

Drug and Poison Information Center (DPIC) DrugScope

Spring 2012

Back to the Basics

Robyn E. Davis MSN, RN, CSPI

Drug abuse has been a growing concern for years. As more and more people, especially adolescents, are plagued with addiction, a review of some basic terms related to drug addiction is necessary. Parents should be especially aware of certain terms related to drug addiction. Basic knowledge of these terms will allow parents and caregivers to recognize the signs and symptoms of drug addiction and allow for early intervention. Below is a list of common terms associated with drug abuse and addiction.

Drug addiction: Adaptive state characterized by loss of control over compulsive drug use despite negative consequences. This combines a physiologic and physical aspect of dependence.

Drug dependence: Adapted state of drug targets that occurs in response to prolonged & excessive drug administration. The body is physically dependent on the drug but there is no mental component.

Drug tolerance: decrease in drug effect associated with a fixed dose. This can lead to someone taking more than recommended to achieve a “high.”

Physical Dependence: Physical state of adaptation to substance.

Psychological Dependence: Emotional state of **craving** a substance. Craving is cause of relapse after prolonged abstinence.

Withdrawal: The physiological and mental readjustment that accompanies such discontinuation. Symptoms of withdrawal depend on the substance that is being discontinued

Narcotic: according to the US DEA, the term narcotic refers to opium, opium derivatives, and their semi-synthetic substitutes. Term is used in a number of ways.

Controlled Substance: a drug or chemical substance whose possession and use are controlled by law. There are 5 controlled substance classes (also called schedules). Only the top three are discussed below as they are the most concerning.

- **Controlled I:** Have a high potential for abuse, have no currently accepted medical use in treatment in the United States. Some examples: heroin, LSD, ecstasy.
- **Controlled II:** Have a high potential for abuse which may lead to severe psychological or physical dependence. A few examples: Dilaudid, Percocet, Oxycontin, Adderall, Ritalin. This is only a small list of the current Schedule II medications.
- **Controlled III:** Have a potential for abuse but potential is less than substances in schedules I or II. Abuse may lead to moderate or low physical dependence or high psychological dependence. Some examples: Vicodin, Suboxone, products with codeine.

These are just a few definitions of existing terms commonly used regarding drug/substance abuse. For more information about drug abuse please visit the following websites: <http://www.deadiversion.usdoj.gov/index.html> http://www.drugabuse.gov/http://www.drugfreeamerica.org/drug_info.html, <http://www.firstgov.gov> <http://www.health.org/>, <http://www.erowid.org> (caution: this website may be biased in favor of recreational drug abuse).

Kratom: *Mitragyna speciosa*

Sarah Feldhaus PharmD Candidate 2012

Robert Goetz PharmD, DABAT

What is it?

Kratom or *Mitragyna speciosa* Korthals is a tree found naturally in the tropical regions of Southeast Asia. Its physical characteristics include opposite leaves, funnel-shaped flowers, and a capsulized fruit with many small seeds. The tree can reach up to 100 feet and have been used for its timber and medicinal purposes.

How does it work?

The leaves of the Kratom tree contain over 20 different alkaloids, but mitragynine is the main alkaloid of interest for both its medicinal and abuse purposes. Mitragynine is an agonist at supraspinal mu and delta opioid receptors. Mu receptor stimulation causes analgesia, euphoria, and respiratory depression similar to other opioid agonists and is the basis for the use of Kratom to treat opiate withdrawal symptoms as well as abuse. Kratom is unique in that at lower doses it acts as a stimulant while higher doses cause CNS depression and analgesic effects. Some researchers theorize that mitragynine may stimulate serotonergic pathways in the spinal cord; however evidence for this effect is limited. Another active alkaloid from the Kratom leaf is 7-hydroxymitragynine which has a high affinity for opioid receptors in mice. It is thought to be more potent than morphine.

Why are people using it?

Low dose Kratom has been used traditionally in Thailand and Malaysia by male laborers to improve productivity, and at higher doses to treat diarrhea. Consumers use Kratom recreationally for its euphoriant effects. It is also commonly used to self-treat opiate withdrawal symptoms, mood and anxiety disorders, attention deficit disorder (ADD).



How is it being used?

Kratom is available as actual kratom leaves and as a powder, or resin. The resin and powder forms tend to be more potent than the leaves. The potency of the leaves depends on growing conditions and harvest time. The leaves are most potent in late autumn. Plants grown in hothouses and in colder climates are not as potent as those grown in tropical climates. Users of kratom leaves may chew them, smoke them or use them to make a tea. Powder and resin may be smoked, ingested plain or as prepared capsules. The onset of effects can take as little as 5-10 minutes after chewing the leaves.

What sort of side effects does it cause?

Therapeutic and toxic doses are not well defined. Determining the correct dose with plant matter is by nature subject to large variability. Typical opioid-like effects including tolerance are similar those seen with codeine. Nausea, vomiting and diarrhea are common in Kratom users. All levels of CNS depression should be expected. Nystagmus and tremor have been reported occasionally. Long term use may be associated with weight loss, hyperpigmentation and psychosis. Chronic use may also lead to addiction.

Is it legal in the US?

Kratom has been illegal in Thailand since 1946 and was made illegal in Australia in 2005. At present, Kratom is not a controlled substance in the United States and can be purchased online.

References:

<http://www.mitragyna.com/en/buy-kratom>

Micromedex

Clinical Toxicology –K.M. Babu

The Use of Adulterants for Urine Drug Screens

Rob Goetz PharmD, DABAT
 Jared Timmons PharmD candidate 2012

The use of urine drug screens to detect illicit drug use has become a billion dollar industry in the United States. Such screening has become common in the workplace, the criminal justice system, the substance abuse treatment system, emergency rooms and even in schools. The growth in the use of substances (adulterants) to block evidence of recent drug use/abuse has increased over the last 20 years in parallel with the growth in urine drug screen industry. Drug users may use a variety of household chemicals and commercially available products intended to render their urine drug screen results falsely negative.

One of the simplest ways avoid detection is to get clean urine from a second person who is not using illicit substances. For example, one might obtain urine from a pregnant spouse. It is also possible to find drug free, freeze dried urine and fake urine delivery devices like the Whizzinator for sale on the internet

There are two main types of adulterant: *In vitro* and *in vivo*. *In vitro* adulterants are added to the urine at the time of sampling. *In vivo* adulterants are taken internally and aim to alter the urine mainly by dilution. These adulterants include household chemicals and medicines as well as commercially prepared products specifically designed by chemists to obscure the presence of abuse drugs.

Household chemicals that have been used as adulterants include but are not limited to: bleach, vinegar, Visine eye drops, Drano, soap/detergent, ammonia, and table salt. Some of these adulterants can produce false negative results for some drugs. However, they also may change the urine's temperature, pH, or specific gravity which allows the testers to detect tampering.

Both *In vitro* and *in vivo* adulterant products are commercially available. Commercially available *in vitro* adulterants are sold under a variety of trade-names including: glutaraldehyde (Clean-X, Instant Clean Add-it-ive, and Urine Aid), nitrites (**Klear, Whizzies, Purafyzit, and Krystal Klean**), pyridinium chlorochromate (**PCC**) (Urine Luck, LL-418, Sweet Pea's Spoiler, and Klear II), peroxidase and peroxide (Stealth). Similar to the household chemicals, these are added to the urine at the time of sampling with the expectation that the additive will result in a false negative.

Household Adulterants Effects on Urine Drug Screens*								
	THC	Amphet-amine	Opioid	Cocaine	Benzos	LSD	PCP	Barbitur-ate
Bleach	X	X	X	X	X		X	X
Vinegar	X	X						
Visine	X							
Drano	X	X	X	X	X		X	X
Detergent/ Soap	X	X	X	X	X		X	X
Ammonia				X			X	
Table Salt	X	X	X	X	X		X	X

*Varies by type of drug test, drug/metabolite concentration, history of drug use. X implies a false NEGATIVE test result.



The OARRS program

Laura Nickell, RPh, CSPI

The OARRS program is Ohio's prescription drug monitoring program (PDMP). It was started in 2006, in an effort to assist health care providers identify potential abuse and diversion of controlled substances. All pharmacist and doctors who dispense any controlled substances, carisoprodol or tramadol in Ohio must report patient specific information to the OARRS program within 1 week. Dispensing pharmacists, prescribers (MD, RN, Dentist), law enforcement, and licensing boards can request an OARRS RX history report on a specific patient. Individuals can also request their own reports from the State Board of Pharmacy. For patients on chronic therapy, the prescriber is required to review the patient OARRS report at least yearly.

For pharmacist and providers, the rules for assessing an OARRS report are similar to other HIPAA documents. Providers should only be reviewing OARRS reports for patients they are actively treating. For pharmacists, a patient presenting a prescription is considered a patient even if the prescription is not filled. Providers may review a report on patients that have scheduled an appointment even if they have not yet seen the patient. Law enforcement and licensing boards have more stringent rules.

The OARRS search is formatted to find patients even if a nick name was used, incorrect spellings occurred, change of address, or incorrect birth dates were entered. There is a potential that the reports could include more than one patient. Because of inherent problems in the data, the OARRS report is not a legal document. So, it should not be put in a patient's chart, and all the information in the report needs to be verified before any action is taken. After verification, appropriate health care providers or law enforcement should be contacted; however, the OARRS report should not be shared with other providers, patient or law enforcement. Each provider must obtain their own report. In Ohio, the program is managed by the State Board of Pharmacy, and their web site is www.ohiopmp.gov.

Currently, most states have a prescription drug monitoring program, and some are able to exchange information with other states. OARRS is not currently able to exchange data with other states. It is hopeful that in the near future, there will be a national database.

© 2009 By the Cincinnati Drug & Poison Information Center (DPIC) and the Cincinnati Health Department.
Editors: Alysha Behrman RN, MSN, CSPI, OCPS II, CARN, Sheila Goertemoeller RPh, CSPI, OCPSII, Jan Scaglione, BS, MT, PharmD, DABAT, Gaylene B. Tsipis, MS, RPh, OCPS II
Editorial Board: Earl G. Siegel, PharmD, OCPS, Rob Goetz, PharmD, DABAT, Alicia Aumentado, RPh, OCPS, E. Don Nelson, PharmD, OCPS and Marsha A. Polk, HPT, OCPS.
The opinions expressed herein are those of the contributing authors and do not necessarily reflect the views of the editor, publisher or supporting institutions. DPIC is a service of the Cincinnati Children's Hospital Medical Center and Children's Hospital Research Foundation. Services are also supported by: the US Department of Health and Human Services (HRSA), the Ohio Department of Health, Hamilton County Mental Health and Recovery Services Board, Butler County Alcohol and Drug Addiction Services Board and the Ohio Department of Alcohol and Drug Addiction Services (ADADAS). Additional support for DPIC services is provided by Akron Children's Hospital Medical Center and additional member Hospitals.