PRODUCT SPECIFICATION SHEET

Nutrient Agar (DM180)

Intended Use
Nutrient Agar (DM180) is used for the cultivation of a wide variety of microorganisms, can be enriched with blood or other biological fluids.

Product Summary and Explanation
In the early 1900's, the American Public Health Association (APHA) suggested the formula of Nutrient Agar as a standard culture medium used in water testing.[1] Nutrient media are basic culture media used for maintaining microorganisms, cultivating fastidious organisms by enriching with serum or blood and are also used for purity checking prior to biochemical or serological testing [6, 7]. This relatively simple formula has been retained and is still widely used in the microbiological examination of variety of materials and is also recommended by standard methods. It is one of the several non-selective media useful in routine cultivation of microorganisms [8, 9]. It can be used for the cultivation and enumeration of bacteria which are not particularly fastidious. Addition of different biological fluids such as horse or sheep blood, serum, egg yolk etc. makes it suitable for the cultivation of related fastidious organisms. If required, enrichments can be added to this medium. Nutrient Agar, modified by incorporating 4-methylumbelliferyl-β-D-glucuronide (MUG), is used for fluorogenic detection of Escherichia coli.[2]
Nutrient Agar meets APHA and Association of Official Analytical Chemists (AOAC) standard methods.[2,3]
Nutrient Agar is specified in many standard methods procedures for the examination of food, dairy products, water, and other materials.[2-5]

Principles of the Procedure
Nutrient Agar is prepared using specially selected raw materials to support good growth of a wide variety of microorganisms. Peptic digest of animal tissue, beef extract and yeast extract provide the necessary nitrogen compounds, carbon, vitamins and also some trace ingredients necessary for the growth of bacteria. Sodium chloride maintains the osmotic equilibrium of the medium.

Formula / Liter

Ingredients	Gms / Litre
Peptic digest of animal tissue	5.00
Beef extract	1.00
Yeast extract	2.00
Sodium chloride	5.00
Agar	15.00
Final pH: 7.4 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions
1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions
1. Suspend 28 g of the medium in one liter of distilled water.
2. Heat with frequent agitation and boil for one minute to completely dissolve the medium.
3. Autoclave at 121°C , 15 psi pressure, for 15 minutes.

Quality Control Specifications

Dehydrated Appearance	Yellow colored, homogeneous, free flowing powder
Solution	2.8% Solution in Distilled or deionized water is soluble on boiling, Light Yellow colored, and very slightly to slightly opalescent.

Prepared Medium	Pale to Light Yellow – slightly opalescent.
Reaction of 2.8% Solution	pH 7.4 ± 0.2 at 25°C
Gel Strength	Firm, compared to 1.5% Agar Gel.

Expected Cultural Response: Cultural response on Nutrient Agar at 32-35°C after 18 - 24 hours incubation.

Sr. No.	Organisms	Results to be achieved		
		Inoculum (CFU)	Growth	Recovery
1.	*Bacillus subtilis* ATCC 9372	50-100	Good-Luxuriant	>=70%
2.	*Escherichia coli* ATCC 25922	50-100	Good-Luxuriant	>=70%
3.	*Salmonella typhimurium* ATCC 14028	50-100	Good-Luxuriant	>=70%
4.	*Staphylococcus aureus* ATCC 25923	50-100	Good-Luxuriant	>=70%
5.	*Streptococcus pneumoniae* ATCC 6305	50-100	Good-Luxuriant	>=70%
6.	*Streptococcus pyogenes* ATCC 19615	50-100	Good-Luxuriant	>=70%

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

1. Inoculate directly onto the surface of the medium. Streak for isolation with an inoculating loop.
2. Use standard procedures to obtain isolated colonies from specimens. Incubate plates at 35 ± 2°C for 18-24 hours or longer, if necessary.
3. Tubed slants are used primarily for the cultivation and maintenance of pure cultures. They should be inoculated with an inoculating loop and incubated under the same conditions as the plated medium.

Results

Examine plates for growth. Growth from tubes inoculated with pure cultures may be used for biochemical and/or serological testing.

Storage

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.

Packaging

Product Name : Nutrient Agar
Product Code : DM180
Available Pack sizes : 100gm / 500gm

References

1. **American Public Health Association.** 1917. Standard methods of water analysis, 3rd ed. American Public Health Association, Washington, D.C.
2. **Eaton, A. D., L. S. Clesceri, and A. E. Greenberg (eds.).** 1995. Standard methods for the examination of water and wastewater, 19th ed. American Public Health Association, Washington, D.C.
3. **Marshall, R. T. (ed.).** 1993. Standard methods for the microbiological examination of dairy products, 16th ed. American Public Health Association, Washington, D.C.

4. **Association of Official Analytical Chemists.** 1995. Official methods of analysis of AOAC International, 16th ed. AOAC International, Arlington, VA.
5. **Vanderzant, C., and D. F. Splittstoesser (eds.).** 1992. Compendium of methods for the microbiological examination of foods, 3rd ed. American Public Health Association, Washington, D.C.
6. Lapage S., Shelton J. and Mitchell T., 1970, **Methods in Microbiology'**, Norris J. and Ribbons D., (Eds.), Vol. 3A, Academic Press, London.
7. MacFaddin J. F., 2000, **Biochemical Tests for Identification of Medical Bacteria**, 3rd Ed., Lippincott, Williams and Wilkins, Baltimore.
8. Downes F. P. and Ito K., (Ed.), 2001, **Compendium of Methods for the Microbiological Examination of Foods**, 4th Ed., American Public Health Association, Washington, D.C.
9. **American Public Health Association, Standard Methods for the Examination of DairyProducts**, 1978, 14th Ed., Washington D.C.

Further Information

For further information please contact your local MICROMASTER Representative.

MICROMASTER LABORATORIES PRIVATE LIMITED
Unit 38/39, Kalpataru Industrial Estate,
Off G.B. Road, Near 'R-Mall', Thane (W) – 400607. M.S. INDIA.
Ph: +91-9320126789/9833630009/9819991103
Email: sales@micromasterlab.com

DM180PSS,QAD/FR/024,Rev.00