



## VRE Broth

Enrichment medium for detection of vancomycin-resistant enterococci.

### INTENDED PURPOSE

VRE Broth is a selective enrichment medium used in procedures for screening, isolation and cultivation of vancomycin-resistant enterococci.

### DESCRIPTION

Enterococci have developed a variety of mechanisms of resistance to several antibiotics, including glycopeptides like vancomycin and teicoplanin. Resistance to glycopeptides is mediated by the Van operon, which may be carried chromosomally or extrachromosomally on a plasmid, with vanA, vanB and VanC the most commonly identified genes. VanA is plasmid borne, confers high-level resistance (MIC, >256 µg/ml) to vancomycin, and is most associated with *E. faecium* and *E. faecalis*, while chromosomally encoded VanC confers low-level resistance (MIC, 8 to 32 µg/ml) to vancomycin and is almost exclusively found in *E. gallinarum*, *E. casseliflavus*, and *E. flavescens*.

VRE Broth can be used as an enrichment broth before plating to contrast the spread of glycopeptide resistance. The combination of direct inoculation on agar plates and enrichment broth, allows a fast detection of vancomycin-resistant enterococci and at the same time ensures the capability of detecting VRE carriers with low concentrations.

### TYPICAL FORMULA\* (Per Liter of Purified Water)

Tryptone	17.0 g
Meat Extract	3.0 g
Yeast Extract	5.0 g
Oxgall	10.0 g
Sodium Chloride	5.0 g
Sodium Citrate	1.0 g
Aesculin	1.0 g
Ferric Ammonium Citrate	0.5 g
Sodium Azide	0.25 g
Vancomycin	1.0 mg
Final pH 7.1 ± 0.2 at 25°C	

\*Adjusted and/or supplemented as required to meet performance specifications.

### METHOD PRINCIPLE

Tryptone and meat extract are a nitrogen source readily available for bacterial growth. Tryptone is a product obtained by a controlled enzymatic hydrolysis of casein and contains a mix of peptides and free amino acids. Yeast extract is a source of aminoacids and vitamins of group B. Sodium chloride maintains the osmotic balance of the medium. Oxgall is ox bile purified and dehydrated. It contains a mix of biliary salts. Aesculin is a glucoside which is combined with ferric citrate in the medium to form a dark brown or black complex. Sodium azide inhibits Gram negative bacteria. The combination of aesculin, bile and azide permit for the selection and differentiation of enterococci by aesculin hydrolysis. Vancomycin is effective against gram-positive bacteria, other than vancomycin-resistant enterococci.

### MATERIALS REQUIRED BUT NOT PROVIDED

Standard microbiological supplies and equipment such as: inoculating loops, sterile cotton swabs, physiological solution, incubator, quality control organisms.

### TEST PROCEDURE

Inoculate the medium with the sample.

Incubate at 35 ± 2°C for 24-48 hours.

### INTERPRETING RESULTS

Observe for growth and a color change in the medium.

Turbidity and a blackening of the broth (compared to an uninoculated control) indicate the presence of *Enterococcus* spp.

Subculture to suitable solid media for complete identification and characterization of the isolated colonies.

#### STORAGE

Store at 2-8°C away from light. Do not use the product beyond its expiry date on the label or if product shows any evidence of contamination or any sign of deterioration.

#### SHELF LIFE

6 months.

#### QUALITY CONTROL

**Appearance of medium:** Clear, yellow/yellow-green to beige.

#### Expected Cultural Response:

Control strains	Inoculum	Incubation	Specification
<i>Enterococcus faecalis</i> WDCM 00152 (ATCC® 51299; NCTC 13379)	≤ 100 CFU	24-48 h/ 35 ± 2°C	Good growth, turbidity Positive reaction: Blackening of broth
<i>Enterococcus faecalis</i> WDCM 00087 (ATCC® 29212; NCTC 12697)	> 10 <sup>3</sup> CFU		Inhibition
<i>Escherichia coli</i> WDCM 00013 (ATCC® 25922; NCTC 12241)			Inhibition

Please refer to the actual batch related Certificate of Analysis (CoA).

#### PERFORMANCE CHARACTERISTICS

Performance testing of VRE Broth was carried out using the QC strains listed above. The results obtained met the established criteria.

#### LIMITATIONS

Invalid results can be caused by poor sample quality, improper sample collection, improper transportation, improper laboratory processing, or a limitation of the testing technology. The operator should understand the principles of the procedures, including its performance limitations, in advance of operation to avoid potential mistakes.

Growth depends on the requirements of each individual microorganism. It is therefore possible that certain strains which have specific requirements (substrate, temperature, incubation conditions, etc.) may not develop.

#### WARNING AND PRECAUTIONS

**For professional use only.** Operators must be trained and have certain experience. Please read the instructions carefully before using this product. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this document.

Consult the Safety Data Sheet (SDS) for information regarding hazards and safe handling practices.

#### DISPOSAL OF WASTE

Disposal of waste must be carried out according to national and local regulations in force.

#### BIBLIOGRAPHY

See the references at the end of this document.

#### TABLE OF SYMBOLS

See the table of symbols at the end of this document.

**ORDER INFORMATION**

Product	Format	Packaging	Ref.
VRE Broth	Tube	20 x 10 ml	24087

**Revision History**

Revision	Release Date	Change Summary
0	2025-01-08	Document creation

This IFU document and the SDS are available from the online Support Center:

[liofilchem.com/ifu-sds](http://liofilchem.com/ifu-sds)













**Fig 1.** *E. faecalis* WDCM 00152 after 48h (a) and 24h (b) incubation: positive test;  
*E. faecalis* WDCM 00087 (c) after 48h incubation: negative test.

## References

1. Faron ML, Ledebouer NA, Buchan BW. Resistance Mechanisms, Epidemiology, and Approaches to Screening for Vancomycin-Resistant Enterococcus in the Health Care Setting. *J Clin Microbiol.* 2016 Oct.
1. Bridson, E.Y. *The Oxoid Manual*, 9<sup>th</sup> Edition. 2006. Oxoid Limited, Basingstoke
2. *Guidelines for Assuring Quality of Medical Microbiological Culture Media*. 1996. Quality Control of Media Special Interest Group, Australian Society for Microbiology.
3. Miller WR., Murray BE., Rice LB., Arias CA. - Resistance in Vancomycin-Resistant Enterococci. - *Infectious disease clinics of North America* - 2020;34(4):751-771.
4. Ahmed MO., Baptiste KE. - Vancomycin-Resistant Enterococci: A Review of Antimicrobial Resistance Mechanisms and Perspectives of Human and Animal Health. - *Microbial drug resistance (Larchmont, NY)* - 2018;24(5):590-606.
5. Yesim Cetinkaya, Pamela Kalk et al. – Vancomycin Resistant Enterococci. – *Clinical Microbiology Reviews*, October 2000, p. 686-707, Vol. 13, No. 4.
6. Baldwin Towe, Josee Shymanski et al. – Clinical and epidemiologic Significance of Enterococci Intrinsically resistant to Vancomycin. – *Journal of clinical Microbiology*, Dec. 1997, p. 3166-3170

## Table of Symbols

	Batch code
	Catalogue number
	Manufacturer
	Use by
	Fragile, handle with care
	Temperature limitation
	Contains sufficient for <n> tests
	Consult instructions for use
	Do not reuse
	Keep away from sunlight



**Liofilchem® s.r.l.**

Via Scozia, 64026 Roseto degli Abruzzi (TE) Italy

Tel. +39 0858930745

Fax +39 0858930330

[www.liofilchem.com](http://www.liofilchem.com)

[liofilchem@liofilchem.com](mailto:liofilchem@liofilchem.com)