



Technical Data

Antibiotic Assay Medium A with pH 7.9

M004B

Intended use

Antibiotic Assay Medium A with pH 7.9 is used for microbiological assay of antibiotics.

Composition**

Ingredients	Gms / Litre
Peptone	6.000
Tryptone\$	4.000
Yeast extract	3.000
HM Peptone B#	1.500
Glucose monohydrate	1.000
Agar	15.000
pH after sterilization (at 25°C)	7.9±0.1

**Formula adjusted, standardized to suit performance parameters

#\$- Equivalent to Pancreatic digest of caseinE

#- Equivalent to Beef extract

Directions

Suspend 30.45 grams (the equivalent weight of dehydrated medium per litre) 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. Mix well and pour into sterile Petri plates.

Advice: Recommended for the microbiological assay of Gentamicin sulphate, Kanamycin monosulphate, Kanamycin acid sulphate, Neomycin sulphate, Netilmycin sulphate, Spiramycin, Streptomycin sulphate, Tylosin, Tylosin tartarate, Vancomycin hydrochloride .

Principle And Interpretation

Antibiotic Assay media are used in the performance of antibiotic assays. Grove and Randall have elucidated those antibiotic assays and media in their comprehensive treatise on antibiotic assays (2). Schmidt and Moyer have reported the use of antibiotic assay medium for the liquid formulation used in the performance of antibiotic assay (5). This medium is recommended by BP (1) and FDA (6).

Nutrients and growth factors are supplied by the ingredients like peptone, pancreatic digest of casein, yeast extract and beef extract. Dextrose provides the carbon and energy source. Agar provides excellent medium for antibiotic diffusion and gives well-defined zones of inhibition. Higher pH provides the optimal conditions for activity of antibiotic and also supports the growth of the test organisms.

Freshly prepared plates should be used for antibiotic assays. Test organisms are inoculated in sterile seed agar pre-cooled to 40-45°C and spread evenly over the surface of solidified base agar. All conditions in the microbiological assay must be controlled carefully.

Type of specimen

Pharmaceutical preparations

Specimen Collection and Handling

For pharmaceutical samples follow appropriate techniques for handling specimens as per established guidelines (1). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions :

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 specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

1. Freshly prepared plates must be used or it may result in erroneous results.

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

Cream to yellow coloured homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Light yellow coloured clear to slightly opalescent gel forms in Petri plates.

pH

7.80-8.00

Growth Promotion Test

As per British Pharmacopoeia

Cultural Response

M004B: Cultural characteristics observed after an incubation at specified temperature for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Antibiotics assayed & incubation temp.
Cultural Response				
<i>Micrococcus luteus</i> ATCC 9341	50-100	good-luxuriant	$\geq 70\%$	Tylosin, Tylosin tartarate (adjust the pH to 8.0 ± 0.1) / 32-35°C
<i>Staphylococcus aureus</i> ATCC 6538p (00195*)	50-100	good-luxuriant	$\geq 70\%$	Kanamycin mono-sulphate / 30-37°C Kanamycin acid sulphate/ 35-39°C Netilmycin sulphate/ 32-35°C
<i>Staphylococcus epidermidis</i> ATCC 12228 (00036*)	50-100	luxuriant	$\geq 70\%$	Gentamicin sulphate/ 35-39°C
<i>Bacillus pumilis</i> NCTC 8241	50-100	good-luxuriant	$\geq 70\%$	Gentamicin sulphate/ 35-39°C Neomycin sulphate/ 30-37°C
<i>Bacillus subtilis</i> subsp. <i>spizizenii</i> ATCC 6633 (00003*)	50-100	good-luxuriant	$\geq 70\%$	Kanamycin mono sulphate / 30-37°C, Kanamycin acid sulphate /35-39°C, Neomycin sulphate/ 30-37°C, Spiramycin / 30-32°C, Streptomycin sulphate /30-37°C Vancomycin hydrochloride (adjust the pH to 8.0 ± 0.1) / 37-39°C
<i>Bacillus subtilis</i> NCTC 8236	50-100	luxuriant	$\geq 70\%$	Streptomycin sulphate/ 30-37°C

*- Corresponding WDCM numbers

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°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. Use before expiry date on the label.

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 sample must be decontaminated and disposed of in accordance with current laboratory techniques (3,4).

Reference

1. British Pharmacopoeia, 2017 The Stationery office British Pharmacopoeia
2. Grove and Randall, 1955, Assay Methods of Antibiotics Medical Encyclopaedia, Inc, New York
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. Schmidt and Moyer, 1944; J. Bact, 47:19
6. 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 pg 242-259 (April 1).

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