



## VIOLET RED BILE GLUCOSE AGAR (7425)

### Intended Use

**Violet Red Bile Glucose Agar** is used for the enumeration of *Enterobacteriaceae* in foods. Violet Red Bile Glucose Agar conforms to Harmonized USP/EP/JP Requirements.<sup>1,2,3</sup>

### 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.<sup>4,5</sup> *Enterobacteriaceae* are glucose-fermenting bacteria. Mossel et al.<sup>6</sup> modified Violet Red Bile Agar, which contains lactose, by adding glucose to improve recovery of *Enterobacteriaceae*. Further research by Mossel et al.<sup>7,8</sup> demonstrated that lactose could be omitted, resulting in the formulation known as Violet Red Bile Glucose Agar.

Violet Red Bile Glucose Agar conforms to Harmonized United States Pharmacopoeia (USP), European Pharmacopoeia (EU), and Japanese Pharmacopoeia (JP).<sup>1,2,3</sup>

### Principles of the Procedure

Enzymatic Digest of Gelatin provides nitrogen, amino acids and carbon in Violet Red Bile Glucose Agar. Yeast Extract supplies essential vitamins for organism growth. Dextrose is the carbohydrate. 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

Enzymatic Digest of Gelatin.....	7.0 g
Yeast Extract.....	3.0 g
Dextrose.....	10.0 g
Bile Salts .....	1.5 g
Sodium Chloride .....	5.0 g
Neutral Red.....	0.03 g
Crystal Violet.....	0.002 g
Agar .....	*13.5 g

\*10 -15 g according to gel strength

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.
2. IRRITANT. Irritating to eyes, respiratory system and skin.

### Directions

1. Suspend 40 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 pour plates..

### Quality Control Specifications

**Dehydrated Appearance:** Powder is homogeneous, free flowing, and pink to red-beige.

**Prepared Appearance:** Prepared medium is reddish-orange to reddish-purple and trace to slightly hazy.

**Expected Cultural Response and USP/EP/JP Growth Promotion Testing:** Cultural response on Violet Red Bile Glucose Agar incubated at Harmonized USP/EP/JP specified temperatures and incubation times.<sup>1,2,3</sup>

Microorganism	Approx. Inoculum (CFU)	Expected Results	
		Growth	Reaction
<i>Enterobacter aerogenes</i> ATCC® 13048	10 - 100	Growth	Pink colonies w/red precipitate
<i>Escherichia coli</i> ATCC® 25922	10 - 100	Growth	Pink colonies w/red precipitate
<i>Escherichia coli</i> ATCC® 8739	10 - 100	Growth	Pink colonies w/red precipitate
<i>Pseudomonas aeruginosa</i> ATCC® 9027	10 - 100	Growth	Colorless to grey
<i>Salmonella typhimurium</i> ATCC® 14028	10 - 100	Growth	Pink colonies w/red precipitate
<i>Staphylococcus aureus</i> ATCC® 25923	≈ 1000	Inhibited	N/A

### **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 conditions suppressing growth of nonfermentative 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 dehydrated medium at 2 - 30°C. Once opened and recapped, place the container in a low humidity environment at the same storage temperature. Protect from moisture and light.

### **Expiration**

Refer to 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**

<b>Violet Red Bile Glucose Agar</b>	<b>Code No.</b>	<b>7425A</b>	<b>500 g</b>
		<b>7425B</b>	<b>2 kg</b>
		<b>7425C</b>	<b>10 kg</b>

### **References**

1. **United States Pharmacopeial Convention.** 2007. The United States pharmacopeia, 31<sup>st</sup> ed., Amended Chapters 61, 62, 111. The United States Pharmacopeial Convention, Rockville, MD.
2. **Directorate for the Quality of Medicines of the Council of Europe (EDQM).** 2007. The European Pharmacopoeia, Amended Chapters 2.6.12, 2.6.13, 5.1.4, Council of Europe, 67075 Strasbourg Cedex, France.
3. **Japanese Pharmacopoeia.** 2007. Society of Japanese Pharmacopoeia. Amended Chapters 35.1, 35.2, 7. The Minister of Health, Labor, and Welfare.

4. **Draft Standard Methods for Microbiological Examination of Meat Products.** 1977. Part 3: Detection and enumeration of *Enterobacteriaceae*. BS5393: Part 3, ISO/DIS 5552.
5. **Mossel, D. A. A.** 1985. Media for *Enterobacteriaceae*. Int. J. Food Microbiol. **2**:27.
6. **Mossel, D. A. A., W. H. J. Mengerink, and H. H. Scholts.** 1962. Use of a modified MacConkey agar medium for the selective growth and enumeration of *Enterobacteriaceae*. J. Bacteriol. **84**:381.
7. **Mossel, D. A. A., I. Eelderink, M. Koopmans, and F. van Rossem.** 1978. Lab Practice. **27**:1049-1050.
8. **Mossel, D. A. A., I. Eelderink, M. Koopmans, and F. van Rossem.** 1979. Influence of carbon source, bile salts and incubation temperature on recovery of *Enterobacteriaceae* from food using MacConkey-type agars. J. Food Protect. **42**:470-475.

### **Technical Information**

Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (517)372-9200 or fax us at (517)372-2006.