VRB Agar (Violet Red Bile Agar)

Selective agar proposed by DAVIS (1951) for the detection and enumeration of coliform bacteria including E. coli in water, milk, ice-cream, meat and other foodstuffs.

This medium complies with the recommendations of the American Public Health Association (1992), the International Dairy Federation FIL-IDF (Internationaler Milchwirtschaftsverband 1985), the Institute for Food Technology and Packaging (Institut für Lebenmitteltechnologie und Verpackung) (1974) and the EUROGLACE (KLOSE 1968 a, b).

Mode of Action

Crystal violet and bile salts inhibit growth primarily of the Gram-positive accompanying bacterial flora. Degradation of lactose to acid is indicated by the pH indicator neutral red, which changes its colour to red, and by precipitation of bile acids.

Typical Composition (g/litre)

Peptone from meat 7.0; yeast extract 3.0; sodium chloride 5.0; lactose 10.0; neutral red 0.03; bile salt mixture 1.5; crystal voilet 0.002; agar-agar 13.0.

Preparation

Suspend 39.5 g in 1 litre of demin. water and heat to boiling with frequent stirring until completely dissolved. Afterwards do not boil more than 2 minutes.

■ **Do not autoclave. Do not overheat!**

pH: 7.4 ± 0.2 at 25 °C.

The prepared medium is clear and dark-red.

Experimental Procedure and Evaluation

Culture medium is usually inoculated by the pour-plate procedure.

Incubation: 24 ± 2hours at 30 ± 1 °C (IDF-FIL) respectively according to recommended procedures.

Appearance of Colonies	Microorganisms
Red, surrounded by reddish precipitation zones, diameter 1-2 mm	Lactose-positive Enterobacteriaceae: coliform bacteria, E. coli
Pink pin-point colonies	Enterococci, possibly Klebsiella
Colourless	Lactose-negative Enterobacteriaceae

Literature

American Public Health Association: Compendium of Methods for the microbiological Examination of Foods. - 3rd ed. (1992).

American Public Health Association: Standard Methods for the Examination of Dairy Products. - 15th ed. (1995).

DAVIS, J.G.: Milk Testing - **Dairy Industries Ltd., London**, 1951.

Institut für Lebensmitteltechnologie und Verpackung der TU München: Merkblatt 19: Bestimmung der Gesamtkeimzahl, der Anzahl an Schimmelpilzen und Hefen und der Anzahl an coliformen Keimen in Flaschen und vergleichbaren enghalsigen Behältern. - **Milchwiss., 29**; 602-606 (1974).

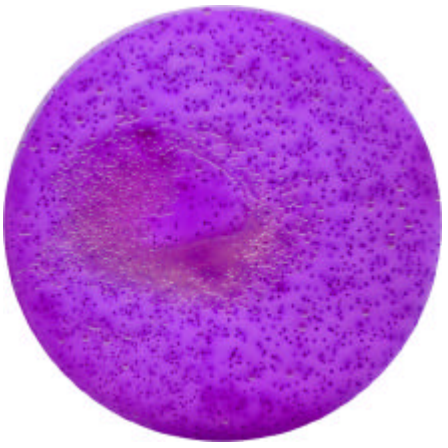
Internationaler Milchwirtschaftsverband: Zählung coliformer Bakterien in Milch und Milchprodukten. - **Internationaler Standard FIL-IDF 73 A: 1985**.

KLOSE, J.: Harmonisierung des Speiseeisrechtes in der EWG. - **Süßwaren, 14**; 778-780 (1968a).

KLOSE, J.: Entwurf einer Richtlinie zur Angleichung der Rechtsvorschriften für Speiseeis in den Mitgliedsstaaten der EWG. Neufassung des AnhangsIII zum Entwurf vom 19.12.1966. - **Süßwaren, 14**; 780-782 (1968b).

Ordering Information

Product	Merck Cat. No.	Pack size
VRB Agar (Violet Red Bile Agar)	1.01406.0500	500 g
VRB Agar (Violet Red Bile Agar)	1.01406.5000	5 kg



Escherichia coli ATCC 11775

VRB Agar (Violet Red Bile Agar)

Quality control (spiral plating method)

Test strains	Inoculum (cfu/ml)	Recovery rate %	Colony colour	Precipitate
Escherichia coli ATCC 11775	10^3-10^5	≥ 30	red	+
Salmonella gallinarum NCTC 9240	10^3-10^5	≥ 30	colourless-reddish	-
Shigella flexneri ATCC 29903	10^3-10^5	≥ 30	colourless	-
Yersinia enterocolitica ATCC 9610	10^3-10^5	≥ 30	colourless	-
Staphylococcus aureus ATCC 6538	> 10^5	≤ 0.01		
Micrococcus luteus ATCC 9341	> 10^5	≤ 0.01		
Lactococcus lactis spp. lactis ATCC 19435	> 10^5	≤ 0.01		
Bacillus cereus ATCC 11778	> 10^5	≤ 0.01		
Lactobacillus plantarum ATCC 14917	> 10^5	≤ 0.01		