SABOURAUD DEXTROSE AGAR

- For in vitro use only -

Plated Media
PS15 – Sabouraud Dextrose Agar (SDA)
PS16 – SDA (Emmons)
PS18 – SDA (Emmons Selective)
PS20 – SDA (Emmons w/ Chloramphenicol)
PS21 – SDA (w/ Lecithin & Tween)

Tubed Media
TS15-05 – SDA Slant
TS15-16 – SDA Pour Plate
TS18 – SDA Slant (Emmons Selective)
TS23 – SDA Slant (w/ Cycloheximide)
TS24 – SDA Slant (Emmons w/ Pen & Strep)

Sabouraud Dextrose Agar is a semi-selective plating medium used for the isolation and cultivation of yeasts and molds.

Our Sabouraud Dextrose Agar is based on the work of Raymond Sabouraud whom first devised the medium during his dermatophyte studies in 1910. The Emmons formulation is similar to the classical version except that the dextrose concentration is halved and the pH is neutral.

The nutritive components include peptone and dextrose. Sabouraud Dextrose Agar is commonly used in the isolation of pathogenic fungi from material containing large numbers of other fungi and bacteria. We offer several selective formulations to increase the selectivity of the medium to inhibit competing organisms. The pH of the classical formulation is quite acidic and helps to inhibit the growth of competing bacteria. The addition of antibiotics such as gentamicin, streptomycin, penicillin, and chloramphenicol inhibits bacterial growth while the inclusion of cycloheximide (TS23) inhibits saprophytic fungi. Different formulations of SDA containing various antibiotic combinations have been published and are available if requested; please contact our technical staff for more information.

For environmental monitoring we offer Sabouraud Dextrose Agar with Lecithin and Tween in contact plates. RODAC or contact plates offer a raised meniscus allowing for easy contact of the agar with the testing surface and a 10-mm grid to aid in enumeration of colonies. The presence of lecithin and polysorbate 80 (Tween 80) helps neutralize residual chemicals and disinfectants that may still be present on the test surface.

Formulation per Litre of Medium

PS15 & TS15 Sabouraud Dextrose Agar

Peptone	10.0 g
Dextrose	40.0 g
Agar	15.0 g

pH 5.6 ± 0.2

Additional Ingredients per Liter:

TS23 SDA with Cycloheximide

Cycloheximide	0.5 g

Formulation per Litre of Medium

PS16 Sabouraud Dextrose Agar (Emmons)

Peptone	10.0 g
Dextrose	20.0 g
Agar	15.0 g

pH 6.9 ± 0.2

Additional Ingredients per Liter:

PS18 & TS18 SDA (Selective)

Gentamicin	40.0 mg

PS20 SDA with Chloramphenicol

Chloramphenicol	0.05 g

PS21 SDA with Lecithin & Tween

Lecithin	0.7 g
Tween 80	5.0 g

TS24 SDA with Penicillin & Streptomycin
Penicillin.....20,000 IU
Streptomycin .....40.0 mg

Recommended Procedure
(Please refer to appropriate literature for a more detailed procedure)

1. Allow medium to adjust to room temperature prior to inoculation.
2. Inoculate by performing a four-quadrant streak on the plated media to obtain well-isolated colonies. For tubed media, streak the surface of the medium in a fishtail motion from the bottom up. For cutaneous specimens, lightly press the specimens into the medium.
3. Incubate aerobically at room temperature or at 35°C, if necessary. Clinical specimens should be done in duplicate with one set incubated at room temperature and the other set at 35°C.
4. Examine plates and tubes daily for up to 20 days.

Procedure for SDA w/ Lecithin and Tween

1. Allow medium to reach room temperature.
2. Ensure that the testing surface is dry before proceeding. Open the RODAC plate carefully. Invert the plate and place it on the testing surface.
3. Apply downward pressure so that entire surface of the agar makes contact with the testing surface.
4. Re-cover the plate and repeat with additional plates if desired.
5. Invert plates and incubate aerobically at room temperature (25°C).
6. Examine plates daily for up to 10 days.

Procedure for SDA Pour Plate

1. Liquefy SDA by steaming (10 minutes) or autoclaving (3 to 5 minutes) the tubes briefly.
2. After liquefying, allow tubes to cool in a warm water bath (40 to 50°C) until the tubes have reached a constant temperature of 40-45°C.
3. If necessary, make adequate dilutions of the sample being tested. Add 1-mL of the sample to a sterile petri plate.
4. Pour the contents of one liquefied SDA tube to the petri dish.
5. Gently swirl the plate in a circular motion to incorporate the sample thoroughly.
6. Place plate on a level surface and allow plate adequate time to set.
7. Invert plates and incubate aerobically at room temperature (25°C).
8. Examine plates daily for up to 10 days and enumerate colonies

Interpretation of Results

After the incubation period examine plates and tubes for organisms of interest. Note the colonial morphology and number of each type of colony. For fungi, identification is often based on colonial and microscopic morphology. Colony morphology should include colors of the surface and reverse of the colony, the texture of the surface (powdery, granular, wooly, cottony, etc.), the topography (elevation, folding, margins, etc.), and rate of growth.

For RODAC plates, the number of colonies should be counted; only enumerate the colonies within the grid area since only the complete squares are of known area (10-mm x 10-mm).

Additional tests should be performed on isolated colonies from pure culture in order to complete identification.

- *If desired the inoculated plates can be partially sealed with parafilm or tape to prevent excess dehydration of the medium during lengthy incubations*

- *For RODAC plates, sampling must be performed with care; rubbing or sliding motions may damage the agar bed and result in inaccurate colony counts. Also, spreader colonies should be counted as only one colony and may make accurate enumeration difficult*

Quality Control

After checking for correct pH, colour, depth, and sterility, the following organisms are used to determine the growth performance of the completed medium.

Organism	Expected Result
SDA (Classical & Emmons)	
Candida albicans ATCC 10231	Growth
Trichophyton mentagrophytes ATCC 9533	Growth
SDA Selective (Gentamicin)	
Candida albicans ATCC 10231	Growth
Trichophyton mentagrophytes ATCC 9533	Growth
Escherichia coli ATCC 25922	Inhibition
Pseudomonas aeruginosa ATCC 27853	Inhibition
SDA w/ Chloramphenicol (or Pen & Strep)	
Candida albicans ATCC 10231	Growth
Trichophyton mentagrophytes ATCC 9533	Growth
Escherichia coli ATCC 25922	Inhibition
SDA w/ Cycloheximide	
Candida albicans ATCC 10231	Growth
Trichophyton mentagrophytes ATCC 9533	Growth
Aspergillus niger ATCC 16404	Inhibition
SDA w/ Lecithin & Tween	
Candida albicans ATCC 10231	Growth
Trichophyton mentagrophytes ATCC 9533	Growth

Storage and Shelf Life

Our various Sabouraud Dextrose Agar formulations should be stored away from direct light at 4°C to 8°C. For plated media, the medium side should be uppermost to prevent excessive accumulation of moisture on the agar surface. Under these conditions this mediums have the following shelf lives from the date of manufacture:

PS15 – SDA – 12 weeks
PS16 – SDA (Emmons) – 12 weeks
PS18 – SDA (Emmons Selective) – 12 weeks
PS20 – SDA (Emmons w Chlor) – 12 weeks
PS21 – SDA w/ Lecithin & Tween – 10 weeks
TS15 – SDA – 26 weeks
TS18 – SDA Slant (Emmons Selective) – 16 weeks
TS23 – SDA Slant (w/ Cycloheximide) – 16 weeks
TS24 – SDA Slant (Emmons w P/S) – 16 weeks

References

1. Sabouraud R. Ann Dermatol Syphilol 1892; 3:1061.
2. Sabouraud R. Les tignes. Paris: Masson et Cie, 1910.
3. Georg LK, Ajello L, Gordon MA. A selective medium for the isolation of *Coccidioides immitis*. Science 1951; 114:387.
4. Georg LK, Ajello L, Papageorge C. Use of cycloheximide in the selective isolation of fungi pathogenic to man. J Lab Clin Med 1954; 44:422-8.
5. McDonough ES, Georg LK, Ajello L, Brinkmann S. Growth of dimorphic human pathogenic fungi on media containing cycloheximide and chloramphenicol. Mycopathol Mycol Appl 1960; 13:113.
6. Emmons CW, Binford CH, Uty JP. Medical mycology. 2nd ed. Philadelphia: Lea and Febiger, 1970.
7. MacFaddin JF. Media for isolation-cultivation-maintenance of medical bacteria, Vol I. Baltimore: Williams & Wilkins, 1985.

8. Isenberg HD, Ed. Clinical microbiology procedures handbook. Washington, DC: ASM, 1992.
9. USP. The United States pharmacopeia. 23rd ed. Rockville, MD: United States Pharmacopeial Convention, 1995.
10. Murray PR, Baron EJ, Pfaller MA, Tenover FC, Yolken RH. Manual of clinical microbiology. 7th ed. Washington: ASM, 1999.

Original: May 2003
Revised / Reviewed: October 2014