



Gassner Lactose Agar, Granulated[®]

GM1022

Intended Use:

Recommended for detection and isolation of pathogenic *Enterobacteriaceae* from food stuffs and other materials.

Composition**

Ingredients	g / L
HM peptone #	7.000
Sodium chloride	5.000
Lactose	50.000
Metachrome yellow	1.250
Water blue	0.625
Agar	13.000
Final pH (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Equivalent to Meat peptone

Directions

Suspend 76.87 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

Gram-negative bacilli belonging to *Enterobacteriaceae* are widely dispersed in nature and have been frequently isolated from clinical specimens. The genera in *Enterobacteriaceae* include pathogens such as *Salmonella*, *Shigella*, *Yersinia*, diarrheogenic *E.coli* and others. Definitive identification of members of *Enterobacteriaceae* may require a battery of biochemical tests. Differentiation of the *Enterobacteriaceae* however is based primarily on the presence or absence of different enzymes coded by the genetic material possessed. These enzymes direct the metabolism of bacteria along one of several pathways that can be detected in vitro. Substrates on which these enzymes can react are incorporated into the culture medium together with an indicator that can detect either utilization of the substrate or the formation of specific metabolic products.

Gassner Lactose Agar was originally developed by Gassner for the detection and isolation of pathogenic *Enterobacteriaceae* from food and other materials (1). This medium has been prescribed in the regulations for the execution of the German Meat Inspection Law (Deutsches Fleischbeschaugesetz) (2).

This medium is also known as Water-blue Metachrome-Yellow Lactose Agar. Metachrome-yellow primarily inhibits gram-positive microorganisms present in the food materials. Lactose fermenters produce acid, indicated by the water blue indicator, which turns blue in acidic range and colourless in the alkaline range. Original colour of the prepared medium is green, but in the acidic pH it becomes blue-green to blue while in the alkaline conditions the yellow colour of metachrome yellow becomes increasingly apparent. Medium ingredients like HM peptone provide essential nutrients and sodium chloride maintains osmotic balance respectively.

Type of specimen

Food samples; Water samples

Specimen Collection and Handling:

For food samples, follow appropriate techniques for sample collection and processing as per guidelines (3). For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards.(4) 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. Other biochemical tests must be carried 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 yellow to green coloured granular medium

Gelling

Firm, comparable with 1.3% Agar gel.

Colour and Clarity of prepared medium

Dark green coloured, clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 7.69% w/v aqueous solution at 25°C. pH : 7.2±0.2

pH

7.00-7.40

Cultural Response

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

Organism	Inoculum (CFU)	Growth	Recovery	Colour of colony	Colour change of medium
<i>Enterococcus faecalis</i> ATCC 29212 (00087*)	≥10 ⁴	inhibited	0%		
<i>Escherichia coli</i> ATCC 25922 (00013*)	50-100	good-luxuriant	≥50%	dark green	blue
<i>Klebsiella pneumoniae</i> ATCC 13883 (00097*)	50-100	good-luxuriant	≥50%	mucoïd green	blue
<i>Proteus mirabilis</i> ATCC 25933	50-100	good-luxuriant	≥50%	yellowish green	yellow
<i>Salmonella</i> Typhi ATCC 6539	50-100	good-luxuriant	≥50%	yellow	yellow
<i>Salmonella</i> Typhimurium ATCC 14028 (00031*)	50-100	good-luxuriant	≥50%	yellow	yellow
<i>Salmonella</i> Enteritidis ATCC 13076 (00030*)	50-100	good-luxuriant	≥50%	yellow	yellow
<i>Shigella flexneri</i> ATCC 12022 (00126*)	50-100	good-luxuriant	≥50%	yellow	yellow
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> ATCC 25923 (00034*)	≥10 ⁴	inhibited	0%		

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. 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 (5,6).

Reference

- Gassner G., 1918, Centralbl. F. Bakt. I. Orig., 80:219-222.
- Deutsches Fleischbeschaugesetz: Anlage 1 zu § 20 Abs. 4: Vorschriften über die bakteriologische Fleischuntersuchung.
- 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.

- 4.Lipps WC, Braun-Howland EB, Baxter TE,eds. Standard methods for the Examination of Water and Wastewater, 24th ed. Washington DC:APHA Press; 2023.
- 5.Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
- 6.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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