GP2 MicroPlate™

A1 Water	A2 α-Cyclodextrin	A3 β-Cyclodextrin	A4 Dextrin	A5 Glycogen	A6 Inulin	A7 Mannan	A8 Tween 40	A9 Tween 80	A10 N-Acetyl-D-Glucosamine	A11 N-Acetyl-β-D-Mannosamine	A12 Amygdalin
B1 L-Arabinose	B2 D-Arabitol	B3 Arbutin	B4 D-Cellobiose	B5 D-Fructose	B6 L-Fucose	B7 D-Galactose	B8 D-Galacturonic Acid	B9 Gentiobiose	B10 D-Gluconic Acid	B11 α-D-Glucose	B12 m-Inositol
C1 α-D-Lactose	C2 Lactulose	C3 Maltose	C4 Maltotriose	C5 D-Mannitol	C6 D-Mannose	C7 D-Melezitose	C8 D-Melibiose	C9 α-Methyl-D-Galactoside	C10 β-Methyl-D-Galactoside	C11 3-Methyl Glucose	C12 α-Methyl-D-Glucoside
D1 β-Methyl-D-Glucoside	D2 α-Methyl-D-Mannoside	D3 Palatinose	D4 D-Psicose	D5 D-Raffinose	D6 L-Rhamnose	D7 D-Ribose	D8 Salicin	D9 Sedoheptulosan	D10 D-Sorbitol	D11 Stachyose	D12 Sucrose
E1 D-Tagatose	E2 D-Trehalose	E3 Turanose	E4 Xylitol	E5 D-Xylose	E6 Acetic Acid	E7 α-Hydroxybutyric Acid	E8 β-Hydroxybutyric Acid	E9 γ-Hydroxybutyric Acid	E10 p-Hydroxy-Phenylacetic Acid	E11 α-Ketoglutaric Acid	E12 α-Ketovaleric Acid
F1 Lactamide	F2 D-Lactic Acid Methyl Ester	F3 L-Lactic Acid	F4 D-Malic Acid	F5 L-Malic Acid	F6 Pyruvatic Acid Methyl Ester	F7 Succinic Acid Mono-methyl Ester	F8 Propionic Acid	F9 Pyruvic Acid	F10 Succinamic Acid	F11 Succinic Acid	F12 N-Acetyl-L-Glutamic Acid
G1 L-Alaninamide	G2 D-Alanine	G3 L-Alanine	G4 L-Alanyl-Glycine	G5 L-Asparagine	G6 L-Glutamic Acid	G7 Glycyl- L-Glutamic Acid	G8 L-Pyroglutamic Acid	G9 L-Serine	G10 Putrescine	G11 2,3-Butanediol	G12 Glycerol
H1 Adenosine	H2 2'-Deoxy Adenosine	H3 Inosine	H4 Thymidine	H5 Uridine	H6 Adenosine-5'-Monophosphate	H7 Thymidine-5'-Monophosphate	H8 Uridine-5'-Monophosphate	H9 D-Fructose-6-Phosphate	H10 α-D-Glucose-1-Phosphate	H11 D-Glucose-6-Phosphate	H12 D-L-α-Glycerol Phosphate

FIGURE 1. Carbon Sources in GP2 MicroPlate

INTRODUCTION

The Biolog GP2 MicroPlate (Figure 1) is designed for identification and characterization of a very wide range of aerobic gram-positive bacteria. Biolog's MicroPlates and databases were first introduced in 1989, employing a novel, patented redox chemistry. This chemistry, based on reduction of tetrazolium, responds to the process of metabolism (i.e. respiration) rather than to metabolic by-products (e.g. acid). Biolog's chemistry works as a universal reporter of metabolism and simplifies the testing process as color developing chemicals do not need to be added. Since the GP2 MicroPlate is not dependent upon growth to produce identifications, it provides superior capability for all types of gram positive organisms: cocci, rods, and spore-forming rods all are identified with a single panel. The database for the GP2 MicroPlate is now over 310 species. It is by far the largest kit-based identification database available.

GP2 MICROPLATE

The Biolog GP2 MicroPlate performs 95 discrete tests simultaneously and gives a characteristic reaction pattern called a "metabolic fingerprint". These fingerprint reaction patterns provide a vast amount of information conveniently contained in a single Biolog MicroPlate. The metabolic fingerprint patterns are compared and identified using the MicroLog™ database software.

Other aerobic kit-based identification methods rely on a much smaller number of tests. Consequently, the significant limitation of these products is the limited number of species and organism types that they can identify. Furthermore, these products were designed to address the needs of routine clinical/hospital testing. The Biolog GP2 MicroPlate was designed to address the needs of a much wider range of users including environmental testing labs and animal and plant disease labs as well as clinical reference labs.

There are approximately 4,000 named bacterial species and this is just a fraction of the total number of species in the environment. The MicroLog™ System provides the unique feature of user defined custom databases. If an organism is outside the MicroLog database, the user can save the pattern to a custom database for future reference. If the organism is isolated again, the laboratory will have the pattern saved instead of simply getting a "no ID". Some other methods provide supplemental off-line tests for use alongside the identification panel. This approach is inconvenient and does not produce an expanded pattern library.

An identification from the Biolog GP2 MicroPlate is superior to less precise methods, because:

- The MicroLog System bases its identification on a larger number of tests. There are over 4×10^{28} possible patterns from a single MicroPlate
- The MicroLog System covers far more species
- Older methods were developed to detect routine clinical pathogens, and do not adequately identify other important organisms such as: : *Bacillus spp.*, *Corynebacterium spp.*, *Entercoccus spp.*, *Micrococcus spp.*, *Staphyoccoccus spp.*, and *Streptococcus spp.*,

Various methods have different numbers and types of organisms within their database. Figure 2, compares several popular kit-based methods. The Biolog GP2 MicroPlate has a much larger number of tests, which provides greater fingerprint discrimination and a larger database.

Manufacturer	Number of Aerobic Species in Database	Number of Tests Used for Identification
Biolog, Inc MicroLog	318	95
bioMérieux Vitek® GPI	49	28
bioMérieux API® Staph, 20 Strep, & Coryne	~106	20
BBL® Crystal™	~140	28

FIGURE 2. Comparison of Commercial Test Kits for Gram Positive Organisms

In addition to a limited number of tests used to identify an unknown, some methods rely primarily on fermentation of sugars. This approach does not provide the necessary environment for every organism of interest. Many bacteria cannot utilize sugars via a fermentative process and react weakly or not at all with these methods. The larger number and more diverse range of tests in the GP2 MicroPlate provide for greater accuracy and precision.

PROCEDURE FOR USING GP2 MICROPLATES

The procedure is fast and simple, involving only 5 steps, and requiring only 2 to 3 minutes hands-on time per sample.

1) A pure culture of a bacterium is grown on a Biolog Universal Growth agar plate (Biolog catalog #70101 for a 500g jar of dehydrated powder. *Bacillus spp.* are grown on a Biolog Universal Growth agar plate with .25% Maltose.

2) The bacteria are swabbed from the surface of the agar plate, and suspended to a specified density in GN/GP Inoculating Fluid (Biolog catalog # 72101).

3) 150 µl of bacterial suspension is pipetted into each well of the GP2 MicroPlate (Biolog catalog # 1104).

4) The MicroPlate is incubated at 30° or 35° C (depending upon the nature of the organism) for 4-24 hours.

5) The MicroPlates are read either visually or with the Biolog MicroStation™ or OmniLog™ System and compared to the GP Database (Biolog catalog # 22604D) and a result is displayed.

CONTACT INFORMATION

The Biolog Microbial Identification/Characterization System will be an invaluable addition to your microbiology laboratory.

For more details, contact us using the information below:

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