Biochemical identification

SmartNote:
Why manual microorganism identification is critical for all microbiology laboratories

Accurate and definitive microorganism identification is essential for correct disease diagnosis, treatment of infection and epidemiological analysis. Biochemical tests are among the most important methods for microbial identification, even when a microbiology laboratory is using an automated system.

What are biochemical tests?

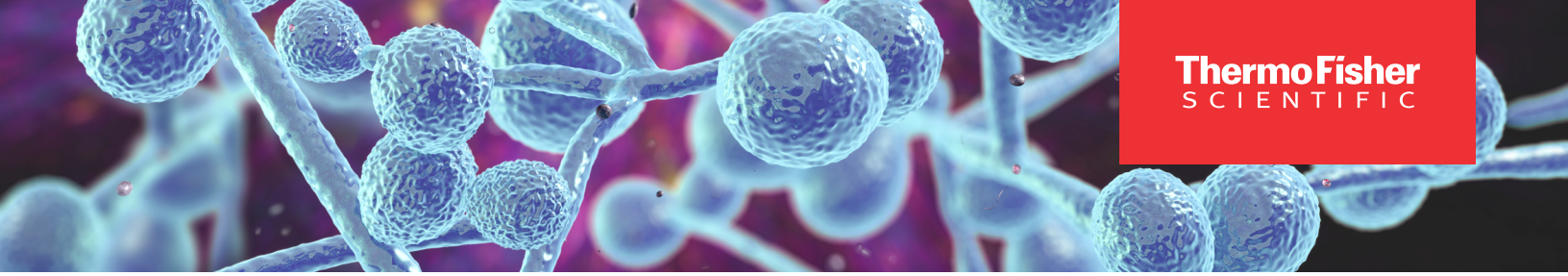
Biochemical reactions can reveal the vital information necessary for accurately identifying the genera of various bacteria or yeast within a patient sample. Biochemical tests are used to differentiate on the basis of biochemical activity. The difference in protein and fat metabolism, carbohydrate metabolism, enzyme production and compound utilization ability are some factors that aid in bacterial identification.

Routine biochemical tests include catalase testing, oxidase testing, substrate utilization tests, hydrogen sulphide production and tests for carbohydrate fermentation. Microbial biochemistry tests shorten the time required to identify microorganisms, reduce costs, and ensure or enhance the accuracy of identification of an unknown microorganism from a patient sample. Rapid accurate identification results aid patient management and support treatment options.

Manual biochemical panel tests employ conventional and chromogenic substrates for the identification of medically important microorganisms. Panels are available for the identification of both common types of bacteria, like staphylococci and streptococci, as well as more complex pathogens like anaerobes, Enterobacteriaceae, yeasts, *Neisseria-Haemophilus*, Corynebacteria, non-fermenters, *Listeria* and urinary tract isolates. These systems are ideal for standalone testing, due to the comprehensive range of bacteria they can identify, or for complementing automated systems that often require a backup method for less common bacterial samples due to limits in their menu of organisms.

How do they work?

Biochemical panels are inoculated with a fluid suspension of the suspect isolate. This inoculum rehydrates the dehydrated reactants in the test panels and initiates test reactions. After incubation of the panel, each test cavity is examined for reactivity by noting the development of a color. In some cases, reagents must be added to the test cavities to provide a color change. The resulting pattern of positive and negative test scores is used as the basis for identification of the test isolate by comparison of results to reactivity patterns stored in a database.



Thermo Scientific™ RapID™ Systems

Traditional manual, confirmatory, ID panels often come with a caveat of a lengthy time-to-result of 24-48 hours, which can be frustrating when results are needed to guide critical, informed decisions. However, Thermo Scientific™ RapID™ Systems work differently, using enzyme technology to reduce time-to-result to just 4 hours. The advantage – fast, same-day, definitive bacterial identification for 400+ medically important organisms. And, combined with advanced Thermo Scientific™ RapID™ ERIC™ Software, users will experience reduced turnaround time, visible color reactions and precise reporting for more organisms on more platforms*.

*Versus traditional testing methods.

RapID ERIC Software

Our proprietary ERIC Software is a complementary, computerized database to support all RapID™ Systems. It includes all information in the database including probability percent, bioscores, contraindicated test results, accessory tests, and clinically relevant commentary.

The latest version of ERIC Software features:

- An updated taxonomy with the latest nomenclature changes for excellent coverage and confidence.
- A comprehensive compendium with extensive reporting coverage for thorough analysis and to keep your laboratory informed and productive.

For more information, visit **thermofisher.com/RapID**