**Certificate of Analysis**

**PREPARED MICROBIOLOGICAL MEDIA**

**VIOLET RED BILE GLUCOSE AGAR**

Catalogue Number CMS181-10-10

Product Description Violet Red Bile Glucose Agar, 10cm Petri Dish, Package of 10

Lot Number 1253

Date of Manufacture 22 November 2022

Expiry Date 21 January 2023

**INTENDED USE**

Violet Red Bile Glucose Agar is used for detecting and enumerating *Enterobacteriaceae* in food and dairy products.

**SUMMARY AND EXPLANATION**

The *Enterobacteriaceae* group includes lactose-fermenting coliform bacteria, lactose-nonfermenting strains of *E. coli*, and lactose-nonfermenting species, such as *Salmonella* and *Shigella*. When examining some foods, it is desirable to detect *Enterobacteriaceae* rather than the coliform bacteria.

*Enterobacteriaceae* are glucose-fermenting bacteria. Mossel *et al*. modified lactose-containing Violet Red Bile Agar by adding glucose to improve the recovery of *Enterobacteriaceae*. Later work by Mossel *et al*. demonstrated that lactose could be omitted, resulting in the formulation known as Violet Red Bile Glucose Agar (VRBGA).

Violet Red Bile Glucose Agar is recommended for the detection and enumeration of *Enterobacteriaceae* in food and dairy products. Violet Red Bile Glucose Agar is also listed in the *USP* as the recommended solid medium for use in the isolation of bile-tolerant gram-negative bacteria from nonsterile pharmaceutical products.

**PRINCIPLE**

Violet Red Bile Glucose Agar contains pancreatic digest of gelatin as a source of carbon, nitrogen, vitamins and minerals. Yeast extract supplies B-complex vitamins which stimulate bacterial growth. Glucose is a carbohydrate. Bile salts and crystal violet inhibit gram-positive bacteria. Glucose fermenters produce red colonies with red-purple halos (bile precipitation) in the presence of neutral red, a pH indicator. Sodium chloride maintains the osmotic balance. Agar is the solidifying agent.

**REAGENTS (FORMULA)**

|  |  |
| --- | --- |
| Yeast Extract .............................. 3.0 | g |
| Gelatin peptone........................... 7.0 | g |
| Bile Salts………......................... 1.5 | g |
| Glucose monohydrate................. 10.0 | g |
| Sodium Chloride .......................... 5.0 | g |
| Neutral Red ................................ 0.03 | g |
| Crystal Violet .......................... 0.002 | g |
| Agar ........................................... 15.0 | g |
| Deionized Water .................... 1000.0 | ml |

**PROCEDURE**

For food samples, refer to appropriate standard references for details on test methods using Violet Red Bile Glucose Agar.

**EXPECTED RESULTS**

*Enterobacteriaceae* ferment glucose, produce acid products and form red to dark purple colonies surrounded by red-purple halos.

**QUALITY CONTROL**

All lot numbers have been tested and have been found to be acceptable. Customers can test products using the following quality control organisms. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, sample results should not be reported.

results should not be reported.

|  |  |  |
| --- | --- | --- |
| **QA Testing:** | **Result:** | **Expected:** |
| **Characteristics** | **Pass** | **Pass** |
| **Sterility** | **Pass** | **Pass** |
| **Performance** | **Pass** | **Pass** |

pH 7.4±0.2 @ 25°C

Appearance Light Yellow, Clear

Storage Condition Refrigerate, 2-8°C

Sterility Method Autoclave

Sterility Test Pass

(Absence of growth following 72 hours at 30 - 35°C)

|  |  |  |
| --- | --- | --- |
| **Organisms** | **Incubation** | **Results** |
| *Escherichia coli ATCC 8739* | 30-35°C for 18-24 hours | pink-red with bile precipitate |
| *Pseudomonas aeruginosa ATCC 9027* | 35 ± 2°C for 18-24 hours | pink to red |
| *Escherichia coli ATCC 25922* | 35 ± 2°C for 18-24 hours | pink-red with bile precipitate |
| *Salmonella Enteritidis ATCC 13076* | 35 ± 2°C for 18-24 hours | light pink |
| *Klebsiella aerogenes ATCC 13048* | 35 ± 2°C for 18-24 hours | pink-red |
| *Staphylococcus aureus subsp. aureus ATCC* *ATCC 6538* | 35 ± 2°C for 18-24 hours | inhibited |

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**BIBLIOGRAPHY**

1. United States Pharmacopeial Convention, Inc. 2008. The United States pharmacopeia 31/The national formulary 26, Supp. 1, 8-1-08, online. United States Pharmacopeial Convention, Inc., Rockville, Md.

2. European Directorate for the Quality of Medicines and Healthcare. 2008. The European pharmacopoeia, 6th ed., Supp. 1, 4-1-2008, online. European Directorate for the Quality of Medicines and Healthcare, Council of Europe, 226 Avenue de Colmar BP907-, F-67029 Strasbourg Cedex 1, France.

3. Japanese Ministry of Health, Labour and Welfare. 2006. The Japanese pharmacopoeia, 15th ed., online. Japanese Ministry of Health, Labour and Welfare.

4. Mossel. 1985. Int. J. Food Microbiol. *2*:27.



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All our prepared media products are manufactured at our site in RCFFN, University of Manitoba and tested both at our site and by department of Microbiology, University of Manitoba.

The generation of this certificate confirms all sterilization and performance criteria have been achieved.

NOTE: Expiry Date only valid if packs stored unopened at Ambient Room Temperature not exceeding 25°C.

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