

PRODUCT CODE: 413745

Violet Red Bile Glucose Agar (VRBG) (Ph. Eur.) (ISO21528) (Dehydrated Culture Media) for microbiology

Preparation

Suspend 41.5 grams of the medium in one litre of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Cool to 45°C and dispense immediately. Alternatively, sterilize in autoclave at 118°C for 15 minutes.

DO NOT OVERHEAT. The prepared medium should be stored at 8-15°C. The colour is Purple-red. The dehydrated medium should be homogeneous, free-flowing and beige-reddish in colour.

If there are any physical changes, discard the medium.

Uses

VIOLET RED BILE AGAR WITH GLUCOSE (VRBG) is a selective medium, containing Bile and Violet Red dye, for the isolation and enumeration of *enterobacteria*. It is based on MacConkey Medium (Cat. 413779) for the detection and enumeration of bile-tolerant Gram-negative *Enterobacteriaceae* in dairy products and foods.

In this medium, the lactose is replaced by glucose as the carbohydrate. VRBG agar is becoming the preferred medium for use in investigations into raw materials, processed foods and plant hygiene. The *Enterobacteriaceae* group includes lactose-fermenting coliforms bacteria and non-lactose fermenting species like *Salmonella* and *Shigella*.

Pancreatic digest of gelatine provides nitrogen, vitamins, minerals and amino acids essential for growth. Yeast extract is the source of vitamins, particularly of the B-group. Glucose is the fermentable carbohydrate providing carbon and energy. Glucose fermenters form red colonies in the presence of the pH indicator neutral red.

Bile salts and crystal violet inhibit Gram-positive bacteria. Sodium chloride supplies essential electrolytes for transport and osmotic balance. Bacteriological agar is the solidifying agent. When testing raw vegetables, for example, VRBL agar (cat. 413746) is a more practical choice for a hygienic state because certain non-lactose fermenting but glucose utilizing organisms, e.g. *Pseudomonas* species, predominate amongst the naturally occurring flora and may easily overgrow the indicator on VRBG Agar.

The European Pharmacopoeia recommends this medium in Paragraph 2.6.13: "Microbiological examination of non-Sterile products: test for specified microorganisms" for the growth promotion, inhibitory and indicative properties of the media in the test of the product for bile-tolerant Gram-negative bacteria. Also, this medium is recommended for the testing of bile-tolerant Gram-negative bacteria in products.

ISO 21528 norm proposes VRBG Agar for the detection and enumeration of *Enterobacteriaceae*. Use the volume of 1g corresponding to product to inoculate with Mossel EE Broth at 30-35°C for 24-48 hours. Subculture on plates of Violet Red Bile Agar with Glucose. Incubate at 30-35°C for 18-24 hours.

The product complies with the test if there is no growth of colonies. The pour plate method decreases the growth of Gram-negative non-fermenting bacteria due to its semi-anaerobic conditions. The fermentation of glucose is likewise stimulated and results in the formation of purple-red colonies, clearly visible, surrounded by a zone of the same colour.

Note that coliforms will ferment the glucose and produce acid with or without gas. *Klebsiella* and *Citrobacter*, which are more heat-resistant than coliforms, also grow in this medium and can indicate a production process defect (insufficient heating).

Composition

See in Data Sheet (TDS).

Microbiological Test

The following results were obtained in the performance of the medium from type cultures after incubation at a temperature of 30-35°C and observed after 18-24 hours. According to European Pharmacopoeia.

Microorganism	Growth	Colony Colour
<i>Escherichia coli</i> ATCC 8739	Good	Red
<i>Staphylococcus aureus</i> ATCC 6538	Inhibited	-
<i>Pseudomonas aeruginosa</i> ATCC 9027	Good	-

According to 11133 (24±2h/37±1 °C) Productivity and Selectivity

Microorganism	Inoculum (CFU)	Reference Media	Productivity Quantitative	Selectivity Qualitative	Characteristic Colonies
<i>Escherichia coli</i> ATCC 25922	10 ²	TSA	pr ≥ 0.5	-	Pink to red colonies with or without precipitation
<i>Salmonella</i> STM ATCC 14028	10 ²	TSA	pr ≥ 0.5	-	Pink to red colonies with or without precipitation
<i>Salmonella enteritidis</i> ATCC 13076	10 ²	TSA	pr ≥ 0.5	-	Pink to red colonies with or without precipitation
<i>Enterococcus faecalis</i> ATCC 29212	10 ⁴ /10 ⁶	-	-	Total inhibition (0)	-

Storage

The dehydrated casein peptone should be homogeneous, free flowing and clear beige in colour. If there are any changes physically, discard the product.

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