



“Bath Salts” (Designer Stimulants) Analysis in Umbilical Cord Specimens

By Charles A. Plate, Ph.D. Laboratory Director, USDTL

“Bath Salts”, a group of designer stimulants that have recently been marketed as “legal” highs, which can be consumed without repercussions, have proven to be anything but safe or harmless. The “Bath Salts” products usually contain one or more synthetically

produced derivatives of cathinone, the active ingredient in Khat (*Catha edulis*), a hallucinogenic plant found in eastern Africa.

Mephedrone and methylone have somewhat similar pharmacology to methylenedioxymethamphetamine (MDMA) in that they affect both dopamine and serotonin release, with serotonin release being the more predominant effect seen. The serotonin pharmacology may be part of the NAS-like behavior newborns sometimes exhibit following exposure to mephedrone and methylone since newborns exposed to SSRI's for extended time prior to delivery may also show NAS-like symptoms.

Other members of the “Bath Salts” such as methylenedioxypyrovalerone exhibit pharmacology more similar to methylphenidate in that it affects the dopamine and norepinephrine transporters, blocking reuptake of these neurotransmitters. MDPV, which is four times as potent on a weight basis as methylphenidate, is a powerful stimulant with little effect on the serotonergic system.

Since “Bath Salts” are seldom the same mix of compounds, the analysis needs to cover as many of the suspected drugs as can be reasonably performed. In this regard, USDTL performs an analysis for eight designer stimulants, Mephedrone, Methylenedioxypyrovalerone, Methylone, Ethylone, Butylone, MBDB, mCPP, and TFMPP. The designer stimulants can be added to any of the CordStat® panels. The samples are analyzed using gold standard LC-MS/MS technology.

Editor's Note: “Face eating zombie” headlines catch our eye but make light of the fast-paced trend toward an addiction that some researchers say is worse than Methamphetamine. Antidotal evidence tells us that NICU doctors and nurses find themselves faced with women delivering babies while high on designer stimulants. Babies come to the NICU with symptoms of SSRI, opiate or cocaine withdrawal, but do not test positive for these substances, leaving caregivers at a loss as to how to properly treat the baby. USDTL's new test for designer stimulants in umbilical cord tissue is leading the way to quicker diagnosis and proper healthcare for baby.



Use of Alcohol, Cigarettes, and Illicit Drugs Resumes after Childbirth

How do pregnant women and new mothers differ when it comes to substance use?

A new national report from SAMHSA's National Survey on Drug Use and Health (NSDUH) provides both encouraging and discouraging news.

The report, *Substance Use among Women During Pregnancy and Following Childbirth*, studies NSDUH data gathered between 2002 and 2007. Results show that most women are heeding warnings about the dangers that substance use during pregnancy can pose.

Of concern, however, are NSDUH data that suggest once women give birth, many new mothers resume the use of alcohol, cigarettes, illicit drugs, or engage in binge drinking.**

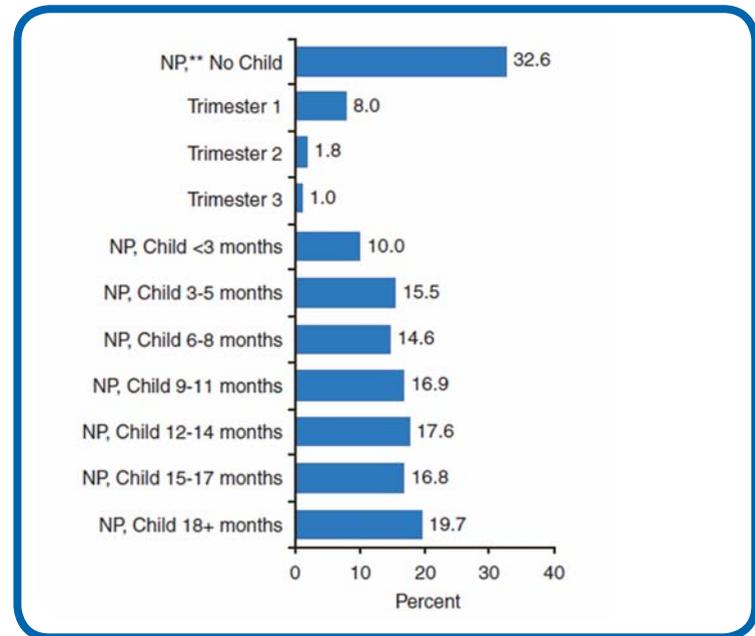
Substance use rates were lowest among women in the third trimester of pregnancy. For example, the rate of past-month alcohol use was 6.2 percent; binge alcohol use, 1 percent; cigarette use, 13.9 percent; and marijuana use, 1.4 percent. Still, a sizeable proportion of women in the first trimester of pregnancy were past-month users of alcohol, cigarettes, or marijuana, and one in seven women used cigarettes in the second or third trimester. However, some of the pregnant women who used substances in their first trimester may not have been aware that they were pregnant at the time.

Findings

Among the report's most significant findings was that many postpartum women rapidly resume substance use.

For example, when compared with women in the third trimester of pregnancy, nonpregnant women with children under 3 months old in the household had much higher rates of past-month alcohol use (6.2 percent vs. 31.9 percent), binge alcohol use (1 percent vs. 10 percent), cigarette use (13.9 percent vs. 20.4 percent), and marijuana use (1.4 percent vs. 3.8 percent), suggesting resumption of substance use among many mothers in the 3 months after childbirth.

Past-month alcohol use among women age 18 to 44 was highest for those who were not pregnant and did not have children living in the household (63 percent), but comparatively low for women in the first trimester of pregnancy (19 percent), and even lower for those in the second (7.8 percent) or third trimester (6.2 percent). Similar patterns were seen with marijuana, cigarette, and binge alcohol use.



Data compiled from a nationally representative sample of approximately 113,000 civilian, noninstitutionalized females age 18 to 44, including approximately 6,000 women who were pregnant at the time of the survey interview.

**Binge alcohol use is defined as drinking five or more drinks at the same time or within a couple of hours on at least 1 day in the past 30 days.

*NP=Nonpregnant.

Source: SAMHSA, Office of Applied Studies (May 21, 2009).
Figure 2. Women's (Age 18 to 44 Years) Past-Month Binge Alcohol Use Rate by Pregnancy Trimester and Age of Youngest Child in Household: 2002 to 2007. The NSDUH Report: Substance Use among Women During Pregnancy and Following Childbirth. Rockville, MD.



In Recent News, Unexpected Causes of Contamination in Newborn Immunoassays Give Positive THC Results

By Nancy J Parra, MA, Marketing Communications Manager

A study, published in the June 2012 issue of *Clinical Biochemistry*, looked into the occurrence of a high rate of positivity for THC in newborn urine and revealed surprising results. External contamination caused by common baby washes used by the hospital for the newborn's first bath resulted in (unconfirmed) positive THC screens.

According to researchers from the University of North Carolina, Chapel Hill, the amount of baby wash in urine needed to result in an initial positive test was less than 0.1 milliliters. This means that tiny levels of soap left on the baby can trigger an initial positive THC test in the baby's urine. Researchers believe the substance is not absorbed through the baby's skin, but washed into the urine from traces left on the skin.

After further inquiry it was discovered that none of the newborn urine specimens had been confirmed by an appropriate GC-MS or LC-MS/MS method but were screen-only results.

Newborn screening for exposure to alcohol and substances of abuse is an important and serious matter.

Unconfirmed urine screens can be tainted and, therefore; hold no forensic value.

The study by the University of North Carolina, Chapel Hill concludes: It is important for laboratories and providers to be aware of these potential sources for false positive screening results and to consider confirmation before initiating interventions. Most importantly, we demonstrate the need for active involvement in the "total testing process," as sources of error are not confined to the laboratory walls.

Screening for suspected exposure must be confirmed by GC-MS or LC-MS/MS if the healthcare provider intends to use the information to provide important services for the child.

USDTL offers GC-MS and LC-MS/MS assays where all positives are confirmed before the results are reported, saving time and money in the long run, while providing forensic substantiation. For more information contact Client Services at 800-235-2367 or visit our website www.USDTL.com.



Why Test for Ethanol Exposure?

What is so important about detecting alcohol consumption during pregnancy that USDTL would develop a test to determine possible maternal drinking behavior?

Here are a few facts that might surprise you:

On average, about 12 percent of women admit to drinking while pregnant. These rates have changed very little over time, according to a 2009 study by the Centers for Disease Control and Prevention that analyzed data from 1991 to 2005.

(<http://www.spectrum.niaaa.nih.gov/charticle/Default.aspx>)

Fetal alcohol spectrum disorders (FASDs) are a group of conditions that can occur in a person whose mother drank alcohol during pregnancy. *There is no known amount of alcohol that is safe to drink while pregnant. There is also no safe time to drink during pregnancy and no safe kind of alcohol to drink while pregnant.* The effects of FASD can include physical problems and problems with behavior and learning.

~Centers for Disease Control <http://www.cdc.gov/ncbddd/fasd/facts.html>

Each year in the US an estimated 40,000 in utero alcohol-exposed children are diagnosed with FASD. Early identification is a key factor to improving outcomes for this group. Currently, identification relies on maternal self-report or the presence of a set of unique physical characteristics. Both of these are subjective tests, which can vary depending on the focus, mood or experience of the tester. Objective tests remove a good portion of the "human" factor providing a repeatable, clinical outcome. CordStat®EtOH is such an objective test. CordStatEtOH tests for EtG in umbilical cord tissue. EtG is a minor product of beverage alcohol (ethanol) metabolism and is therefore a direct alcohol biomarker. Its presence may be used to detect recent alcohol consumption, even after ethanol is no longer measurable. The presence of EtG is a definitive indicator that alcohol was ingested, and an indirect marker of harm, which requires further evaluation.

That is why monitoring alcohol consumption during pregnancy is so important.



United States Drug Testing Laboratories, Inc.

Up Coming Events:

- July 14-17 – Perinatal Dilemmas – Jackson Hole, WY
- August 10 – AWHONN Ohio – Columbus, Ohio
- Sept 5-8 – National Neonatal Nurses Conferences – Chicago, IL

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