USDTL News

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USDTL synthetic cannabinoid urine test stems from increasing illicit use

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Spice is more potent than THC in its psychoactive properties.

Due to recent growing client requests, USDTL released a new urine assay for synthetic cannabinoids commonly known as "Spice" or "K2" for commercial use on Monday. The new assay detects the metabolites of the controlled compounds JWH-018 and JWH-073.

The Drug Enforcement Administration (DEA) scheduled five synthetic cannabinoids into the Controlled Substances Act (CSA) in early 2011. Synthetic cannabinoids generally appear sprayed on plant material and are smoked like marijuana.

Although they have similar properties to THC in marijuana, synthetic cannabinoids are more potent than THC in their psychoactive properties, as found in animal studies.

According to the American Association of Poison Control Centers, synthetic cannabinoid use has resulted in over 3,000 calls to United States poison centers since 2010. As of February 10, 2011, the number of calls had already reached almost 500.

According to the DEA, individuals who have smoked synthetic cannabinoids have experienced extreme psychotic episodes, agitation, anxiety, vomiting, elevated blood pressure, seizures, hallucinations and non-responsiveness.

Users typically choose synthetic cannabinoids over marijuana attempting to evade detection through standard urine screens, since only a handful of drug testing laboratories currently test for synthetic cannabinoids.

The synthetic cannabinoid assay is now part of our extensive UrineStat® customized drug

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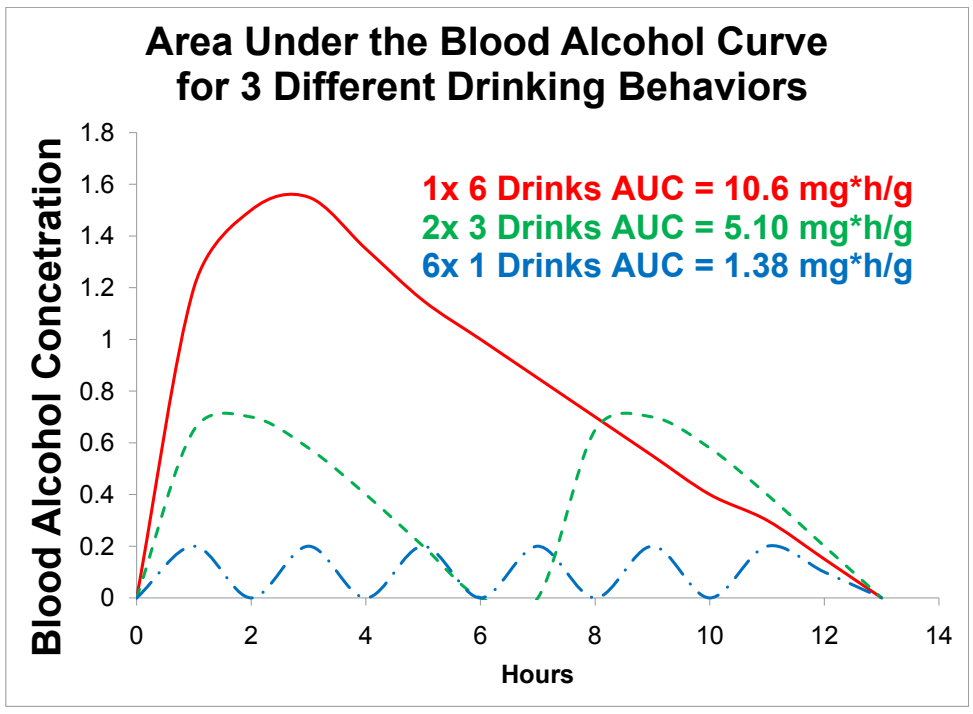
Long-term alcohol biomarkers proportional to the area under the blood alcohol curve

by Joseph Jones
Vice President Laboratory Operations



F. Pragst et al. (2010) *For Sci Int, 196* , 101-110.

Chart 1

When reviewing the results of long-term alcohol biomarkers, knowing how many drinks are required to achieve a positive is important. To uncover the dose response for long-term alcohol biomarkers, our research team recently executed a Small Business Innovative Research (SBIR) phase II study funded by the National Institute of Alcohol Abuse and Alcoholism (NIAAA).

USDTL gathered an extensive 90-day time line follow back (TLFB) history, coupled with hair and fingernail specimens from over 600 consenting students at the University of Wisconsin-Milwaukee. USDTL analyzed the hair and fingernail specimens for the direct alcohol biomarker ethyl glucuronide (EtG).

Initially, when comparing the EtG results to self-report, the results were unclear. The results seemed to reflect not only the number of drinks consumed but also how they were consumed (non-hazardous versus hazardous or binge drinking). The individuals with positive results needed to achieve appreciable blood alcohol content. Revisiting a recent journal article allowed us to realize a predicted pattern.

Last year, a research paper published by Pragst, et al., proposed that long-term alcohol biomarker results did not necessarily correlate to the number of drinks ingested. Pragst proposed that the results actually correlated to the area under the blood alcohol versus time curve (BAC).

If an individual connected to a continuous blood alcohol monitoring device consumed standard drinks at various rates of time per drink, Pragst indicated that the data would appear something like that depicted in Chart 1. Assuming one standard drink (one beer, one serving of wine, one shot of distilled spirits) is approximately 14 to 17 grams of ethanol, most of the ethanol is absorbed in the small intestine approximately 50 minutes after a drink and alcohol is eliminated at an approximate rate of one hour per drink.

If an individual consumed one drink every two hours for 12 hours, there would be six little peaks on the test chart. Chart 1 depicts

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Propofol metabolite now added to NailStat℠ and HairStat® drug panels

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Abusers may inject propofol as many as 50 to 100 times in one sitting.

USDTL released a new fingernail and hair test for a metabolite of the anesthetic propofol (Diprivan®). The fingernail and hair assay tests for the metabolite propofol glucuronide, instead of the parent propofol, due to the rapid rate of metabolism of the parent compound.

Propofol reduces anxiety and tension, promotes sleep or loss of consciousness and awareness for short diagnostic and surgical procedures. After the death of artist Michael Jackson, propofol is now widely recognized as having abuse potential, particularly among healthcare practitioners such as surgeons, anesthesiologists, nurse anesthetists and operating room

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Ask the President

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President Douglas Lewis

Q: What can our organization do if we strongly suspect that an individual was drug-exposed, but the specimen results came back negative?

A: All of USDTL's clients can "dispute" a negative result and request a "re-test" for one or more specific drug classes that are suspected of being present. The re-test is a concept routinely used in workplace urine testing, where a subject disputes a positive result and requests a re-test, which is a re-confirmation of the specimen with a cutoff at 40 percent of the original confirmation cutoff. For non-workplace cases, clinical professionals may believe that drug exposure occurred and dispute the negative finding, which results in a re-confirmation of the disputed drug class at 40 percent of the confirmation cutoff. This re-test then becomes the result of record for the case.

To order a re-test, fax or email USDTL Client Services a re-test request on your letterhead and state the test(s) requested, the subject's demographic information, the USDTL lab number and your contact information. You can also call Client Services with the case information. Our representative will provide you with the necessary paperwork for you to sign and return to initiate the re-test process. Once the paperwork is in order, Client Services will return a re-test result to you in one to two working days. If you have any questions after receiving the results, please contact Client Services and they will either assist you or direct you to one of our forensic toxicologists to discuss the case with you.

Got a question for USDTL? Ask President and Scientific Director Douglas Lewis. E-mail heather.sliwinski@usdtl.com with your questions, and you may be featured in our newsletter!

Cover story: BAC (cont.)

this reading as the blue dot-dash line. Pragst calculated the area under these six small peaks as 1.38 mg-h/g. If the individual rapidly consumed three drinks six hours apart, there would be two medium peaks on the test chart. Chart 1 depicts this reading as the green dashed line. Pragst calculated the area under these two medium peaks as 5.10 mg-h/g. If the individual consumed six drinks all at once, there would be one large peak on the test chart. Chart 1 depicts this reading as the red solid line. Pragst calculated the area under this large peak as 10.6 mg-h/g.

This illustration depicts a single individual, drinking the same amount of alcohol (six drinks), over the same amount of time (12 hours), using three different drinking patterns (paced drinking to binge drinking), with three very different areas under the blood alcohol curve (1.38, 5.10, & 10.6). With this observation in mind, the EtG fingernail and hair assays and PEth blood and bloodspot assays seem to test for risky alcohol behavior, not all alcohol use.

Spice (cont.)

panels. Initial screening takes up to two days in the laboratory and up to an additional two days for confirmation of presumptive positives. Although the literature has not fully described the parameters of the assay, USDTL expects it will act similarly to marijuana, providing a drug history of up to five days.

For more information about the synthetic cannabinoids UrineStat® test, contact Client Services at customer.service@usdtl.com or at 800-235-2367.

Propofol (cont.)

technicians. However, monitoring and treatment for propofol abuse are still missing from the majority of anesthesiology programs.

Propofol's time of action is very short, resulting in loss of consciousness within 40 seconds of injection. Its duration of action is also short, with an average of three to five minutes following a dose of 2 milligrams to 2.5 milligrams per kilogram of body weight. Because of its short duration of action, abusers may inject it as many as 50 to 100 times in one sitting. Deaths occur among abusers due to the very narrow therapeutic window—even a small quantity over the standard dose can be fatal.

Testing fingernails and hair for propofol glucuronide is advantageous because the sample provides a longer detection window than urine. The liver rapidly metabolizes propofol to propofol glucuronide. Propofol glucuronide is primarily excreted into urine and can be detected for five to seven days following repeated dosing. Hair, on the other hand, can detect drugs up to three months after dosing, and fingernails can show up to eight months of drug exposure.

The propofol glucuronide assay is a directed confirmation by LCMSMS. Propofol glucuronide may be ordered as a stand-alone test or added to any other NailStat℠ or HairStat® 5-, 7-, 9-, 10-, 12- or 14-drug panel. To order, researchers and clinicians can contact Client Services at (800) 235-2367 or at customer.service@usdtl.com.

References

-F. Pragst et al. (2010) For Sci Int, 196, 101-110
-The Center for Disease Control and Prevention: http://www.cdc.gov