

## Product Information

### 95273 VRB MUG Agar (Violet Red Bile MUG Agar)

Selective medium for the detection and enumeration of coliform bacteria, in particular *E. coli*. Gram-positive accompanying flora are extensively inhibited by crystal violet and bile salts. A colour-change to red indicates lactose-positive colonies like *E. coli* and other coliform organisms. *E. coli* can be demonstrated by fluorescence in the UV.

#### Composition:

Ingredients	Grams/Litre
Meat peptone	7.0
Yeast extract	3.0
Sodium chloride	5.0
Lactose	10.0
Neutral red	0.03
Crystal violet	0.002
Bile salt mixture	1.5
4-Methylumbelliferyl- $\beta$ -D-glucuronide	0.1
Agar	13.0

Final pH 7.4 +/- 0.2 at 25°C

Store prepared media below 8°C, protected from direct light. Store dehydrated powder, in a dry place, in tightly-sealed containers at 2-25°C.

#### Directions :

Dissolve 39.6 g in 1 litre distilled water. Bring to boil to completely dissolve the powder and distribute into plates or tubes. Do not autoclave! Do not overheat! NO STERILIZATION IMPROVES THE RECOVERY of the stressed microorganisms.

Check the plates under UV light at about 360-370 nm. Light blue fluorescence indicates the presence of *E. coli*. If there is no fluorescence after 24 hours of incubation, continue incubation for another 24 hours and check again for fluorescence. For confirmation, the indole test can be made with Kovac's reagent (60983). Cover a colony with 10-20  $\mu$ l Kovac's reagent. A change of color to red after 2-10 seconds shows indole formation.

#### Principle and Interpretation:

Meat peptone provides amino acids and other complex nitrogenous substances, and yeast extract supplies Vitamin B complexes. Lactose is the fermentable carbohydrate. Sodium chloride is for osmotic balance. Crystal violet and bile salts largely inhibit the growth of gram-positive accompanying bacterial flora. Neutral red acts as a pH indicator. Lactose-positive colonies show a colour change to red due to acid production. Lactose-negative Enterobacteriaceae are colourless. Lactose-positive colonies are red and often surrounded by a turbid zone due to the precipitation of bile acids.

$\beta$ -D-glucuronidase, which is produced by *E. coli*, cleaves 4-methylumbelliferyl- $\beta$ -D-glucuronide to 4-methylumbelliferone and glucuronide. The fluorogen 4-methylumbelliferone can be detected under a long wavelength UV lamp. In addition the indole test can be made with Kovac's reagent (60983).

Cultural characteristics after 24 hours at 35°C.

Organisms (ATCC)	Growth	Color	Precipitate	Fluorescence
<i>Escherichia coli</i> (25922)	+++	red	+	+
<i>Enterobacter aerogenes</i> (13048)	+++	red	+	-
<i>Shigella flexneri</i> (29903)	+++	colorless	-	-
<i>Yersinia enterocolitica</i> (9610)	+++	colorless	-	-
<i>Staphylococcus aureus</i> (25923)	-	-	-	-
<i>Micrococcus luteus</i> (9341)	-	-	-	-
<i>Bacillus cereus</i> (11778)	-	-	-	-

References:

1. J.G. Davis, Recommended by the American Public Health Association (APHA), Milk Testing 131 (1951)
2. R.G. Durce, et al., Dairy Ind. Ltd. London, J. Appl. Bact. 20, 1 (1957)
3. F.I.L./I.D.F., Milchwiss. 29, 602 (1974)
4. J. Klose, Süßwaren 14, 778 (1968)
5. G. Suhren, Studies on coliform bacteria, Milchwiss. 45, 139 (1990)

**Precautions and Disclaimer**

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

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