MOF Medium (Marine Oxidation Fermentation Medium)

M379

Intended Use:

Recommended for differentiation of marine bacteria from clinical and non-clinical samples on the basis of fermentative and oxidative metabolism of carbohydrates.

Composition**

Ingredients	g / L
Tryptone	1.000
Yeast extract	0.100
Tris (hydroxymethyl) aminomethane	0.500
Boric acid	0.011
Ammonium sulphate	0.500
Disodium hydrogen phosphate	0.004
Ammonium nitrate	0.0008
Sodium chloride	9.700
Magnesium chloride	4.400
Sodium sulphate	1.600
Calcium chloride anhydrous	0.900
Potassium chloride	0.275
Sodium bicarbonate	0.080
Potassium bromide	0.040
Strontium chloride	0.017
Sodium silicate	0.002
Sodium fluoride	0.0012
Phenol red	0.010
Agar	3.000
Final pH (at 25°C)	8.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 22.14 grams in 1000 ml purified/distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C and aseptically add sterile dextrose solution (or other carbohydrate of choice) to a final concentration of 1%. Mix well and dispense into sterile test tubes.

Principle And Interpretation

Some organisms metabolize glucose oxidatively and others ferment glucose fermentatively when the hydrogen acceptor is not oxygen. Such organisms can be differentiated based on the Oxidation Fermentation Test. This test is also known as the "oxferm" test. MOF medium is a modified version of the formula originally developed by Leifson (1); used for differentiating oxidative and fermentative carbohydrate metabolizing marine bacteria. The marine environment of the oceans illustrates a different view of microbial populations in water. In the high salt concentration of ocean water, halophillic or salt-loving microorganisms survive. In addition, the organisms must be psychrophilic since it is very cold below the surface. Those at bottom must also withstand great pressure and are therefore barophilic or pressure loving (2). Tryptone and yeast extract in the medium supply the necessary nitrogenous nutrients including amino acids, vitamins etc. The mineral content of this medium is equivalent to one-half that of seawater (1). It contains a variety of salts found in seawater, which not only makes the medium suitable for marine bacteria but also buffers the medium. Phenol red is the pH indicator in the medium.

For differentiating the fermentation and oxidation of carbohydrates, inoculate two tubes of medium containing carbohydrate with each culture to be tested. Cover one medium tube of each culture with sterile melted petrolatum to form a layer of about one inch in height.

Carbohydrate-fermenting marine bacteria change the colour of the medium in both the tubes (covered and uncovered) from red to yellow whereas carbohydrate-oxidizing marine bacteria change the colour of the medium from red to yellow only in the uncovered (open) tube. Marine bacteria that are neither oxidative nor fermentation do not exhibit any change in the covered medium and exhibit an alkaline (red to deep pink) reaction in the uncovered medium. Gas production is detected as splitting or displacement of agar or formation of small bubbles. Motile organisms form a diffuse zone of growth originating from the line of inoculation. Non-motile organisms grow along the line of inoculation.

Type of specimen

Isolated Microorganism from clinical sample and water sample.

Specimen Collection and Handling:

For clinical samples follow appropriate techniques for handling specimens as per established guidelines (3,4).
For water samples, follow appropriate techniques for sample collection, processing as per guidelines and local standards (5).
After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions :

In Vitro diagnostic Use only. For professional use only. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

N.A.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance

Light yellow to pinkish purple homogeneous free flowing powder

Gelling

Semisolid, comparable with 0.3% Agar gel.

Colour and Clarity of prepared medium

Pink coloured clear to slightly opalescent gel forms in tubes as butts

Reaction

Reaction of 2.2% w/v aqueous solution at 25°C. pH : 8.0±0.2

pH

7.80-8.20

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Growth	Motility	Acid	Gas
Vibrio cholerae ATCC 15748	luxuriant	positive, growth away from stabline causing turbidity	positive reaction, yellow colour	positive reaction
Vibrio parahaemolyticus ATCC 17802 (00037*)	luxuriant	negative, growth along the stabline, surrounding medium remains clear	negative reaction	negative reaction

Key : *Corresponding WDCM numbers.

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 15-30°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (3,4).

Reference

1. Leifson E., 1963, J. Bacteriol., 85:1183.
2. Alcamo E. I., 2001, Fundamentals of Microbiology, 6th Ed., Jones and Bartlett Publishers.
3. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
4. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
5. Lipps WC, Braun-Howland EB, Baxter TE,eds. Standard methods for the Examination of Water and Wastewater, 24th ed. Washington DC:APHA Press; 2023.

Revision : 04/2024

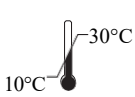
HiMedia Laboratories Pvt. Limited,
Plot No.C-40, Road No.21Y,
MIDC, Wagle Industrial Area,
Thane (W) -400604, MS, India

EC REP

CEpartner4U, Esdoornlaan 13,
3951DB Maarn, NL
www.cepartner4u.eu

IVD ***In vitro*** **diagnostic medical device**

CE Marking



Storage temperature

Do not use if package is damaged