

TECHNICAL DATA SHEET

MUG Violet Red Bile Agar

Principle

Violet red bile agar with MUG contains peptone, yeast extract, bile salts, sodium chloride, lactose, neutral red, crystal violet, chromogen (MUG), and agar. The peptone serves as a source of carbon, nitrogen, vitamins, and minerals. Yeast extract supplies B-complex vitamins, which stimulate bacterial growth. Lactose is a source of carbohydrate. The fermentation of lactose to acid is indicated by the pH indicator neutral red, which changes its color to red, and by the precipitation of bile acids. Organisms that rapidly attack lactose produce red-purple colonies surrounded by purple haloes. While the non-fermenters or late lactose-fermenters produce pale colonies with greenish zones. Bile salts and crystal violet perform inhibitory action and inhibit gram-positive bacteria. Chromogen MUG (4-methylumbelliferyl- β -D-glucuronide) is a substrate used for detecting glucuronidase activity. *E. coli* produces the enzyme glucuronidase, which hydrolyzes MUG to yield a fluorogenic compound; this compound shows blue-green fluorescence under long-wave UV light (366 nm). Agar is a solidifying agent.

Use: For detection and enumeration of coliform organisms by a fluorogenic method.

Contents*

Ingredients	Gram/Lite
Peptone	7.000
Yeast Extract	3.000
Bile Salts	1.500
Sodium Chloride	5.000
Lactose	10.000
Neutral Red	0.030
Crystal Violet	0.002
4-Methylumbelliferyl β-D-glucuronide (MUG)	0.100
Agar	15.000
pH at 25°C	7.4 $\pm$ 0.2

*** Formula adjusted for optimum performance and parameters**

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Directions: Dissolve 41.63 grams in 1000 ml distilled water. Heat to boil for 1 minutes to dissolve ingredients completely, Do Not Autoclave. In aseptic condition immediately cool it to 42-45°C and distribute in sterile petri plates and allow solidify. Ensure complete solidification and inoculate test sample.

Specimens types analyzed

Food and food products, water and dairy products samples.

Precautions to be taken

All the handling, experiments, storage, and discarding should be performed with the help of skilled and knowledgeable technicians and as per the established guidelines. The material should be disposed only after proper sterilization by autoclaving. Please go through the MSDS of the media to avoid any accidents or in emergency.

Performance and Evaluation

The expected performance of the medium is liable to use as per the direction on the label when stored at optimum conditions and within expiry date.

Quality Control

Appearance	Pink-beige colored free flowing, homogeneous powder
Reaction of 4.16% solution	7.4 ±0.2 at 25°C
pH	7.20 - 7.60
Gelling	Firm comparable with 1.5% agar gel
Color and clarity of ready medium	Reddish-purple, slightly opalescent gel
Growth Promotion properties	Best at ≤ 100 CFU at 32-37 °C for 18-48 h
Indicative properties	Optimum at ≤ 100 CFU at 32-37 °C for 18-48 h
Negative control	Performed using sterile distilled water

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Different Microbial Response: Cultural characteristics observed after incubation at $35\pm 2^{\circ}\text{C}$ for 18-24 hours. Inoculum 50-100 CFU.

Organism	ATCC	Growth	Recovery	Colony color	Fluorescence (at 366 nm)
<i>Escherichia coli</i>	25922	Luxuriant	$\geq 60\%$	Pink-red with bile precipitate	Positive
<i>Klebsiella aerogenes</i>	13048	Luxuriant	$\geq 60\%$	Pinkish	Negative
<i>Staphylococcus aureus</i>	25923	Inhibited	--	--	--

Storage and Shelf Life: The product is highly hygroscopic; keep the container tightly closed at all times and store it properly as per the conditions mentioned on the label. The declared expiry is valid only when stored as per the conditions mentioned on the label. Note: Sterilize media immediately after reconstitution.

Disposal: To avoid the contamination or propagation of any hazardous microbes the used, unusable or modified preparation of this product must be disposed after autoclaving after completion of task.

Reference

1. Difco Manual (1998). 11th Edition. Difco Laboratories., Division of Becton Dickinson and Company, Sparks, Maryland, USA.
2. FDA Bacteriological analytical manual BAM: Enumeration of *Escherichia coli* and the Coliform Bacteria. Chapter 4.
3. International Organization for Standardization (ISO), 1991, Draft ISO/DIS 43.
4. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.

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