

Presumptive Results Guidance

What are they and what
do I need to do?

What are presumptive results?

To understand presumptive results, it is necessary to understand how microbiology testing works.

Microbiology testing works by spreading the sample into an agar plate and incubating it until any bacteria present grow to visible levels. As a single bacterium is around 1/1000 of a millimetre, it must multiply into a colony, each made up of millions of cells derived from the original organism.

Each colony can then be counted, and because each colony originates from a single cell present when the sample was plated, it is considered representative of one bacterium in the original sample.

The tests select for specific bacteria using four main approaches:

1. Nutrients/pH/atmosphere - not all bacteria require the same conditions to grow
2. Temperature - different bacteria grow optimally at different temperatures
3. Time – species vary in how quickly they form colonies
4. Selective agents (e.g. antibiotics) – these help suppress unwanted organisms not targeted by the test

However, many different bacteria may still share the ability to grow under the selected conditions and survive selective agents, which can make precise identification more complex.

Therefore, not all bacteria that grow on a test agar are the bacteria that the test is looking for!

Technicians will examine the colonies that grow and look for those matching the expected appearance of the target bacteria. However, many non-target bacteria can produce colonies with similar visual characteristics, so their presence can be reduced through selective conditions, but not completely eliminated.

Therefore, a test can, and will, give rise to colonies that meet all the basic parameters of the target organism but may not be the organism being tested for.

These are presumptive colonies.

Presumptive colonies are then processed through confirmation tests.

Confirmation tests are more specific biochemical and/or serological methods that can determine whether the colony tested is, or is not, the target organism.

These are confirmed colonies.



Why isn't the test extremely specific and designed to avoid presumptive counts?

There are two main reasons why the test is not so specific that it excludes all non-target organisms from producing presumptive results:

1. The test is based on the growth of organisms under favourable conditions for the target bacteria. However, it's common for other bacteria from the same environment to thrive under similar conditions. Therefore, selection based solely on growth conditions can never be 100% specific.
2. Bacteria in the environment are often under stress from heat, sanitisers or cleaning agents, pH changes, or suboptimal temperatures. To survive, they adapt by switching biochemical pathways on or off. These changes are not permanent but are temporary adjustments to the environment. As a result, bacteria may behave atypically when exposed to selective agar. They may display unexpected characteristics, fail to match typical colony appearances for the target organism, or may not grow at all if the selective conditions are made too strict.



Therefore, the test is designed to make the best use of selective conditions while intentionally allowing some non-target organisms to grow.

If the test were too strict, only allowing typical target bacteria to grow, it could miss those that aren't behaving typically.

What should I do with a presumptive result?

Treat it as a heads-up warning, but don't overreact. It's likely to confirm, as most do, but don't assume it will, as some won't. Be prepared and make any necessary arrangements so you can respond promptly once the confirmed result is available.

We're here to help

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