Medical Marijuana

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*No conflicts to disclose

Marijuana Legalization: Pros & Cons, Questions & Answers

- There are countless ways to liberalize marijuana policy
- Repealing current law is simple in concept, figuring out what might replace those laws is more complex
- At least 50% of all Americans support legalization

Alabama's Medical Marijuana Law

- May 17, 2021: Darren Wesley "Ato" Hall Compassion Act
- Permits medical cannabis for medical conditions including Crohn's, depression, epilepsy, HIV/AIDS, panic disorder, Parkinson's, nausea, PTSD, and pain
- Medical cannabis will not become available for at least a year
- Medical cannabis can be used in a variety of forms including oral tablet, capsule or tincture, gel, oil, cream or other topical preparations, suppository, transdermal patch, nebulizer, and liquid oil for administration using an inhaler.
- Medical cannabis may NOT be used by smoking or vaping, or by consuming food products (e.g., cookies or candies).
- The law does NOT permit recreational use

What is marijuana?

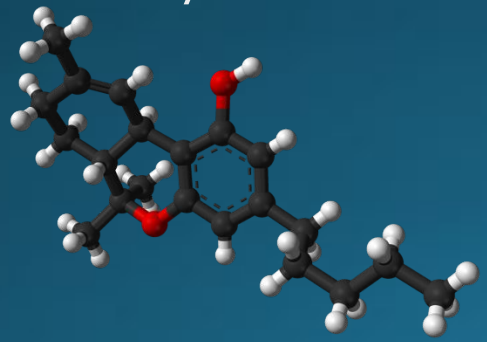
- American term for *Cannabis sativa*
- Flowers contain concentrated cannabinoids
- Leaves contain lesser quantities
- Hashish (resin) is made by extracting cannabinoid-rich trichomes

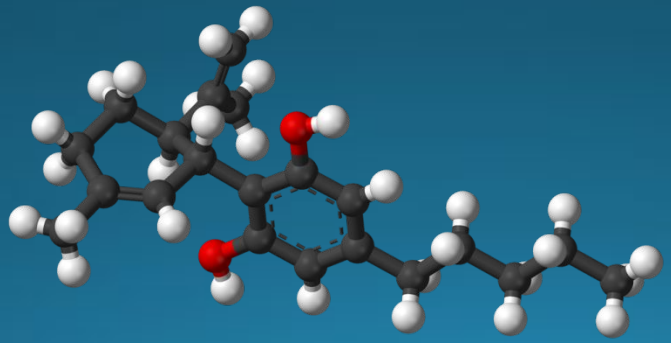
How does it feel to get high?

- Most psychoactive drugs influence one or more of 3 nerve receptors: dopamine, serotonin, or GABA
- Chemicals in marijuana react with a pair of receptor systems unique to them known as CB1 and CB2, and to a naturally occurring neurotransmitter known as anandamide
- Effects: relaxation, mild euphoria, focusing of attention and sensory experience, impairment of short-term memory and executive functioning, enhancing appetite, receptivity to humor. Anxiety and panic at high doses

What are the active ingredients?

- Delta-9-tetrahyrocannabinol (THC) is just one of more than 60 cannabinoids
- Effects of cannabinoids other than THC not well understood
- One compound drawing increasing attention: cannabidiol (CBD). It is not intoxicating, but may be anxiolytic and antipsychotic
- Marijuana with a better balance between CBD and THC may be less risky





What are the risks of using marijuana?

- The hard truth is that the scientific community has not reached a consensus
- 30 million Americans report using in the past year, 22 million report using in the past month
- Of those who have used in the past month, 1 in 8 met criteria for dependence at some time in the previous year (2.75 million people)
- About 9% of those who use marijuana end up being dependent. Comparable rates for alcohol and cocaine are 15% and 16%, respectively

What are the risks of using marijuana?

- Marijuana dependence does not, on average, create the same social and personal problems as alcohol, cocaine, or heroin dependence
- Degree of dependence has been characterized as "weak."
- 350,000 drug treatment admissions per year (mostly adolescents and young adults). More than 50% referred by criminal justice system
- "Safety ratio" is the ratio of the average fatal dose to the average recreational dose. Bigger ratios = greater safety
  - Ratios for alcohol, heroin, methamphetamine, and cocaine range from 6 to 15
  - There is no known fatal dose of marijuana; it has been estimated that such a dose must be at least 1000 times the amount typically consumed

What are the risks of using marijuana?

- The CDC's WONDER database reports 26 deaths between 1999 and 2007 attributed to cannabis dependence (3 deaths per year)
  - Roughly the death risk from taking a single commercial airline flight in the U.S.
- Drug Abuse Warning Network (DAWN) records more "mentions" of marijuana (375,000 per year) than any other illegal drug except cocaine (425,000 per year)
  - These marijuana mentions mostly stem from interactions or piggy-back on other substances
  - The vast majority are treated and released without being admitted

What are the risks of using marijuana?

- Increases likelihood of cough, phlegm, and wheeze, but no consistent association with pulmonary function
  - A benefit of legalization might be increased use of vaporizers
- Marijuana users typically inhale more deeply than tobacco smokers, but consume far less marijuana than tobacco smokers consume tobacco (20 grams of tobacco per day is typical, whereas 4 grams of marijuana per day is an extremely heavy habit)
  - Mixed and weak results linking marijuana use to respiratory cancer (some cannabinoids may inhibit growth of tumors)

What are the risks of using marijuana?

- Evidence points to a probable, but weak, causal link between marijuana use and psychotic disorders
- Correlation between marijuana use and poor academic and occupational performance, but this likely captures the effects of "third variables"

What are the nonmedical benefits of using marijuana?

- Much is claimed, little is known
- Users report that getting high is relaxing and pleasurable, and contributes to other pleasures including food, music, dancing, art, conversation, humor, and sex
- Boosts in creativity?
- Boosts in athletic performance?

What are the medical benefits of using marijuana?

- The American public overwhelmingly supports making marijuana legal for medical purposes (8 in 10), and this support is increasing
- Institute of Medicine (IOM) found therapeutic value "particularly for symptoms such as pain relief, control of nausea and vomiting, and appetite stimulation," although effects are "generally modest"
- IOM views smoked marijuana as a "crude THC delivery system" and does not recommend long-term use

What are the pros and cons of legalization?

- Costs of prohibition include loss of liberty, criminal enterprise, and the need for enforcement
  - Legalization would be a gain for those who want to use the drug and can do so without losing control: they gain the liberty of doing as they choose and get access to cheaper and safer products
- However, legalization could increase the number of people who wind up abusing or becoming dependent
- To legalize a drug, then, is to choose the problems associated with increased levels of excessive consumption over the problems associated with illicit dealing and enforcement

How much of the increase in consumption after legalization would reflect increased heavy use rather than increased casual use?

- More-than-weekly users account for 90% of the marijuana demand
- If we create a legal industry, the resulting businesses will have a strong profit incentive to create and sustain frequent and abusive consumption patterns
- Those who claim "regulation and taxation" could provide the benefits of prohibition without its costs might be asked why that doesn't seem to have happened with alcohol

Marijuana legalization: What do we know so far?

- Marijuana did not achieve mass-market status in the U.S. until the mid-1960s
- Archeological evidence of hemp cord dates back 10,000 years
- First recorded medicinal application was in China, 2700 BC
- Records of Indian religious use going back to 2000 BC
- Westerners were late adopters (early 19th century)
- In colonial America, grown alongside tobacco for industrial use. In 1619 the Virginia Assembly passed legislation encouraging farmers to grow it
- By late 19th century, marijuana was a common ingredient in many medicines

Marijuana legalization: What do we know so far?

- Widespread use of marijuana as a recreational drug began in the early 1900s (Mexican immigrants). Adopted by jazz musicians
- Government portrayals grossly exaggerated negative effects. Association with African-American jazz culture hurt its image among the white majority. By 1931, 29 states criminalized marijuana
- Marijuana was part of the 1950s Beat culture, but use remained uncommon until the 1960s (hippie counterculture); in 1967 lifetime prevalence among college students was 5%, 1969 it was 22%, and by 1971 it reached 51%

Marijuana legalization: What do we know so far?

- 1970: Nixon signed the Controlled Substances Act (CSA) which categorized marijuana as a Schedule I drug
- Shafer Commission (1972): "Neither the marijuana user nor the drug itself can be said to constitute a danger to public safety. Therefore the Commission recommends…possession of marijuana for personal use no longer be an offense…and casual distribution of small amounts of marijuana for no remuneration, or insignificant remuneration no longer be an offense"

Marijuana legalization: What do we know so far?

- Shafer report drew an immediate and vehement denunciation from Nixon. Still, its publication reflected the shift in opinion
  - Federal mandatory sentencing for possession was repealed.
  - By the end of the 1970s, 11 states had decriminalized possession, and others reduced penalties
- Marijuana prevalence increased through the 1970s, reaching a peak in 1979 (10% of high school seniors reported daily or near daily use!)
- This fueled the "parents' movement," which helped bring an end to the era of liberalization

Marijuana legalization: What do we know so far?

- Regan administration saw increasing levels of anti-marijuana rhetoric, and marijuana use dropped throughout the 1980s (https://www.youtube.com/watch?v=VxHBx6H-xFo)
- Marijuana use bounced back, nearly doubling during the early and mid-1990s (though remaining below levels reached in 1979-1980)
- 1996: California passed the Compassionate Use Act allowing medical use
- This started a trend….

Marijuana legalization: What do we know so far?

- 36 states & DC have legalized access to medical marijuana.
- 19 states & DC have legalized recreational use
- Increase in arrests related to "stoned driving," though it is believed that this is the result of increased enforcement efforts
- Increase in use among adults, and in hospitalizations associated with marijuana use, including accidental ingestion by youth (edibles)

Marijuana legalization: What do we know so far?

- Opioid overdose deaths
  - States with medical cannabis laws had a 24.8% lower mean annual opioid overdose mortality rate compared with states without medical cannabis laws
- Alcohol-related automobile fatalities
  - Legalization of marijuana is associated with an almost 12% decrease in any-BAC fatal crashed per 100,000 licensed drivers, and an almost 14% decrease in high-BAC fatal crashes per 100,000 licensed drivers
- Violent crimes
  - State medical marijuana laws may be correlated with a reduction in homicide and assault rates, net of other covariates

Marijuana legalization: What do we know so far?

- Suicides
  - Legalization of medical marijuana is associated with a 5 percent decrease in the total suicide rate, an 11 percent decrease in the suicide rate of 20- through 29-year-old males, and a 9 percent decrease in the suicide rate of 30- through 39 year-old-males
- Teen use
  - 12% drop in marijuana use, year-over-year, among 12 to 17 year olds in Colorado
- Other
  - Colorado makes more on cannabis taxes than alcohol
  - In 2015, the legal marijuana industry in Colorado created more than 18,000 new full-time jobs and generated $2.4 billion in economic activity

Moving Forward

Cannabis Access for Medical Purposes Study (CAMPS)	N=628
Sleep	85%
Pain	82%
Anxiety	78%
Depression	66%
Appetite/ Weight	56%
Nausea	49%

International Journal of Drug Policy 24 (2013) 511–516

Contents lists available at ScienceDirect

International Journal of Drug Policy

journal homepage: www.elsevier.com/locate/drugpo

Editors' choice

Cannabis for therapeutic purposes: Patient characteristics, access, and reasons for use

Zach Walsh[a,*], Robert Callaway[b], Lynne Belle-Isle[c,d], Rielle Capler[e], Robert Kay[f], Philippe Lucas[d], Susan Holtzman[a]

Original Paper

Does cannabis use modify the effect of post-traumatic stress disorder on severe depression and suicidal ideation? Evidence from a population-based cross-sectional study of Canadians

Stephanie Lake[1,2], Thomas Kerr[1,3], Jane Buxton[2,4], Zach Walsh[5], Brandon Marshall[6], Evan Wood[1,3] and M-J Milloy[1,3]

Psychopharm

Journal of Psychopharmacology
1–8

DOI: 10.1177/0269881119882806
journals.sagepub.com/home/jop
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Results: Among 24,089 eligible respondents, 420 (1.7%) reported a current clinical diagnosis of post-traumatic stress disorder. In total, 106 (28.2%) people with post-traumatic stress disorder reported past-year cannabis use, compared to 11.2% of those without post-traumatic stress disorder ($p < 0.001$). In multivariable analyses, post-traumatic stress disorder was significantly associated with recent major depressive episode (adjusted odds ratio = 7.18, 95% confidence interval: 4.32–11.91) and suicidal ideation (adjusted odds ratio = 4.76, 95% confidence interval: 2.39–9.47) among cannabis non-users. post-traumatic stress disorder was not associated with either outcome among cannabis-using respondents (both $p > 0.05$).

Conclusions: This study provides preliminary epidemiological evidence that cannabis use may contribute to reducing the association between post-traumatic stress disorder and severe depressive and suicidal states. There is an emerging need for high-quality experimental investigation of the efficacy of cannabis/cannabinoids for the treatment of post-traumatic stress disorder.

BRIEF COMPOSITE CANNABIS ASSESSEMENT TOOL

BCCAT

Item				
1. Substitution				
2. Relieve pain				
3. Improve sleep				
4. Unable to stop using				
5. Relieve nausea				
6. Refrain from activities				
7. Difficulty controlling				
8. Improve mood				
9. Like the feeling				
10. Think differently				
11. To relax				
12. Feel bad about use				
SUM	**Therapeutic**	**Negative**	**Positive**	**Total Score**
Therapeutic – (Negative – Positive) =		– (	–	) =

*A single score is indicative of therapeutic versus problematic use, such that higher scores reflect therapeutic use and lower scores indicate more problematic use.

ROUTES OF ADMINISTRATION

JOINT

- 1 - 50 + Puffs

PIPE

- 1 - 50 + Puffs

EDIBLE

- 2.5 - 200 + mg
- mg in THC .

BONG

- 1 - 30 + Hits

HERBAL VAPORIZER

- 1 - 50 + Puffs

CONCENTRATE VAPORIZER

- 1 - 50+ Puffs

CONCENTRATE (DAB)

- 0 - 8+ Dabs
- 1 Dab = approx. .05 grams

THE PRELIMINARY ICE

- User-derived cannabis dose across diverse routes of administration
- Low tolerance ratings used

"Start low, go slow"

CanniMed, 2019; NCSM, 2018; Simon, 2018

ICE; Index of Cannabis Equivalence

Route	Low Dose	Medium Dose	High Dose
 Joint	2 puffs	6 puffs	11 puffs
 Pipe	2 puffs	4 puffs	8 puffs
 Bong	1 hit	3 hits	5 hits
 Concentrate Vaporizer	2 puffs	4 puffs	7 puffs
 Herbal Vaporizer	3 puffs	6 puffs	11 puffs
 Concentrate (.05 g dab)	1/4 dab	3/4 dab	1 1/2 dab
 Edible	5 mg	15 mg	35 mg

THE STANDARD CANNABIS UNIT

- Low tolerance low-dose ratings of cannabis dose
- Modeled after the 'standard drink'

ICE Standard Cannabis Unit	
Joint	2 puffs
Pipe	2 puffs
Concentrate Vaporizer	2 puffs
Herbal Vaporizer	3 puffs
Bong	1 hit
Concentrate (Dab)	1/4 dab
Edible	5 mg

" what we know is a drop; what we ignore is an ocean."

- Isaac Newton