



PRODUCT SPECIFICATION SHEET

Violet Red Bile Glucose Agar w/o Lactose (DM287)

Intended Use

Violet Red Bile Glucose Agar w/o Lactose (DM287) is used for the enumeration of *Enterobacteriaceae* in foods.

Product Summary and Explanation

The *Enterobacteriaceae* group includes lactose-fermenting coliform bacteria, nonlactose-fermenting strains of *E. coli*, and nonlactose-fermenting species such as *Salmonella* and *Shigella*. When examining certain foods, it is important to detect *Enterobacteriaceae* rather than coliform bacteria.^(1,2) *Enterobacteriaceae* are glucose-fermenting bacteria. Mossel et al.⁽³⁾ modified Violet Red Bile Agar, which contains lactose, by adding glucose to improve recovery of *Enterobacteriaceae*. Further research by Mossel et al.^(4,5) demonstrated that lactose could be omitted, resulting in the formulation known as Violet Red Bile Glucose Agar.

Violet Red Bile Glucose Agar w/o Lactose, a modification of VRBA (DM286), was designed for the enumeration of *Enterobacteriaceae*.⁽⁶⁾ It employs the selective inhibitory components crystals violet and bile salts and the indicator system glucose and neutral red. Sought bacteria will dissimilate glucose and produce red-purple zones around the colonies.⁽⁷⁾ ISO committee has also recommended this medium.⁽⁸⁾ Selectivity of VRBGA can be increased by incubation under anaerobic conditions and/ or at elevated temperature, i.e. equal to or above 42°C.⁽⁶⁻⁹⁾

Principles of the Procedure

Peptic Digest of animal tissue provides nitrogen, amino acids and carbon in Violet Red Bile Glucose Agar. Yeast Extract supplies essential vitamins for organism growth. Glucose is the fermentable carbohydrate, utilization of which leads to the production of acids. Bile Salts and Crystal Violet are selective agents, inhibiting Gram-positive cocci and allowing Gram-negative organisms to grow. Dextrose fermenters produce red colonies with red-purple halos in the presence of Neutral Red, the pH indicator. Agar is the solidifying agent.

Formula / Liter

| Ingredients | Gms / Litre |
|--|-------------|
| Yeast Extract | 3.00 |
| Peptic Digest of animal tissue | 7.00 |
| Bile Salts Mixture | 1.50 |
| Glucose | 10.00 |
| Sodium Chloride | 5.00 |
| Neutral Red | 0.03 |
| Crystal Violet | 0.002 |
| Agar | 12.00 |
| Final pH: 7.4 ± 0.2 at 25°C | |
| Formula may be adjusted and/or supplemented as required to meet performance specifications | |

Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.





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Directions

1. Suspend 38.53 g of the medium in one liter of purified water.
2. Heat with frequent agitation and boil for one minute to completely dissolve the medium.
3. DO NOT AUTOCLAVE.
4. Cool to 45 - 50°C and dispense into sterile petri dishes.

Quality Control Specifications

| | |
|-----------------------------------|---|
| Dehydrated Appearance | pink-beige to red-beige colored, homogeneous, free flowing powder |
| Solution | 3.85% Solution in Distilled or deionized water is soluble on boiling, red-purple colored, and very slightly to slightly opalescent. |
| Prepared Medium | Red-purple colored slightly opalescent gel. |
| Reaction of 3.85% Solution | pH 7.4 ± 0.2 at 25°C |
| Gel Strength | Firm, compared to 1.5% Agar Gel. |

Expected Cultural Response: Cultural response on Violet Red Bile Glucose Agar at 35-37°C after 18 - 24 hours incubation. Recovery rate is considered as 100% for bacteria growth on Soyabean Casein Digest Agar.

| Sr. No. | Organisms | Results to be achieved | | | | |
|---------|---|------------------------|----------------|--------------------------|----------|--------------------------------|
| | | Inoculum (CFU) | Growth | Observed Lot value (CFU) | Recovery | Colour of colony |
| 1. | <i>Escherichia coli</i> ATCC 8739 | 50-100 | luxuriant | 25-100 | ≥50% | pink-red with bile precipitate |
| 2. | <i>Pseudomonas aeruginosa</i> ATCC 9027 | 50-100 | luxuriant | 25-100 | ≥50% | pink to red |
| 3. | <i>Escherichia coli</i> NCTC 9002 | 50-100 | Good-luxuriant | 25-100 | ≥50% | pink to red |
| 4. | <i>Escherichia coli</i> ATCC 25922 | 50-100 | Good-luxuriant | 25-100 | ≥50% | light pink |
| 5. | <i>Salmonella Enteritidis</i> ATCC13076 | 50-100 | Good-luxuriant | 25-100 | ≥50% | pink to red |
| 6. | <i>Enterobacter aerogenes</i> ATCC 13048 | 50-100 | Good-luxuriant | 25-100 | ≥50% | -- |
| 7. | <i>Staphylococcus aureus</i> ATCC 25923 | ≥10 ³ | inhibited | 0 | 0% | -- |
| 8. | <i>Staphylococcus aureus</i> ATCC 6538 | ≥10 ³ | inhibited | 0 | 0% | -- |

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

Violet Red Bile Glucose Agar is used in spread or pour plate procedures, with or without an overlay. In addition, this medium can be used as an overlayer for spread plates to prevent swarming colonies and provide semi-anaerobic





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conditions suppressing growth of non-fermentative Gram-negative organisms. Stab inoculation procedures can also be used with Violet Red Bile Glucose Agar.

Results

Enterobacteriaceae ferment dextrose, produce acid products, and form pink to reddish colonies with reddish precipitate.

Storage

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

1. Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.
2. When used in the pour plate procedure, Violet Red Bile Glucose Agar should be freshly prepared, tempered to 47°C, and used within 3 hours.

Packaging

Product Name: Violet Red Bile Glucose Agar

Product Code : DM287

Available Pack sizes : 100gm / 500gm

References

1. Draft Standard Methods for Microbiological Examination of Meat Products. 1977. Part 3: Detection and enumeration of *Enterobacteriaceae*. BS5393: Part 3, ISO/DIS 5552.
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7. Corry J. E. L., Curtis G. D. W. and Baird R. M., (Ed.), 1995, Culture Media for Food Microbiology, Vol. 34, Progress in Industrial Microbiology, Elsevier, Amsterdam.
8. Mossel D. A. A. and Vega C. L., 1973, Hlth. Lab. Sci., 11:303
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Further Information

For further information please contact your local MICROMASTER Representative.








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