



## 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.

### General Information

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 Lebensmitteltechnologie 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 violet 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:  $7.4 \pm 0.2$  at  $25^{\circ}\text{C}$ .

The prepared medium is clear and dark-red.

### Experimental Procedure and Evaluation

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

Incubation:  $24 \pm 2$  hours at  $30 \pm 1^{\circ}\text{C}$  (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, <i>E. coli</i>
Pink pin-point colonies	Enterococci, possibly <i>Klebsiella</i>
Colourless	Lactose-negative Enterobacteriaceae

### Literature

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



American Public Health Association: Standard Methods for the Examination of Dairy Products. - 15<sup>th</sup> 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 Anhangs III zum Entwurf vom 19.12.1966. - **Süßwaren, 14**; 780-782 (1968b).

## Ordering Information

Product	Ordering 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

## Quality control (spiral plating method)

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



Escherichia coli ATCC 11775