Technical Information

Antibiotic MiVeg Assay Medium No.1 (Seed MiVeg Agar)

Product Code : VM1003

Application:- Antibiotic MiVeg Assay Medium No.1 (Seed MiVeg Agar) is used for the microbiological assay of Beta-lactam and other antibiotics.

Composition

Ingredients	Gms / Litre
MiVeg peptone	6.000
MiVeg hydrolysate	4.000
Yeast extract	3.000
MiVeg extract	1.500
Dextrose	1.000
Agar	15.000
Final pH (at 25°C)	6.6 ± 0.2

** Formula adjusted, standardized to suit performance parameters.

Principle & Interpretation

Antibiotic MiVeg Assay Medium No.1 (Seed MiVeg Agar) is prepared by vegetable peptones, in place of animal based peptones making the medium free from BSE-TSE risks. It can serve for the same purpose of Antibiotic Assay Medium No.1 (Seed Agar). The potency of an antibiotic can be determined by physical, chemical and biological assays. Biological assays offer the most convenient method (1), since a reduction in the antimicrobial activity of a specific antibiotic is not usually displayed in chemical methods (2). Biological testing may be performed by either dilution (turbidimetric) or diffusion methods. The choice of methodology is often based on many factors, including relative ease of performance, flexibility and use of automated or semi-automated devices for both identification and susceptibility testing (3). Grove and Randall have elucidated those antibiotic assays and media in their comprehensive treatise on antibiotic assays (4). This medium is used in the microbiological assay of ß-lactam and other antibiotics and as seed agar with *Micrococcus luteus* (ATCC 9341) for plate assay of Bacitracin, with *Staphylococcus aureus* (ATCC 29739) for cylinder plate assay of Cephalexin , Cephalothin, Cephapirin, Cloxacillin, Dicloxacillin, Methicillin, Nafcillin , Oxacillin, Penicillin-G and *Staphylococcus epidermidis* (ATCC 12228) for plate assay of Novobiocin. This media can be used according to the specifications detailed in various pharmacopoeias (2,5,6) and by the FDA (7).

It is preferable to use freshly prepared media for antibiotic assays. Test organisms are spread evenly over the surface of solidified base agar. After incubation, the concentration of the antibiotic being assayed is determined by measuring the zone of inhibition obtained, with that of reference standard antibiotic. All conditions in the microbiological assay must be carefully controlled. The use of standard culture media in the test is one of the important steps for good results.

Nutrients and growth factors are supplied by the MiVeg peptone, MiVeg hydrolysate, yeast extract and MiVeg extract. Dextrose is supplemented as a carbon and energy source.

Methodology

Suspend 30.5 grams of powder media in 1000 ml distilled water. Mix thoroughly. Heat if necessary to dissolve the medium completely. Distribute 10ml amounts into tubes containing inverted Durham's tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 10 minutes.

Suggestion: *This medium is recommended for the microbiological assay of Bacitracin,Cephalexin, Cephaloglycin, Cephradine , Cephaloridine, Cephalothin, Cephaperin, Cephazolin, Cloxacillin Cycloserine, Dicloxacillin, Methicllin, Nafcillin, Novobiocin, Oxacillin, Penicillin-G and*

Quality Control

Physical Appearance

Cream to yellow homogeneous, free flowing powder.

Gelling

Firm,comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Yellow coloured clear to slightly opalescent gel forms in Petriplates.

Reaction

Reaction of 3.05% w/v aqueous solution at 25°C pH: 6.6±0.2

pH range

6.40-6.80

CulturalResponse/Characteristics

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

Organisms (ATCC)	Inoculum (CFU)	Growth	Recovery	Inoculum medium	Assay medium Inoculum & Assay medium
Bacillus subtilis (6633)	50-100	luxuriant	>70%	Framycetin, Streptomycin Josamycin,Josamycin propionate, Kanamycin B,Spiramycin, Streptomycin	
Bordetella bronchiseptica ATCC 4617	50-100	luxuriant	>50%	Colistimethate sodium,Colistin,Polymyxin B	
Escherichia coli (25922)	50-100	luxuriant	>70%	Chloramphenicol	
Bacillus cereus var mycoides ATCC 11778	50-100	luxuriant	>70%	Oxytetracycline, Tetracycline	
Bacillus pumilis ATCC 14884	50-100	luxuriant	>70%	Chlortetracycline,Framycetin, Kanamycin sulphate	
Klebsiella pneumoniae ATCC 10031	50-100	luxuriant	>70%	Capreomycin,Dihydrostreptomycin, Neomycin,Streptomycin, Troleandomycin	
Micrococcus luteus ATCC 9341	50-100	luxuriant	>70%	Erythromycin, Erythromycin Rifamycin	
Micrococcus luteus ATCC 10240	50-100	luxuriant	>70%		Bacitracin
Pseudomonas aeruginosa ATCC 25619	50-100	luxuriant	>70%	Carbenicillin	
Staphylococcus aureus ATCC 29737	50-100	luxuriant	>70%	Amikacin,Cephalothin, Cephapirin, Cloxacillin, Chlortetracycline, Nafcillin, Penicillin-G, Cycloserine,Doxycycline, Demeclocycline, Methacycline,Oxytetracycline,Rolitetracycline, Tetracycline,Tobramycoin,Tylosin	

Staphylococcus epidermidis ATCC 12228	50-100	luxuriant	>70%	Gentamycin, Netilmycin, Neomycin,Novobiocin, Sisomycin,Paromomycin

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. 1. Pelczar M. J. Jr., Reid R. D., Chan E. C. S., 1977, Microbiology, 4th Edi, Tata McGraw-Hill Publishing Company Ltd, New Delhi
2. The United States Pharmacopoeia 2011,USP 34/NF 29, The United States Pharmacopoeial Convention,Rockville, MD.
3. Murray P. R., Baron J. H., Pfaller M. A., Jorgensen J. H. and Yolken R. H., (Eds.), 2003, Manual of Clinical Microbiology, 8th Ed., American Society for Microbiology, Washington, D.C.
4. Grove and Randall, 1955, Assay Methods of Antibiotics Medical Encyclopedia, Inc.New York.
5. European Pharmacopoeia, 2011, European Department, for the Quality of Medicines
6. British Pharmacopoeia, 2011,The Stationery office British Pharmacopoeia
7. Tests and Methods of Assay of Antibiotics and Antibiotic containing Drugs, FDA, CFR, 1983 Title 21, Part 436, Subpart D, Washington, D.C.: U.S. Government Printing Office, paragraphs 436, 100-436, 106, p. 242- 259 (April 1).

Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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