Potato Dextrose Agar • Potato Dextrose Broth

Intended Use

Potato Dextrose Agar conforms with specifications of *The United States Pharmacopeia* (*USP*).

Potato Dextrose Agar is used for the cultivation and enumeration of yeasts and molds.

Potato Dextrose Broth is used for cultivating yeasts and molds.

Summary and Explanation

Potato Dextrose Agar is recommended by the American Public Health Association for plate counts of yeasts and molds in the examination of foods and dairy products.[1,2] It is recommended in the *USP* for use in the performance of Microbial Limit Tests.[3] It is also used for the stimulation of sporulation (slide preparations), maintenance of stock cultures of certain dermatophytes and for differentiation of atypical varieties of dermatophytes by pigment production.[4]

Potato Dextrose Broth is a general-purpose broth medium for yeasts and molds (Potato Dextrose Agar without the agar).

Principles of the Procedure

Potato starch and dextrose support luxuriant growth of fungi. Lowering of the pH of the medium to approximately 3.5 with sterile tartaric acid achieves the inhibition of bacterial growth. It is important, however, to avoid heating the medium after it has been acidified because this action results in the hydrolysis of the agar and impairs its ability to solidify.

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User Quality Control

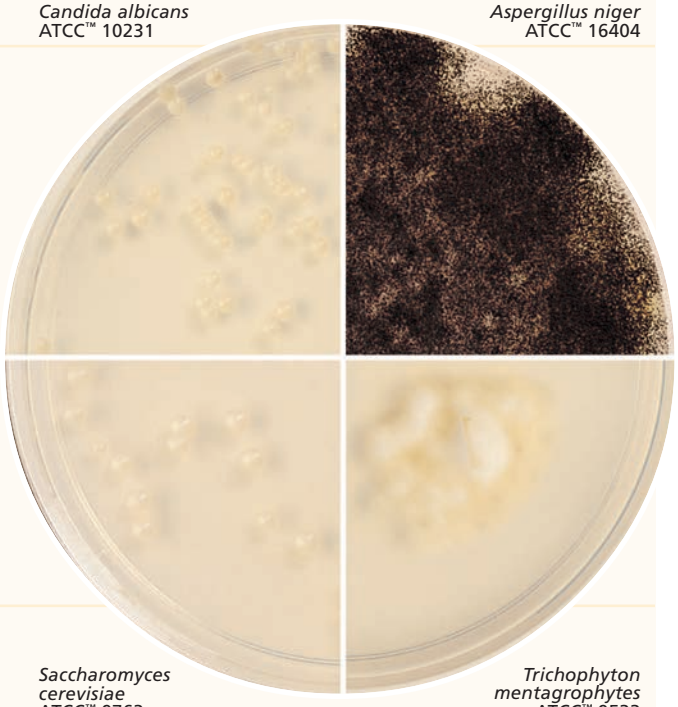
Identity Specifications

Difco™ Potato Dextrose Agar

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	3.9% solution, soluble in purified water upon boiling. Solution is light amber, slightly opalescent.
Prepared Appearance:	Light amber, slightly opalescent.
Reaction of 3.9% Solution at 25°C:	pH 5.6 ± 0.2

Difco™ Potato Dextrose Broth

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	2.4% solution, soluble in purified water upon boiling. Solution is very, very light amber, clear to very slightly opalescent .
Prepared Appearance:	Very, very light amber, clear to very slightly opalescent.
Reaction of 2.4% Solution at 25°C:	pH 5.1 ± 0.2



Cultural Response

Difco™ Potato Dextrose Agar

Prepare the medium per label directions. Inoculate and incubate at 25-30°C for 18-48 hours (up to 7 days for *T. mentagrophytes*).

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
Aspergillus niger	16404	10^3-10^4	Good
Candida albicans	10231	10^3-10^4	Good
Saccharomyces cerevisiae	9763	10^3-10^4	Good
Trichophyton mentagrophytes	9533	Undiluted	Good

Difco™ Potato Dextrose Broth

Prepare the medium per label directions. Inoculate and incubate at 25 ± 2°C for 40-48 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
Aspergillus niger	16404	10^2-10^3	Good
Candida albicans	10231	10^2-10^3	Good
Lactobacillus rhamnosus	7469	10^2-10^3	Fair to good
Saccharomyces cerevisiae	9763	10^2-10^3	Good

Formulae

Difco™ Potato Dextrose Agar

Approximate Formula* Per Liter

Potato Starch	4.0	g
Dextrose	20.0	g
Agar	15.0	g

Difco™ Potato Dextrose Broth

Consists of the same ingredients without the agar.

**Adjusted and/or supplemented as required to meet performance criteria.*

Directions for Preparation from Dehydrated Product

1. Suspend the powder in 1 L of purified water:
   Difco™ Potato Dextrose Agar – 39 g;
   Difco™ Potato Dextrose Broth – 24 g.
   Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
3. Autoclave at 121°C for 15 minutes.
4. To alter the reaction of the agar medium to pH 3.5, cool the base to 45-50°C and aseptically add an appropriate amount of sterile 10% tartaric acid to each liter of medium. Mix well. Do not reheat the medium.
5. Test samples of the finished product for performance using stable, typical control cultures.

Procedure

Consult appropriate references for information concerning the processing and inoculation of specimens.[1-3,5,6] Liquefy the medium in pour tubes by heating in boiling water. Cool to 45-50°C and pour into sterile Petri dishes. Allow to solidify for a minimum of 30 minutes.

Streak the specimen onto prepared media with a sterile inoculating loop to obtain isolated colonies. When used for determining yeast and mold counts, the medium should be adjusted to a pH of approximately 3.5 with sterile tartaric aid and used in the standard pour plate technique. Incubate the plates at 25-30°C in an inverted position (agar side up) with increased humidity.

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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.

For isolation of fungi from potentially contaminated specimens, a selective medium should be inoculated along with the nonselective medium. For isolation of fungi causing systemic mycoses, two sets of media should be inoculated, with one set incubated at 25-30°C and a duplicate set at 35 ± 2°C. All cultures should be examined at least weekly for fungal growth and should be held for 4-6 weeks before being reported as negative.

Inoculation of Potato Dextrose Broth with pure cultures of yeasts can assist in their identification.

Expected Results

After sufficient incubation, the plates, which were streak-inoculated, should show isolated colonies in streaked areas and confluent growth in areas of heavy inoculation. The colonies in pour plates should be counted and the results expressed as yeast and molds counts per gram or milliliter of material, taking into account the applicable dilution factor.

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

For broth, observe cultures for surface growth and pellicle formation.

Limitations of the Procedure

1. Heating Potato Dextrose Agar after acidifying hydrolyzes the agar and may destroy the solidifying properties.
2. Potato Dextrose Agar is not a differential medium. Perform microscopic examination and biochemical tests to identify isolates to genus and species if necessary.

References

1. Downes and Ito (ed.). 2001. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
2. Marshall, (ed.). 1993. Standard methods for the examination of dairy products, 16th ed. American Public Health Association, Washington, D.C.
3. United States Pharmacopeial Convention, Inc. 2001. The United States pharmacopeia 25/The national formulary 20 – 2002. United States Pharmacopeial Convention, Inc., Rockville, Md.
4. MacFaddin. 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol. 1. Williams & Wilkins, Baltimore, Md.
5. Murray, Baron, Pfaller, Tenover and Yolken (ed.). 1999. Manual of clinical microbiology, 7th ed. American Society for Microbiology, Washington, D.C.
6. Isenberg (ed.). 1992. Clinical microbiology procedures handbook, vol. 1. American Society for Microbiology, Washington, D.C.

Availability

Difco™ Potato Dextrose Agar

AOAC | BAM | BS10 | CCAM | CMPH | COMPF | MCM7 | SMD | USP

Cat. No.	213300	Dehydrated – 100 g
	213400	Dehydrated – 500 g
	213200	Dehydrated – 2 kg

BBL™ Potato Dextrose Agar

AOAC | BAM | BS10 | CCAM | CMPH | COMPF | MCM7 | SMD | USP

United States and Canada

Cat. No.	296272	Prepared Plates (Deep Fill) – Pkg. of 20*
	297945	Prepared Plates (Deep Fill) – Ctn. of 100*
	221002	Prepared Pour Tubes, 20 mL – Pkg. of 10
	297241	Prepared Slants – Pkg. of 10
	299906	Bottle, 500 mL – Pkg. of 10

Japan

Cat. No.	251545	Prepared Plates – Ctn. of 100*
	251821	Prepared Plates (Deep Fill) – Ctn. of 100*
	251544	Prepared Plates (150 × 15 mm-style) – Pkg. of 24*

Difco™ Potato Dextrose Broth

Cat. No.	254920	Dehydrated – 500 g

**Store at 2-8°C.*