

SAB/SAB

Code 5551

USE:

Selective isolation of fungi (yeasts and molds) (**SAB**)

Side 1 & 2: Sabouraud Dextrose Agar (**SAB**) (colorless / slightly hazy)



APPLICATION

Sabouraud Dextrose Agar (**SAB**) is a modification of dextrose agar described by Sabouraud.¹ SAB is used for cultivating pathogenic and commensal fungi and yeasts. The high dextrose concentration and acidic pH of the formula permit selectivity of fungi.² Sabouraud Dextrose Agar is used for determining the microbial content of cosmetics,³ in the mycological evaluation of food,⁴ and clinically to aid in the diagnosis of yeast and fungal infections.⁵

PADDLE AGARS

Sabouraud Dextrose Agar (SAB) – Enzymatic digest of casein and enzymatic digest of animal tissue provide the nitrogen and vitamin source required for organism growth in SAB. The high concentration of dextrose is included as an energy source. Agar and a proprietary polymer are the solidifying agents.

CULTURE CONTROLS

10-300 inoculum (CFU)

| | SAB Agar |
|------------------------------------|-----------------|
| <i>Aspergillus niger</i> | GROWTH |
| <i>Candida albicans</i> | GROWTH |
| <i>Escherichia coli</i> | INHIBITED |
| <i>Microsporium canis</i> | GROWTH |
| <i>Trichophyton mentagrophytes</i> | GROWTH |

¹ Sabouraud, R. 1892. Ann. Dermatol. Syphilol. 3:1061.

² Jarett, L., and A. C. Sonnenwirth (eds.). 1980. Gradwohl's and parasitic infections, 7th ed. American Public Health Association, Washington, D.C.

³ Curry, A. S., J. G. Graf, and G. N. McEwen, Jr. (eds.). 1993. CTFA Microbiology Guidelines. The Cosmetic, Toiletry, and Fragrance Association, Washington, D.C.

⁴ U.S. Food and Drug Administration. 1995. Bacteriological analytical manual, 8th ed. AOAC International, Gaithersburg, MD.

⁵ Murray, P. R., E. J. Baron, M. A. Pfaller, F. C. Tenover, and R. H. Tenover (eds.). Manual of clinical microbiology, 6th ed. American Society for Microbiology, Washington, D.C.

For *in vitro* diagnostic use only. This product should be used only by adequately trained personnel with knowledge of microbiological techniques in the laboratory.

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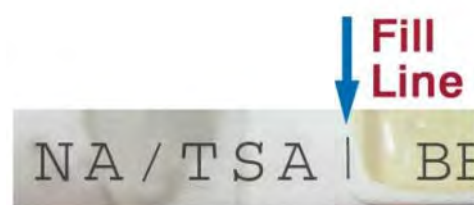
STORAGE / EXPIRATION

Store tightly sealed BioPaddles® in a cool, dry location. Shield from direct sunlight. Store BioPaddles® at room temperature (65 - 77°F/18 - 25°C). Avoid sudden temperature changes. Temperature fluctuations may result in condensation settling at the bottom of the vial. This will not affect the culture properties but could reduce the shelf-life or cause the agar to separate from the plastic paddle support. Do not refrigerate or store at temperatures above 80°F/27°C. Refrigeration may result in water condensation. Avoid freezing. Freezing can promote excess water loss and variation in media surface due to crystal formation. If freezing occurs, wrap BioPaddle in vial in thick towel and thaw at room temperature for 3-6 hours.

Refer to Best Before End date (See: BBE stamped on vial). Discard if paddle agar appears oxidized and darker than the expected color or if contaminants appear. The expiration date is based on medium in an intact container that is stored as directed.

SAMPLING

Liquids: Twist to remove paddle from vial. Fill vial to 40 mL fill line with the liquid to be sampled. The 40 mL volume can be used to calculate Total Viable Count (TVC) and/or Total Colony Count (TCC). Replace paddle. Allow a contact time of 15 seconds. Remove the paddle. Empty the vial. Replace the paddle in the vial.



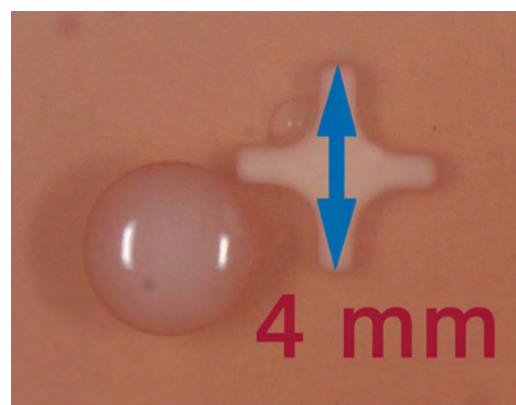
Surfaces: Recovery rate is about 50%. Twist paddle to remove from vial. To ensure an accurate recovery, touch the paddle surface (10 cm²) to the test surface twice to cover a 20 cm² area (2 X 10 cm²). Allow 15 second contact time. Replace paddle in vial.

INCUBATION

| Temperature | Minimum Period | Optimal Period |
|-------------|----------------|----------------|
| 35°C | 18 hours | 24 hours |
| 20-25°C | 5 days | 7 days |

COLONY MEASURING

Each BioPaddles® paddle has molded media attachment points that are 4mm in length (point-to-point). This feature provides a useful guidepost to estimating nearby colony size.




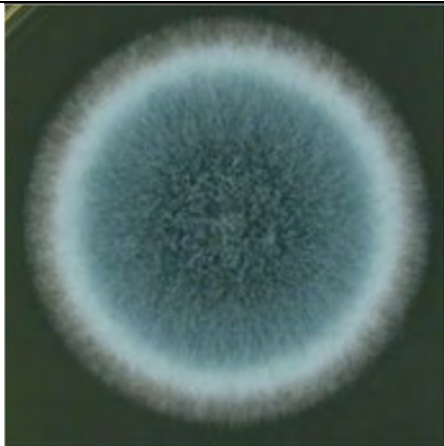


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IDENTIFICATION

| ORGANISM | | SAB | | |
|------------------------------|--|--------|---|--|
| ORGANISM | PHYSIOLOGY ◆ Precision Test Strip Available | GROWTH | COLONY | IMAGE |
| <i>Alternaria spp.</i> | <ul style="list-style-type: none"> Catalase (+) ◆ Ascomycete | ++ | <ul style="list-style-type: none"> Downy to woolly; flat Grayish, short, aerial hyphae Later becomes greenish black or olive brown with a light border 2-5+++cm |  |
| <i>Aspergillus niger</i> | <ul style="list-style-type: none"> Catalase (+) ◆ Ascomycete | +++ | <ul style="list-style-type: none"> Granular White, w/ jet black fruiting bodies w/ yellow/gray hyphae 2-5+++cm |  |
| <i>Aspergillus flavus</i> | <ul style="list-style-type: none"> Catalase (+) ◆ Ascomycete | +++ | <ul style="list-style-type: none"> Granular to woolly Yellow, yellow-green or yellow-brown pigment 2-5+++cm |  |
| <i>Aspergillus fumigatus</i> | <ul style="list-style-type: none"> Catalase (+) ◆ Ascomycete | +++ | <ul style="list-style-type: none"> Granular to cottony Blue-green, green-gray, green-brown pigment 2-5+++cm |  |

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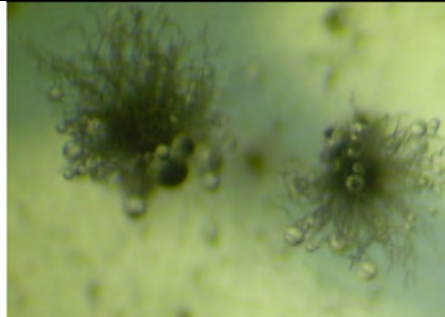


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| <i>Aspergillus terreus</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | +++ | <ul style="list-style-type: none"> • Granular, radially rugose (wrinkled) • Cinnamon buff, brown pigment • 2-5++cm |  |
| <i>Bacillus subtilis</i> | <ul style="list-style-type: none"> • Lactose (-) • Indole (-) ◆ • Oxidase (-) ◆ • Catalase (+) ◆ • Urease (+) ◆ • Gram (+) Rod | +++ | <ul style="list-style-type: none"> • Transparent • Punctiform • Convex, glossy • Entire • 0.1-0.5 mm |  |
| <i>Botrytis spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | +++ | <ul style="list-style-type: none"> • Woolly • white, grey/brown pigment • 2-5++cm |  |
| <i>Candida albicans</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | +++ | <ul style="list-style-type: none"> • Translucent to white/cream • Smooth/Spreading • 2-6mm |  |

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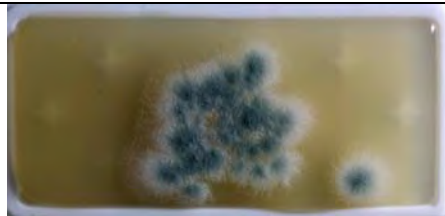

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| <i>Chaetomium spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | +++ | <ul style="list-style-type: none"> • Woolly • white, grey/olive pigment • 2-5cm |  |
| <i>Cladosporium spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | + | <ul style="list-style-type: none"> • Slow-growing • Mostly olivaceous-brown to blackish brown but also sometimes grey, buff or brown, suede-like to floccose (wooly), often becoming powdery due to the production of abundant conidia • Vegetative hyphae, conidiophores and conidia are equally pigmented |  |
| <i>Epicoccum spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | +++ | <ul style="list-style-type: none"> • Woolly/Cottony/Felty • yellow, orange, red, brown pigment • 2-5++cm |  |
| <i>Escherichia coli</i> | <ul style="list-style-type: none"> • Lactose (+) • Indole (+) ◆ • Oxidase (-) ◆ • Catalase (+) ◆ • Urease (-) ◆ • Gram (-) Rod | PARTIAL - COMPLETE INHIBITION | --- | --- |

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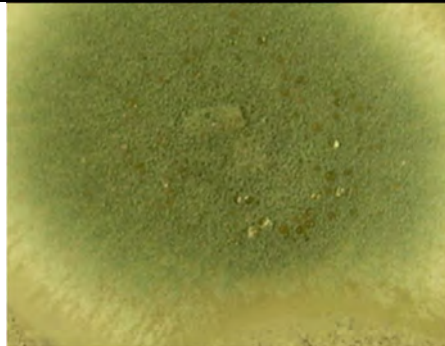



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| <i>Fusarium spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | +++ | <ul style="list-style-type: none"> • Fast-growing (4.5 cm in 4 days) • Woolly, white to yellow, pink, red or purple shades • 4+ cm |  |
| <i>Microsporum spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | + | <ul style="list-style-type: none"> • Glabrous (smooth)/Downy/Wooly/Powdery • White at first, later becoming grayish yellow to blue green with age • 1-9+cm |  |
| <i>Mucor spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Zygomycete | +++ | <ul style="list-style-type: none"> • Woolly, fast-growing • Initially white, then white-yellow to various shades of gray to green showing lollipop sporangia (60-300µm) • 3-9+cm |  |
| <i>Penicillium chrysogenum (notatum)</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | ++ | <ul style="list-style-type: none"> • Granular, velvet-like/powdery, flat • Initially white, then various shades of green blue-green or yellow-green pigment • 3-9++cm |  |
| <i>Penicillium roqueforti</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | ++ | <ul style="list-style-type: none"> • Granular, velvet-like/powdery, flat • Initially white, then various shades of green, blue-green, or yellow-green pigment • 3-9+cm |  |

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| <i>Penicillium digittum</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | +++ | <ul style="list-style-type: none"> • Woolly, Fluffy (like cotton candy) • White at first, later becoming green with age • 2-5+++cm |  |
| <i>Rhizopus spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Zygomycete | +++ | <ul style="list-style-type: none"> • Cottony • White to blackish grey (black fruiting bodies) • 5+++mm (rapidly spreading) |  |
| <i>Saccharomyces cerevisiae</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | +++ | <ul style="list-style-type: none"> • White • Punctiform/circular • Convex, dull • Entire • 0.1-0.5 mm |  |
| <i>Stachybotrys spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | ++ | <ul style="list-style-type: none"> • Dark gray • Powdery • white, pink, orange, black pigment • 2-5+++cm |  |

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| <i>Torula spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | + | <ul style="list-style-type: none"> • Transparent • Punctiform/circular • Convex, dull • Erode • 0.1-0.5 mm |  |
| <i>Trichoderma spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | ++ | <ul style="list-style-type: none"> • Cottony • White/late scattered green or yellow-green patches (rings) • 2-5++cm |  |
| <i>Trichophyton spp.</i> | <ul style="list-style-type: none"> • Catalase (+) ◆ • Ascomycete | + | <ul style="list-style-type: none"> • Woolly with indented borders • White to brownish-tan pigment • 2-5++cm |  |
| +++ = very rich, luxurious growth expected ++ = grows + = grows slightly +/- = may grow; may be inhibited | | | | |

DISPOSAL

Twist to remove paddle from vial. Fill vial to 40 mL fill line with 1:9 dilution of household bleach (5.25% sodium hypochlorite). Replace paddle in vial. Allow 15 minute contact time. Remove paddle. Discard bleach solution. Replace paddle in vial and dispose. Alternatively, loosen cap and microwave for 30 seconds, autoclave, or incinerate.

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GLOSSARY:**Catalase Test**

Catalase enzyme will react with hydrogen peroxide to produce oxygen if the bacteria is catalase positive.

Lactose Test

Lactose positive bacteria can ferment available lactose in the agar producing an acid which lowers the pH. Lactose negative bacteria are non-fermenting.

Indole Test

Biochemical test to determine the ability of an organism to split indole from the amino acid tryptophan. *P. vulgaris* is indole positive while *P. mirabilis* is indole negative.

Oxidase Test

Oxidase positive bacteria contain cytochrome c oxidase which will turn an indicator dark blue. In contact with oxidase negative bacteria, the indicator will remain colorless.

Urease Test

Bacteria containing urease will hydrolyze urea to ammonia and carbon dioxide causing an alkaline environment which changes the color of a pH indicator from yellow to fuchsia.

β-D-Glucuronidase Reaction

The presence of *E. coli* is determined when both β-D-Glucuronidase and Indole are positive, and the organism is gram negative.

Gram Staining

A method for differentiating bacteria into two groups – gram positive and gram negative – based on the chemical and physical properties of their cell walls. Often the first step in identifying bacteria.

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