

STERLING NEWS & NOTES

A Report from Sterling Reference Laboratories

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Technical Information from STERLING Reference Laboratories

How Does Drug Testing Work?

The first step in the process is to screen all specimens for evidence of drug use and to run additional tests such as creatinine, pH, and nitrite to assess the quality of each sample. The initial screening test is typically an immunoassay. Immunoassays depend on competitive binding of a specific drug with an antibody prepared to react with that drug or drug class. Immunoassay screens such as the ones used by STERLING are selected for their ability to detect drugs of a specific class with a high degree of reliability. Immunoassay reactive substances fall into two categories – members of the targeted drug class that are expected to be detected (true positives) and unrelated structurally similar substances that could be detected (false positives). Therefore, all results of screening tests should be considered “presumptive”.

How Can I Be Sure That a Positive Result is Valid?

When more information is needed concerning the nature of an immunoassay result, confirmation testing is done. Confirmation testing must be done by a procedure that is chemically different than the original assay and must have a greater level of sensitivity and specificity for the target drug(s) so that true positives are differentiated from false positives. Follow up or repeat immunoassay tests are not reliable confirmation tests, even when the immunoassay is from a different manufacturer than that of the original screening test. The only sure way to eliminate the effects of these cross-reacting substances is to include or request a Gas Chromatography/Mass Spectroscopy (GC/MS) confirmation as part of the testing process.

Why is a GC/MS Test More Reliable Than an Immunoassay?

GC/MS is an alternative chemical method used to ensure an unbiased “second opinion”, unaffected by any substance(s) other than the targeted drug that may have caused a positive reaction in the screening assay. Chromatography is a process of separating and isolating the various drug components in a urine sample.

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All chromatographic procedures require a stationary (fixed) phase and a mobile (moving) phase for separation, and a detection method for identifying any drugs present. For GC/MS, the stationary phase is a fused silica glass column. The mobile phase is an inert gas. A test sample is introduced to the column via an injector port where the specimen is vaporized and transported through the column by the carrier gas at a specified temperature and flow rate. The detector is a mass selective ion detector (MSD). The identification of drugs is based on retention time and the selective ion pattern that is unique to each drug or metabolite. This creates a unique chemical “fingerprint” of the substance present, so that it can be reliably identified.

Why Not Just do A GC/MS Test on Everything and Skip the Immunoassay?

The simple answer is that GC/MS is too labor intensive, expensive and time consuming for routine use. The immunoassay tests provide an inexpensive, easily automated, rapid method for identifying and separating the negative specimens from those that have evidence of drug presence. Then only those specimens identified as presumptively positive would be candidates for additional testing if required.

The follow up confirmation tests can be set up to be run automatically as part of your routine testing protocol, or can be requested at a later date. All specimens that screen positive are retained for a minimum of two months to allow for additional testing if needed. Contact our sales department (1-800-442-4038 or sales@regtox.com) for assistance in selecting the testing protocol that best suits your client base and budget.