New Drug Treatments Show Promise in Treating Marijuana Dependency

Cannabis dependency is a stubborn phenomenon. Responsible for a quarter of all in-patient admissions around the world, addiction to cannabis products is associated with significant cognitive, work, and social dysfunctions. The treatment of cannabis dependency has been a hit-and-miss proposition. Withdrawal from chronic marijuana use can be lengthy. Cravings may be quite powerful. Disruptions to the sleep cycle are almost certain. Many prescription medications have been employed to treat the more troubling symptoms experienced by recovering marijuana users. These drugs all work through a variety of different mechanisms. But ultimately, conventional pharmaceutical medications have proven to be ineffective.

In recent years, gabapentin, a GABA analogue, has been utilized in off-label applications in the treatment of some forms of anxiety. Gabapentin is not a narcotic. This drug has also been used to treat certain manifestations of neuropathic pain; gabapentin use in pain management is widespread. In the treatment of cannabis-dependent patients, some addiction medicine physicians have taken to using gabapentin as a means of reducing patients' symptoms of drug withdrawal. In many of those cases, the course of treatment progressed faster and involved fewer relapses. In all, it appeared that gabapentin possessed some real promise in helping cannabis addicts cope with the debilitating effects of withdrawal. To that end, researchers conducted a pilot study of gabapentin’s effectiveness. In a 12-week
randomized, placebo-controlled trial, 50 chronic and dependent cannabis users were enrolled in a careful study. All participants received motivational enhancement and counseling in the form of cognitive behavioral therapy1.

Compared to placebo, those who were treated with gabapentin exhibited fewer days of cannabis use and lessened symptoms of withdrawal and drug cravings. The gabapentin-using patients also exhibited greater improvement in executive function and fewer systemic physical problems associated with their drug use. In this study, patients were treated with 1200 mg of the drug in three divided daily doses. The drug appeared to be well tolerated. With a broad spectrum of positive effects apparent in this study, gabapentin looks like a medication that can have immediate and beneficial effects on the symptoms and progression of recovering cannabis addicts.

In related news, N-acetylcysteine (NAC) has also been evaluated for efficacy in the treatment of cannabis dependent teenagers2. NAC has been proffered as a potential benefit in the treatment of cocaine and nicotine cravings. It has also been ventured as helpful in reducing some symptoms of schizophrenia and bipolar disorder. A pro-drug of amino acid cysteine, the substance is available in a variety of different compounds and products. Researchers recently concluded a double blind, randomized- and placebo-controlled study of the effects of this substance in 116 cannabis dependent teenagers. Patients received 1200 mg of NAC, twice daily over an eight week course of therapy. In this study, the NAC treatment group had significantly more negative urine test results than those treated receiving placebo (NAC group 40.9% negative; placebo group 27.2% negative). But there were no differences between these groups when secondary measures of effectiveness were considered. Despite the lack of difference in secondary measures, experts opine that NAC may be a useful tool when combined with a contingency-based cannabis dependency treatment program and they argue for further careful study of the substance. Available as an over-the-counter supplement, NAC is well tolerated and is fairly affordable. Gabapentin and N-acetylcysteine both appear to have positive effects on the symptoms and course for recovery of addicted patients. Let’s hope that follow-on studies corroborate these early findings. We could all use some good news in the battle against marijuana dependency.

President Obama Signs Federal Bath Salts and Spice Ban into Law

On Monday, July 9, 2012, President Obama signed into law sweeping legislation designed to rein in the menace of designer drug abuse. Designer drugs are synthetic substances that consist of chemicals that, when taken, mimic the effects of illicit substances, such as methamphetamine, ecstasy and marijuana. The chemical structures of these drugs often turn out to be near clones of the illicit drugs they emulate, a nuance that allowed the synthetic drugs to be sold as legal alternatives to banned drugs. And as legislation has evolved at the state level, the drug manufacturers have changed their chemical formulas just enough to avoid the law; street chemists have turned out to be adept in reacting to the actions of government.

The nefarious synthetic substances impacted by this legislation are marketed and sold over the Internet and in convenience stores. Marked as “not for human consumption,” these drugs are clearly designed for snorting or smoking by humans. Sold as “bath salts,” “glass cleaner” and “ant powder,” these substances have proven to be extremely dangerous and totally unpredictable in their effects. Using

brand names of “Ivory Wave,” “Legal Phunk” and “Vanilla Sky,” these drugs have been widely marketed and sold in the United States. Manufacturers of these drugs are found mostly in Europe, well outside the reach of domestic law enforcement agencies. Few U.S. communities have been spared the effects of these drugs. Contemporary versions of these drugs seem to be an ever-changing mix of a core set of hallucinogenic compounds. The net effects seem to be a synergy of cocaine and L.S.D. with users often citing frightening hallucinations and over stimulating effects. Driving the effects of these drugs have been substances like MDPV (3,4 methelynedioxpyrovalerone) and mephedrone (4-MMC). These two drugs are among the many that are banned by the legislation.

This bill was largely the work of Senators Amy Klobuchar (D-MN) and Charles Schumer (D-NY). The bill enjoyed bipartisan support, a rare occasion in Washington D.C. these days. Their bill also includes provisions that ban a large swath of synthetic cannabinoids, compounds called K2 and Spice. An entirely different class of synthetic drugs, these cannabinoid-like substances closely mimic the activity of the primary intoxicant found in organic marijuana. Sold as purported herbal room odorizers and potpourri, the Spice/K2 products are smoked using special pipes and “bongs” made exclusively for that purpose. Users of the synthetic cannabinoids frequently compare these lab-made drugs to marijuana cultivated from the cannabis plant. K2 and Spice are described as being more powerful than its organic cousin, the marijuana plant. They’re said to be more energizing and arousing than plant-harvested marijuana. In fact, many marijuana users dismiss the K2/Spice products as marijuana alternatives because the effects and symptoms are too harsh. Nevertheless, these drugs have experienced explosive growth in drug using communities nationwide. Poison control centers and hospital emergency rooms have had to deal with a wave of K2/Spice users who were unprepared for the drugs’ “upper” effects.

In all, the federal legislation signed by President Obama bans 31 different substances and relegates them to Schedule I of the Controlled Substances Act. Hopefully this bill will curb accessibility to these drugs and the serious health hazards that they represent.

Drug testing of people suspected of “bath salt” or K2/Spice use is available through the auspices of some specialized laboratories. MEDTOX Laboratories has developed a battery of special drug testing protocols in response to the designer drug phenomenon. Contact a MEDTOX government sales representative for more information.

More technical information regarding the ban on synthetic cannabinoids and “bath salts” can be obtained by contacting the MEDTOX Journal directly or the MEDTOX DARS program at darsprogram@mac.com.

**Medicinal Marijuana Programs Prove Risky for Teenagers**

For some time now, the diversion of prescription drugs from parental medicine lockers into grab bags featured at teenage “cabinet parties” has been problematic. In fact, the problem of psychotropic drug diversion is a growing one. Besides the usual suspects of diverted hydrocodone and oxycodone, kids redirect drugs of all sizes and shapes from their friends and parents. From gabapentin to cyclobenzaprine, adolescents routinely collect and experiment with second tier drugs whose purpose and central effects are unknown to them. And now is the threat of medical marijuana diversion, the redirection of legal marijuana prescriptions from recipient to recreational user. With scientific reports warning that use of marijuana in teen years heightens the risk of psychosis in adulthood, the diversion of medical marijuana becomes a serious issue to evaluate.
A recently released study in the Journal of Child and Adolescent Psychiatry points out the hazards posed to kids through the auspices of medical marijuana. Focusing on the Denver, Colorado greater metropolitan area, researchers studied the prevalence and frequency of adolescent marijuana diversion. Colorado is one of 16 states that have established protocols for the legal use of medicinal marijuana. Colorado is a state that is heavily populated by medicinal marijuana clinics; Colorado is home to more than 80,000 registered medicinal marijuana users. Of great concern to residents inside and outside of Colorado is the impact that the medicalization of marijuana has had on overall adolescent attitudes towards marijuana. Two camps exist to argue this point. There is research evidence that suggest that medical marijuana programs do reduce risk perception in kids. Other studies have reached the opposite conclusion. That debate will rage on. But this study makes pretty clear what the diversion risk is for medical marijuana.

In the study referenced, researchers evaluated 164 subjects in an age range of 14-18 years old. Participants were culled from two area substance abuse programs and underwent comprehensive assessments by researchers. Of the adolescents participating in this program, 74% had used marijuana diverted from a source that possessed a legal prescription; 80% of the diverters were male. Only one of the subjects possessed a legitimate medical marijuana registration card. The kids involved in diversion displayed higher rates of marijuana use disorder. They also engaged in more troublesome conduct when compared to those kids who did not divert.

The percentage of adolescents who participate in medical marijuana diversion is troubling, even in a state where marijuana availability is widespread. Physicians (pediatricians, child psychiatrists, etc.) and counselors should add inquiries about diversion of medical marijuana to the list of questions asked of kids who may be diverting other psychotropic drugs. Physicians who treat patients who use medical marijuana need to educate them about the risks and dangers when kids have access to stores of medical marijuana.

Drug diversion of any substance by adolescents is a serious concern. This study establishes the need for adults to act responsibly and safely when participating in a course of medical marijuana treatment.

“Shake and Bake” Method for Making Methamphetamine Lands “Cookers” in Hospitals

Methamphetamine, also known as crank, ice, and speed, manufacture has always been a dicey proposition. In the 50s and 60s, the halcyon days for outlaw motorcycle gangs and their drug trafficking efforts, methamphetamine production was a somewhat elegant process. West coast motorcycle gangs gave birth to modern crank. They made speed via a method of reductive amination of phenyl-2-propanone (P-2-P) with methylamine. For this reaction, as well as other similar routes of synthesis, methylamine was the critical component. Restrictions on the sale and availability of methylamine forced early crank cookers to other methods of manufacture. But no matter what recipe was adapted by its makers, methamphetamine production has always been a flammable venture, especially in cases where cookers sought to make their own methylamine. Using model airplane gas, motorcycle gangs added methyl iodide with hexanamine to create their own methylamine. This method had explosive

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potential. And explode it did. Many a biker meth lab went up in blown out windows and flaming lab gear. As far as blown up labs go, things have not changed all that much since.

As American law enforcement and regulatory officials cracked down on precursor chemicals, cooks moved to new methods of manufacture. The most well known evolution of it occurred with a formula that reduces the drug ephedrine (or pseudoephedrine). It is a simple process that can be undertaken with just a few drugs and chemicals, all of which can be purchased at pharmacies and hardware stores. Hydrogen iodide and red phosphorous were the necessary components. Pseudoephedrine found in cold and allergy tablets was a prime source for the molecular core needed to make methamphetamine. The alleged Nazi method was the next iteration of illicit crank production. Through 2005 or so, this method came to dominate most instances of the drug's manufacturing. The method employed here is quite reactive and quite unstable. It mixes venerable pseudoephedrine in a reaction consisting of anhydrous ammonia (liquid) and some type of alkali metal. Lithium was the most common choice for the alkali metal, often times stripped from small D, C, and AAA-size batteries. Components necessary to undertake the Nazi method were relatively easy to come by and so the method flourished as one of the most common recipes for cooks. Not too concerned about clean up and safe disposal of unstable or caustic ingredients and reagents, meth cooks frequently dumped or abandoned their labs where they’d been operated or where they had last used. Hotel rooms, state parks, automobile trunks, and kitchen sinks were common repositories for the detritus generated by these illicit drug labs. An entirely new industry of government services emerged out of this. Hazardous material crime lab crews now can be found in most major urban police and sheriff departments. The dismantling and removal of discarded chemicals and lab gear consumes the majority of their time and efforts.

The most recent incarnation in methamphetamine manufacture is the shake and bake method. Sometimes called the one pot method, it is used mostly by small time dealers and users who can literally sit and watch the reaction fulminate in their hands. The ingredients necessary to run shake and bake can be carried in a backpack, purse, or shopping bag. Shake and bake can be run while seated in a car, while watching television, or lying around in bed. The method requires pseudoephedrine tablets (Sudafed etc.), ammonium nitrate (fertilizer), Coleman lantern fuel (or similar solvent), lye (plumber’s lye works great) and lithium (from batteries again). The concoction is mixed in a large plastic vessel of some sort. Typically shake and bake cookers will use discarded 1.5 liter soft drink bottles for the purpose of mixing the ingredients. For larger batches, 5 gallon water bottles can be considered. Mixed together, the ingredients give off gas; they create pressure and heat. The plastic vessel must be vented at various points in the process in order to control the process; cooks call this process burping. Too much pressure can foul and ruin the final product. By the same token, should outside air be allowed to react with the lithium inside the vessel, a flash fire can occur. Further contact by water with the lithium can cause fire and/or explosion of a different and potentially more powerful sort. This method is extremely dangerous for anyone located in the vicinity of a one pot laboratory.

The shake and bake method is responsible for a surge in patients admitted to burn units in hospitals of methamphetamine-impacted communities. By some estimates in affected communities, up to a third of all patients in burn units are there because of injuries sustained while attempting a shake and bake meth cook. And most of them lack health insurance or any legitimate means of paying their bill. In some areas where methamphetamine has become a suffocating blight, burn units are stretched to the financial breaking point. People hurt and burned by shake and bake mishaps frequently present at hospitals with burns to their hands and abdomen; oftentimes the burns are complicated by infection and neglect. Since the reaction vessel (plastic bottle) is held so close to the body, the potential for upper torso injury is great. Thermal burns to the lips and face are very common. Many a cook can be found
with scars on their hands or forearms. Others bear the lifelong marks of burn scars on their face and scalp.

Complicating the task of treating and rehabilitating burn victims is the fact that suborning the situation is an addiction, an untreated addiction. As a result, burn victims rarely tell their doctors or nurses the truth about what has happened to them. Oftentimes physicians know what has occurred, but they are unable to coax the patients to honesty. Frequently patients bear more onerous long-term effects because doctors were unable to get critical information needed to formulate an effective treatment plan. Methamphetamine addiction is as onerous a substance abuse problem as there is. For the burned or injured cook, a return to lab duty is a sad certainty. In some instances, burn patients being treated in the hospital have been known to go outside for a smoke and then return to their floor exhibiting class signs and symptoms of methamphetamine use. The drug’s ability to hijack and rewire the human central nervous system is profound.

Readers who deal with methamphetamine addicts or those in recovery from methamphetamine addiction need to be attentive to the potential for *shake and bake* accidents with their clients and patients. Consideration also needs to be given to family members, especially children who may be within the sphere of contact with a *shake and bake* or one pot method cooker. With most crank busts now involving this method, authorities must be attuned to the signs and symptoms of methamphetamine manufacture. Sure clues can be found by looking at the hands and arms, as well as the face and scalp of at-risk people for signs of contact with *shake and bake* chemicals.

If one were to ever encounter the ingredients of a live or, for that matter, abandoned one pot laboratory, it should be left alone and not disturbed. Immediately call your local police or sheriff’s department and notify them of your discovery. A specially trained cadre of law enforcement and crime lab personnel will respond to safely dismantle and dispose of lab contents.

MEDTOX’s Drug Abuse Recognition (DAR) team is made up of law enforcement experts who have worked with methamphetamine cooks and crank labs for many years. Questions regarding this aspect of methamphetamine abuse can be directed to the DAR group at DARSProgram@mac.com or by contacting Mr. Andrew Gilberts, Agilberts@medtox.com.

**Name That Drug: Is This Common Prescription Drug an Abused Drug?**

This month’s mystery drug is a widely prescribed medication, a drug that is routinely combined with other drugs to create a sedative cocktail that reduces human misery. It is not however a controlled substance, at least not in the United States. This drug is a member of a larger class of drugs, a diverse lineup of substances that work through some rather mysterious ways. In fact, the method of action for this drug is not known. That can be rather unsettling to a patient or user, but “mechanism unknown” is not an uncommon characteristic of drugs found in this class. This drug is available in brand name and generic formulas; the brand names for this substance reveal its nature.

This drug is frequently prescribed to weekend squires who overexert themselves. Sprained backs are pretty painful conditions to be sure. Acute musculoskeletal spasm is agonizing. This month’s drug would probably be a first line of defense with any prescribing physician in the know. Our drug this month is primarily used to treat painful musculoskeletal conditions. It is also frequently deployed as a response to the pain and aggravation of fibromyalgia. Of interest here is that although quite effective in quieting the
pain of spasm early on, the drug loses potency over the long haul. There is little evidence to suggest that the drug is of any real use after about two weeks of therapy.

Although the drug can be safely used as solo drug therapy, it is particularly valuable when combined with other related medications in dual therapy. When partnered with opiates, this month’s drug can help achieve a heightened state of analgesia and relaxation for an affected patient. Of particular popularity is a combination of this drug with the low potency opioid, tramadol (Ultram; Ultracet). This month’s drug displays interesting structural chemistry. It closely resembles drugs of the tricyclic antidepressant family. These are drugs that exert action by slowing the reuptake of the central nervous system neurotransmitters norepinephrine and serotonin. Amytriptaline (Elavil) is probably the best-known drug of the tricyclic family. First released to the market in 1961, Elavil was a blockbuster drug. Still in use today, Elavil is prescribed for conditions that span migraines to post-traumatic stress disorder. This month’s drug possesses some of the traits exhibited by Elavil. But unlike Elavil, this drug is not an antidepressant.

Competing against this month’s drug as a pharmaceutical alternative is a medication called methocarbamol; it is also known by the brand name drug Robaxin. Methocarbamol is a prescription drug as well, but it is not a controlled substance. Compared to this month’s drug, methocarbamol is less prone to diversion and abuse. Frankly, this month’s drug does not possess much of a potential for abuse either. But it does happen. At websites where drug users compare notes on their experiences, this month’s drug is on the menu. It’s not a drug known to do much more than trigger a little buzz and to make the user feel sleepy. Oddly, most abusers of the drug who write about their experiences with the drug cite the fact that it can cause sedation that leads to sleepiness, but it doesn’t directly lead to sleep. Where abuse of this drug is most common is in instances where it is fashioned into a drug cocktail with either oxycodone or hydrocodone. In that sense, this month’s drug is not all that much unlike carisoprodol, a muscle relaxant and very widely abused variant of meprobamate that is routinely partnered on the street with oxycodone (Percocet, Oxycontin) or hydrocodone (Vicodin, Lorcet and Norco) to heightened analgesic effect.

With a brand name of Flexeril (last clue), this month’s drug in higher doses is capable of causing marked sedation. When mixed with alcohol, a synergistic effect may ensue, a condition where sedation and central nervous system depression become greatly exaggerated. Someone who has consumed alcohol concurrent to use of Flexeril would probably be unfit to operate an automobile. It is not clear that users develop psychophysical tolerance to the sedating effects of this month’s drug.

For our DAR trained readers, someone encountered under the influence and inebriated by this drug will exhibit the following signs and symptoms:

- Horizontal gaze nystagmus is present.
- Vertical nystagmus not present.
- Lack of convergence present.
- Pulse in the range of normal.
- Romberg clock in the range of normal
- Pupil sizes in the range of normal.
- Pupil reaction to direct light mildly slowed.

Answer:
This month’s drug is cyclobenzaprine; also known as Flexeril.

What’s Up with Cannabis Candy?

For some time now, the news has reported on a variety of foodstuffs that have been found laced with marijuana or impregnated with concentrated THC components. Marijuana-infused food products, such as cakes, brownies, cookies, and even butter have been around the drug using scene for a while now. The medical marijuana movement has been a catalyst for the development of new means of marijuana delivery. Take a look at Oaksterdam University in Oakland, California. This institution offers a series of semester-long courses devoted to the study of culinary methods used to infuse popular foodstuffs with marijuana. “Cannabis Infused Sweet and Savory Recipes” is but one course offered to students who want to learn how to cook with marijuana. Another course titled, “No Cooking Required! Bliss Edibles Method” chronicles the techniques necessary to create quick potions and tinctures of marijuana that do not require the use of heat in cooking. There, students learn how to use kitchen tools, such as blenders and grinders, to make their intoxicating foods. Marijuana cuisine is expanding in size and scope. And with that comes some serious problems, especially when children and teenagers are exposed to these products. This situation is exacerbated when the involved foodstuff looks and tastes like candy.

Recent reports have emerged from law enforcement and news sources regarding hard candy or rock candy that contain concentrated amounts of THC. These products are quite different than pot-flavored candy. “Kronic Candy” and “Pot Suckers” are ostensibly THC-free sweets that are flavored to taste like marijuana, but they are not intoxicating. A number of companies market and sell these flavored sweets, most of which are produced in Europe. Beyond the specter of cannabis-flavored candies however is the emergence on the streets of real THC-containing “candy weed.” The formulas for these candies can be found with a quick search of the Internet. At www.grasscity.com marijuana aficionados can easily find recipes for hard candy butterscotch, Russian hard candy, and saltwater taffy. Most of these concoctions require the use of marijuana butter to spike it. And of course, there are several special recipes for the production of the marijuana “ganja butter” itself. As you might imagine, the potency of these products can vary widely. Depending on the amount of THC in the marijuana used to create “ganja butter,” these candies can be relatively weak. They can also potentially be quite intoxicating, capable of causing very noticeable symptoms of marijuana intoxication. It appears that at least one version of real “candy weed” has popped up on the streets of the west coast, as well as in parts of the Midwest. Using methods outlined above, organic marijuana is ground down into a very fine powder. It is then mixed with a vegetable oil and brought to boil. Pressed through cheesecloth to separate impurities, the liquid is quickly cooled and fashioned in the form of a desired candy. Food coloring can be employed to give the candy a desired tint. The final product appears as small, square, bite-sized candy.

For the more ardent candy marijuana makers, a distilling process is used by which the pressing and filtering phase is repeated several times. In doing this, the manufacturer can create a titrated liquid of very concentrated THC. This potent liquid can then be mixed with water, corn syrup, and sugar to create a candied cube about the size of a Jolly Rancher sucker. Although these products can be smoked, they are nearly always eaten. Someone who eats one of these candies may exhibit the classic DAR or DRE signs of cannabis (marijuana) intoxication. A urine drug test will likely reveal presence of delta-9-THC and/or its metabolites in someone eating these candies.
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