Technical Information

Gluconate Test MiVeg Medium

Product Code : VM1483

Application:- Gluconate Test MiVeg Medium is used to check the ability of bacteria to oxidise gluconates to alpha keto-gluconate.

Composition

Ingredients	Gms / Litre
MiVeg peptone	1.50
Yeast extract	1.00
Dipotassium hydrogen phosphate	1.00
Potassium gluconate	40.00
Final pH (at 25°C)	7.0 ± 0.2

** Formula adjusted, standardized to suit performance parameters.

Principle & Interpretation

Gluconate Test MiVeg Medium is prepared by using MiVeg peptone in place of animal peptone thus making it free from TSE/BSE risk. This medium is the modification of Gluonate Test Medium. MiVeg peptone and yeast extract in the medium supplies nitrogen, vitamins and other essential growth nutrients to the test organisms. Dipotassium hydrogen phosphate act as a buffering system of the medium. Potassium salt of gluconate in media serves as a readily available sole carbon source for the organism to be tested for gluconate metabolism.
This medium is basically used to check the ability of bacteria to oxidize gluconates to alpha keto-gluconate which subsequently accumulates in the medium(1). *Pseudomonas aeruginosa* is known to accumulate atleast 50% of keto-gluconate after 48 hrs of incubation (2). The basis of the Gluconate test is the change from gluconate, a non-reducing compound to alpha keto-gluconate, is a reducing compound (1,3). When tested with Benedicts reagent the reducing compound alpha-ketogluconate reduces copper sulphate (blue colour) to an insoluble cuprous oxide which is precipitated out. A yellow to orange red precipitate is formed. The colour depends on the amount of reducing substance accumulated. Greater the amount of alpha keto-gluconate in the medium more orange to orange – red colour develops. However, colours ranging from slight green to deep orange indicates oxidation. After addition of benedicts solution, if the medium remains blue or bluish green it is considered as negative reaction which means absence of reducing substance and potassium gluconate present in the media is not metabolized.

Methodology

Suspend 43.5 grams of powder media in 1000 ml distilled water. Mix thoroughly. Heat if necessary to dissolve the medium completely. Dispense in 10 ml quantities in screw capped bottles and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

For Gluconate test :

After cultivating test organism for 48 hours (to be studied for detection of gluconate oxidizing ability) transfer 1 ml aliquots in clean sterile test tube and add 1 ml of Benedicts qualitative reagent (808820). Mix well and place in boiling water bath (100°C) for 10 minutes.

Quality Control

Physical Appearance

Cream to yellow coloured, may have slightly greenish tinge, homogeneous, free flowing powder.

Colour and Clarity of prepared medium

Light straw coloured, clear solution without any precipitate.

Reaction

Reaction of 4.35% w/v aqueous solution is pH 7.0 ± 0.2 at 25°C.

pH Range

6.8-7.2

Cultural Response/Characteristics

Cultural characteristics observed after an incubation at 35-37°C for 18 – 48 hours.

Organisms (ATCC)	Inoculum (CFU)	Growth	Gluconate Test
Citrobacter freundii (8090)	10^2-10^3	poor-good	–
Escherichia coli (25922)	10^2-10^3	poor-good	–
Klebsiella pneumoniae (23357)	10^2-10^3	luxuriant	+
Pseudomonas aeruginosa (10145)	10^2-10^3	luxuriant	+

Key : + = positive reaction, slight green to deep orange precipitate
-- = negative reaction, no change in colour or blue

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 day.

Further Reading

1. Collee, J.G.; Marmin, B.P., Fraser, A.G and Simmons A (eds) Mackie and McCartney, Practical Medical Microbiology, (1996) 14th ed., Churchill Livingstone, New York.
2. Haynes, W.C. 1951, J. Gen. Microbiology; 5(5):939.
3. MacFaddin, J.F. (2000) (ed.) Biochemical Tests for identification of Medical Bacteria, 3rd edition, Lippincott Willimas and Wilkins, New York.

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