MARINE AGAR 2216 (ZOBELL MARINE AGAR) TM 207

for isolation and enumeration of heterotrophic marine bacteria

Composition

Ingredients	Gms/Ltr.
Sodium chloride	19.45
Magnesium chloride	8.80
Peptic digest of animal tissue	5.00
Sodium sulphate	3.24
Calcium chloride	1.80
Yeast extract	1.00
Potassium chloride	0.55
Sodium bicarbonate	0.16
Ferric citrate	0.10
Potassium bromide	0.08
Strontium chloride	0.034
Boric acid	0.022
Disodium phosphate	0.008
Sodium silicate	0.004
Sodium fluoride	0.0024
Ammonium nitrate	0.0016
Agar	15.00

* Dehydrated powder, store in a dry place, in tightly-sealed containers at 24°C and protect from direct Sunlight.

Instructions for Use

Dissolve 55.25 gms in 1000 ml of distilled water. Gently heat to boiling with gentle swirling and dissolve the medium completely. Sterilize by autoclaving at 15 psi (121°C) for 15 minutes. Cool to 45 - 50°C, mix well and dispense as desired.

Appearance: Yellow coloured opalescent
PH (at 25°C): 7.6 ± 0.2

Principle

MARINE AGAR is used for isolation and enumeration of heterotrophic marine bacteria. Marine agar is a medium containing all the nutrients necessary to cultivate the majority of marine bacteria.

Since the marine environment is characterized by unique environmental conditions, its microflora is also unique. Marine microorganisms have the ability to survive at very low temperatures and at high salinity

levels. Microorganisms in an aquatic environment may occur at all depths ranging from the surface region to the very bottom of the ocean trenches. Marine microorganisms are vital to ecological cycles because they form the foundations of many food chains. Marine Agar is formulated by Zobell, has a composition that mimics seawater and thus helps the marine bacteria to grow abundantly.

Jones reported that these media have minerals as in sea water and peptic digest of animal tissue and yeast extract as the sources of nutrients nitrogen, vitamins, minerals and amino acids essential for growth. To stimulate seawater, high amount of salt content is used and other minerals are used to mimic the mineral composition of seawater.

Spread plate and pour plate techniques are generally used for enumeration of marine bacteria. In the spread plate technique, the agar is poured while hot and allowed to cool before inoculation. However, precaution must be taken in the pour plate method to cool the medium to 42 - 45°C before pouring, as the majority of marine organisms are heat sensitive.

Interpretation

Cultural characteristics observed after inoculating the organisms and subsequent incubation at 20 - 25^{0}C for 40 - 72 hours**.**

Microorganisms	ATCC	Inoculum (CFU)	Growth	Recovery
Vibrio fischeri	7744	10^3	Good-luxuriant	>=50%
Vibrio harveyi	14126	10^3	Good-luxuriant	>=50%

References

1. J. Marine Research N:42. 1941. Limnology and Oceanography 5:78, 1960.
2. Pelczar M.J..Jr., Reid R.D., Chan E.C.S., 1977, Microbiology, 4th Edi, Tata McGraw-Hill Publishing Company Ltd, NewDelhi.
3. Alcamo E.I.,2001, Fundamentals of Microbiology, 6th Ed., Jones AND Barlett Publishers.
4. Lyman J. and Fleming R. H., 1940, J. Mar. Res. 3:134.
5. ZoBell C. E., 1941, J. Mar. Res., 4:42.
6. Weiner R. M., Segall A. M. and Colwell R. R., 1985, Appl. Environ. Microbiol., 49:83.
7. Zobell C. E., 1940, J. Marine Research , 3:134.
8. Sizemore R. K. and Stevenson L. H., 1970, Appl. Microbiol., 20:991.