



PIC QUESTION OF THE WEEK: 6/28/10

Q: What drugs can produce false-positive results when performing urine screening tests for drugs of abuse?

A: Screening for use of illicit drugs has become a common practice in places of employment, rehabilitation settings, correctional facilities, and even at home. Drug classes customarily examined in urine screening tests include amphetamines, cannabinoids, cocaine, opioids, and phencyclidine (PCP). While immunoassay methods used in urine testing are usually highly sensitive and well standardized, false positives may be reported due to cross-reactivity with chemically related drugs and other compounds. False-positive outcomes for amphetamine are not unusual and can occur due to cross-reactivity with medications such as pseudoephedrine, phenylephrine, bupropion, trazodone, and components of many weight-loss supplements. Drugs reported to produce false-positive results for cannabinoids include some non-steroidal anti-inflammatory drugs (NSAIDs), proton pump inhibitors (PPIs), and specific hemp-containing foods such as nut butters and cold-pressed cooking oil. There is no available evidence that *passive* inhalation of methamphetamine or marijuana can interfere with interpretation of tests for use of amphetamines or cannabinoids. Topical anesthetics containing cocaine (but not other local anesthetics) or coca leaf teas can yield false-positive results for cocaine. Many agents possess structural similarity to morphine and its metabolites. Dextromethorphan, quinine, codeine, opioid prescription medications, and fluoroquinolones can yield false-positive findings. Poppy seeds have also been implicated as causes of false-positive tests resulting in what is referred to as the “poppy-seed defense.” In 2000, detection cut-off (threshold) limits of certain metabolites were increased to counter this defense. Processing poppy seeds in food preparation eliminates most of their morphine content. Poppy seed *buns* seem to pose the lowest risk of cross-reactivity as up to 90% of morphine is lost during the baking process. The “poppy-seed defense” is still plausible, but is dependent on the amount ingested, food processing technique, and kinetics of absorption. PCP use may be falsely reported in patients receiving dextromethorphan, ketamine, and chlorpromazine. Variations in results for any of these drug classes may be related to the quantity ingested, duration of use, timing, and the specific test being employed. Because of these issues, highly specific *confirmatory* tests that incorporate chromatography and mass spectrometry may be required to distinguish whether the results of a urine screening test are falsely positive.

References

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