting, gram-negative enteric bacteria can tolerate the inhibitory substances present in the media. These bacteria can be recognized readily by their appearance on selective plates. Litmus Lactose Agar is formulated by Wurtz (8) for the differentiation of lactose fermenting and lactose non-fermenting bacteria.

HM peptone and HM peptone B in the medium provide nitrogenous nutrients to the organisms. Lactose is fermented by lactose fermenting bacteria with acid production. Litmus is the pH indicator, which turns red at acidic pH. Colonies of lactose fermenting bacteria are surrounded by a red zone, which distinguishes them from colonies of other organisms that either do not change the surrounding medium or change it to blue due to production of ammonia. Inoculate culture from primary fermentation tubes showing gas either by streaking directly or by pour plate method of serially diluted culture (5).

Type of specimen

Food, dairy, water samples

Specimen Collection and Handling

For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (1,6,7).
For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.(2)
After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions :

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 specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

1. Further biochemical tests must be carried out for confirmation.

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

Light purple to greyish yellow homogeneous free flowing may contain minute to small particles.

Gelling

Firm, comparable with 1.0% Agar gel.

Colour and Clarity of prepared medium

Dark purple coloured clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 2.9% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH

6.80-7.20

Cultural Response

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

Organism	Inoculum (CFU)	Growth	Recovery	Colour of colony
Escherichia coli ATCC 25922 (00013*)	50-100	luxuriant	>=70%	red
Klebsiella pneumoniae ATCC 13883 (00097*)	50-100	luxuriant	>=70%	red
Pseudomonas aeruginosa ATCC 27853 (00025*)	50-100	luxuriant	>=70%	deep blue - violet
Salmonella Typhi *ATCC 6539*	50-100	luxuriant	>=70%	deep blue - violet
Shigella flexneri ATCC 12022 (00126*)	50-100	luxuriant	>=70%	deep blue - violet

Key : *Corresponding WDCM numbers.

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 20-30°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. Use before expiry date on the label.
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 sample must be decontaminated and disposed of in accordance with current laboratory techniques (3,4).

Reference

1. American Public Health Association, Standard Methods for the Examination of Dairy Products, 1978, 14th Ed., Washington D.C.
2. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23rd ed., APHA, Washington, D.C.
3. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
4. 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.
5. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore.
6. Salfinger Y., and Tortorello M.L. , 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.

7. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.
8. Wurtz R., 1897, Technique Bacteriologique, Paris, Masson.

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