



## Marijuana

### Overview

Although marijuana has been illegal in the US since 1937, it is still the most commonly abused illicit drug. It is commonly known as "pot", "grass" or "weed".

There are several forms of marijuana that are obtained from the *Cannabis sativa* plant. Marijuana is dried plant material including leaves, stems and seeds. Sinsemilla is seedless flowering tops of the female plant. Hashish is dried resin from the flowering tops of the plant and hash oil is extracted dark liquid, high in the psychoactive component.

### Sources and Potency

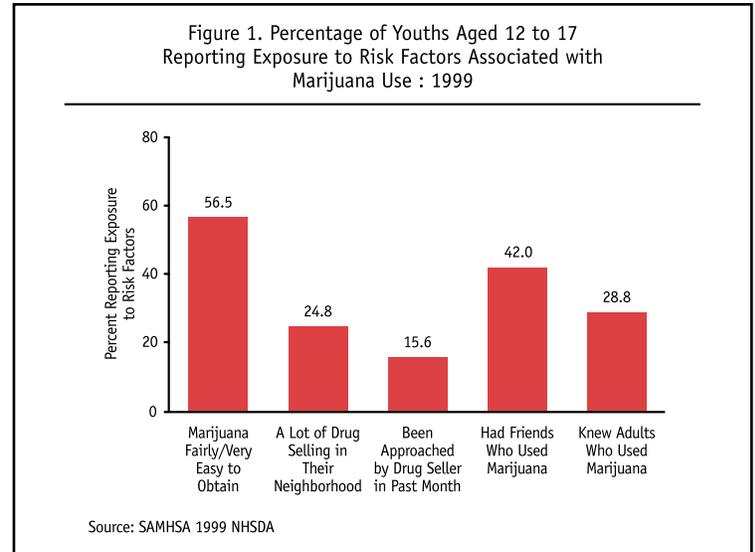
In 1987, the majority of marijuana confiscated in the US had originated in Columbia or Mexico and less than 40% was from the US. However, in 2001 more than 60% of seized marijuana was grown in North America with the majority coming from California and British Columbia, Canada.

Not only has the source of marijuana changed in recent years but the potency has increased as well. The active component in marijuana is delta-9-tetra-hydrocannabinol (THC). In the 1960's the average THC content was 1.5%, in the 1980's it had increased to 3.5%. Today the average THC content is greater than 5% with indoor cultivation of sinsemilla having up to 20% THC.

### Usage

There are approximately 14 million illicit drug users in the United States representing 6.3% of the population. Marijuana abuse, particularly in teenagers, continues to be a problem. The prevalence of marijuana use in teenagers peaked in 1979 at 50.8% and reached a low of 21.9% in 1992. In 2000, teen usage rose to 37% and has remained constant since then. These numbers are of little surprise when one considers the ease at which teens may obtain marijuana (Figure 1). Marijuana related emergency department visits have been on the rise since 1992 (Figure 2).

Marijuana exposure resulted in over 3,000 calls to poison centers during 2000. The majority of these calls were for patients less than 19 years of age including 122 calls for



children less than 6 years old. Over 2,400 of these patients were treated in a health care facility.

Clues that marijuana may be in use include the presence of plastic baggies, rolling paper, "roach" clips, or odor of burnt rope in the residence.

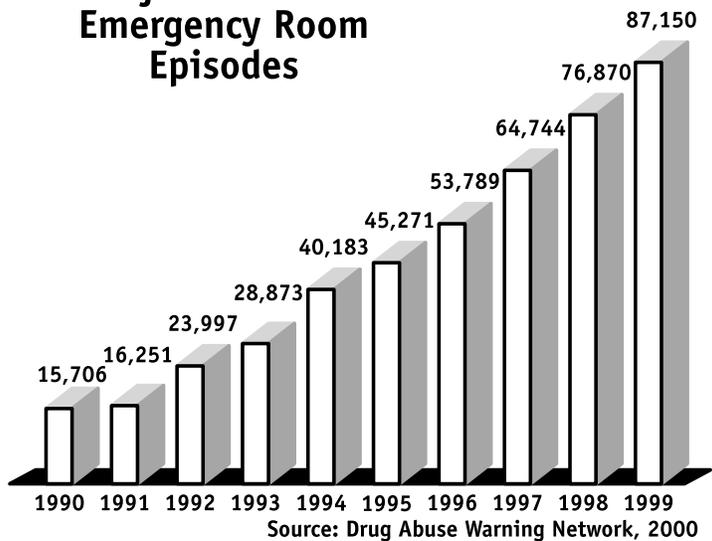
### Pharmacology

The preferred route of exposure is through inhalation by smoking the plant product. After inhalation, peak THC concentrations are reached in 7-8 minutes and peak effects are seen in 20-60 minutes. Only 18-50% of available THC is absorbed by inhalation. The duration of effect is usually 1-4 hours. THC is also absorbed via the GI tract but only 5-20% is bioavailable. The onset is delayed 30-60 minutes after ingestion and the effects persist for 4-6 hours. THC is metabolized to several metabolites including 11-hydroxy-THC which easily crosses the blood-brain barrier. THC is metabolized by the liver and stored readily in lipophilic tissues. It is eliminated slowly from the body and is highly protein bound (98%).

THC affects several areas of the human brain. It stimulates the dopamine pathway through endogenous THC receptors affecting mood. THC also binds with hippocampal receptors thus affecting short-term memory. Motor coordination is altered via binding with cerebellar receptors.

Figure 2.

## Marijuana-Related Emergency Room Episodes



## Clinical Effects

The desired effects from smoking or ingesting marijuana are primarily neurologic in nature. These include euphoria, relaxation, increased sensory awareness and altered space and time perception. However, many other effects of marijuana are not desired. These include decreased short-term memory and coordination, sinus tachycardia, pulmonary mucosal irritation, dry mouth, conjunctival injection and increased appetite.

At high concentrations the effects are more profound. There is a significant decrease in motor coordination and strength. Slurred speech, ataxia, nystagmus, sedation and lethargy are usually evident. Panic reactions often develop at high doses also.

Chronic use of marijuana is associated with significant health risks. Chronic smokers are at risk for both obstructive and restrictive lung disease and are at increased risk for lung carcinoma. Chronic users tend to have decreased REM sleep and may suffer from blackouts. Memory and attention deficits may also accompany long-term use.

## Laboratory Testing

Urine testing for marijuana is the most common method of detection. Commercial urine tests target the detection of the primary urinary metabolite of THC, 9-carboxy-THC. However, they may also cross-react to other THC metabolites in the urine. Most immunoassay kits use a cutoff of 50-100 ng/ml based upon several studies of passive inhalation. This level is set so that passive exposure to marijuana smoke will not cause positive tests in non-users.

Several substances are purported to “mask” or cause a false negative urine test. These substances may be added

to the urine sample and include acidic or alkaline liquids, salt, soap, bleach, Visine®, and vinegar.

Urine testing can detect marijuana use within the last 10 days in infrequent users. Duration of positive tests depends on frequency of use. Chronic users are positive for approximately 27 days with a range of 16 to 77 days. There is a myriad of kits available for “home testing” for drugs of abuse, including marijuana. The UPCC does not recommend that parents drug test their children at home. Rather, we encourage frank family communications regarding drug abuse and to seek counseling from their physician or a social worker familiar with substance abuse when necessary.

## Pediatric Ingestions

Sadly, it is common for children to find and ingest marijuana that lead to significant clinical effects. Children who ingest one marijuana “joint” may develop rapid onset of drowsiness, marked hypotonia, hypothermia, ataxia and nystagmus. Rarely, respiratory distress or coma may be seen. Decontamination must be undertaken if it is believed the child ingested more than one marijuana joint or cookie.

## Overdose Treatment

Activated charcoal may prevent further absorption from the gut if ingestion is within a couple of hours but clinical data is lacking on efficacy. There is no specific antidote for marijuana overdose or ingestion. Furthermore, it is not possible to enhance elimination of THC from the blood or tissues. For patients who present with severe anxiety or panic reaction, a benzodiazepine may be considered. An environment to reduce self-harm is needed for patients who are ataxic or hallucinating.

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High School and Youth Trends: [www.NIDA.NIH.GOV/INFOFAX/HSYouthtrends.html](http://www.NIDA.NIH.GOV/INFOFAX/HSYouthtrends.html)  
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Marijuana Treatment Admissions Increase:1993-1999:  
[www.SAMHSA/dasis.marijuantreatment](http://www.SAMHSA/dasis.marijuantreatment)  
Obtaining Marijuana Easy for Youths: [www.SAMHSA/NHSDA/obtainingmarijuan](http://www.SAMHSA/NHSDA/obtainingmarijuan)

## UPCC Policy regarding Tablet Identification

The Utah Poison Control Center (UPCC) changed its policy several years ago regarding identification of tablets for the lay public. We want to make you aware of this policy change and the reasons for the change.

Tablet imprints are often hard to read. For a lay person unfamiliar with imprint codes, mistakes are easily made. The consequences of misidentifying a tablet could be significant. Therefore, the Utah Poison Control Center will no longer identify an unknown tablet/capsule from a lay caller. Our recommendation to the caller is to TAKE the medication to their local pharmacy. The Utah Poison Control Center is happy to assist the pharmacist in the identification of the tablet.

The Utah Poison Control Center WILL identify tablets under certain circumstances. The following are situations in which the Utah Poison Control Center will identify tablets/capsules:

- Requests from pharmacists or other health professionals who have visually inspected the markings on the tablet or capsule.
- Requests from law enforcement officials who have visually inspected the markings on the tablet or capsule.
- Patients who are taking a known list of medications and need to sort out which medication is in question.

Please feel free to call the Utah Poison Control Center 24-hours a day for assistance. The staff are ready and willing to answer your calls whether it be regarding a poisoning emergency or to assist you in identification of a tablet that your patient has brought in. In order to avoid a discussion of the new tablet identification policy, it is helpful if you can identify yourself as a health care professional at the beginning of the call.

Thank you for your help and we look forward to working with you!

## Meet the UPCC Staff



Bruce Garrett has been a Specialist with the Utah Poison Control Center since January 2000. He has a Bachelor's Degree in Nursing and is still practicing as an ER/ICU nurse in Salt Lake City. Previously Bruce was a Firefighter, EMT, and Hazardous Materials Technician for twelve years, and was an Instructor with the State Fire Academy for 7 years. He and his wife Kim have seven children and three grandchildren between them, with another grandchild expected in July. Favorite Poisons: Rattlesnake bites and organophosphates. Hobbies: cooking, working out, travel, reading and music.

## UPCC Update

### Are you prepared for snake bite season? Update on antivenom supply

Up until last year the only antivenom for the treatment of rattlesnake bites and bites from other species in the sub-family of pit vipers Crotalinae was Antivenin (Crotalidae) Polyvalent (equine origin) from Wyeth-Ayerst Laboratories. In 2000, Crotalidae Polyvalent Immune Fab (ovine origin, CroFab™) was approved by the FDA. It is manufactured by Protherics, marketed by Savage Laboratories and distributed by Altana Inc. The new antivenom has the advantage that it is less antigenic because it is manufactured using venom-specific Fab fragments derived from sheep, similar to Digibind®. Supplies were made available of the new antivenom for the 2001 snakebite season. Unfortunately, the demand for the new antivenom was greater than the available supplies in some areas of the country. In Utah the supply was adequate and no patient went untreated in 2001. Protherics assured us that they would increase production for the 2002 snakebite season. Wyeth-Ayerst announced that it was going to discontinue making the Antivenin (Crotalidae) Polyvalent equine.

The 2002 snakebite season is here. We had anticipated that Protherics would increase production so that we would have plenty of antivenom for this season. The FDA requires that every lot of a biological drug be tested, which is a much higher standard than for chemical drugs. Unfortunately, two lots of CroFab™ failed the FDA test. The problem apparently occurred during the packaging of the product performed by another company.

The future status of the equine Wyeth-Ayerst product is not clear. No Wyeth-Ayerst product was shipped in the



### Nationwide Toll-Free Number

The new national toll-free number 1-800-222-1222 was announced at a news conference held January 31, 2002 at Bright Horizons Day

Care Center located at the University of Utah. Calling this number anywhere in the US will connect you with the poison control center for that area. The UPCC hotline can be accessed by this number when calling from within the state. Our other number remains operational.

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summer or fall of 2001 after a letter from the manufacturer was received stating it planned to discontinue supplies. It is possible that the company will ship some antivenom in 2002, but the status is not yet known.

Protherics has several approved antivenom lots scheduled for release in late May or early June which should be available at local hospitals by mid-June. Protherics has doubled its production from 2001.

Currently, hospitals have to rely on their 2001 supply in preparation for the 2002 snakebite season. The Utah Poison Control Center (UPCC) has surveyed every hospital in the state to determine the number of vials of Antivenin (Crotalidae) Polyvalent and Crotalidae Polyvalent Immune Fab (CroFab™) currently available. The UPCC is ready to assist you in identifying the closest antivenom for your institution to manage any venomous snakebite. We are optimistic that by the next issue of Utox the supply of antivenom in Utah will no longer be an issue for Utah Hospitals.

The Utah Poison Control Center thanks  
**MCNEIL CONSUMER HEALTHCARE**  
for their generous contribution  
which allowed us to produce and  
distribute this newsletter.

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