Technical Information

Photobacterium Broth

Product Code: DM 1783

Application: - Photobacterium Broth is used for cultivation and demonstration of luminescence of photobacteria.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	5.000
Yeast extract	2.500
Sodium chloride	30.000
Ammonium chloride	0.300
Magnesium sulphate	0.300
Ferric chloride	0.010
Calcium carbonate	1.000
Monopotassium dihydrogen phosphate	3.000
Sodium glycerophosphate	23.500
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Most luminescent bacteria are marine; they are usually associated with fish and provide the light sources for fish luminescent organs and marking. The light-generating enzyme called luciferase is responsible for luminescence [1]. Luminescent bacteria divert upto 10% of their respiratory enzyme into a specific metabolite pathway that converts chemical energy into visible light [2].

Photobacterium Broth is prepared as per the formulations described by Daudoroff [3] and Giese [4]. The medium is used for the cultivation and demonstration of luminescence of photobacteria [5].

Casein enzymic hydrolysate and yeast extract provide nitrogenous compounds, carbon, sulphur, trace nutrients, vitamin B complex, which is essential for the growth of photobacteria. Monopotassium dihydrogen phosphate helps in maintaining the buffering capacity of the medium. Chlorides, sulphate, carbonate and glycerophosphate help for luminescence. The intensity of luminescence is related to the aeration of culture. The greater the oxygen supply, the greater will be the luminescence.

Methodology

Suspend 65.61 grams of powder media in 1000 ml distilled water. Shake well & heat just to boiling. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Before pouring mix well to evenly distribute slight precipitate formed.

Note: Due to presence of calcium carbonate, the prepared medium forms opalescent solution with white precipitate.

Quality Control

Physical Appearance

Off-white to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Light amber coloured clear to slightly opalescent solution with heavy white precipitate

Reaction

Reaction of 6.56% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH Range 6.80-7.20

Cultural Response/Characteristics

DM 1783: Cultural characteristics observed after an incubation at 25-30°C for 18-48 hours.

Organism	Growth	Luminescens
Luci bacterium harveyi positive *ATCC 14126*	good-luxuriant	positive
Vibrio fischeri ATCC 7744	good-luxuriant	positive

Storage and Shelf Life

Dried media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

Prepared Media: 2-8^0 in sealable plastic bags for 2-5 days.

Further Reading

1. Norton C.F., 1986, Microbiology, 2nd Ed., Addison-Wesley Publishing Company.
2. Eaton A. D., Clesceri L.S. and Greenberg A. E., (Eds.), 1998, Standard Methods for the Examination of water and Wastewater, 20th Ed., American Public Health Association, Washington, D.C.
3. Daudoroff M., 1942, J. Bacteriol., 44: 451.
4. Giese A.C., 1943, J. Bacteriol., 46: 323.
5. Atlas R.M., 2004, Handbook of Microbiological Media, Lawrence C. Parks (Ed.), 3rd Edition, CRC Press.

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