



**2021 ACOI Annual Convention
And Scientific Sessions
October 27-30**

The Great American Cannabis Experiment

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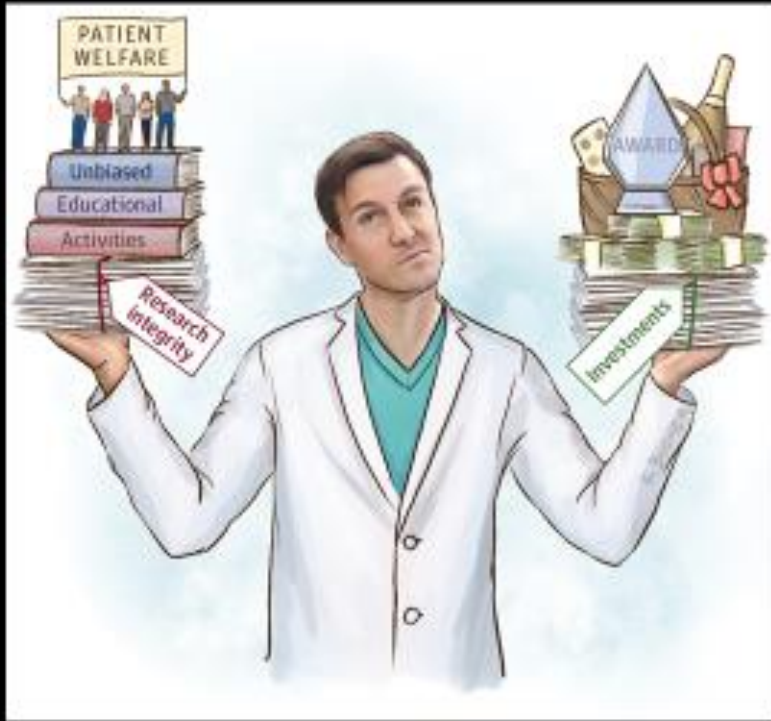
THE GREAT AMERICAN CANNABIS EXPERIMENT



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- ACOI Annual Convention 2021

Disclosures

NO DISCLOSURES TO REPORT
ONLY FDA APPROVED INDICATIONS



SCIENCE OF CANNABIS



Medical & Science

Journal of Anecdotal Medicine

means

favourite, but unwritten, source of
medical wisdom

by acronymandlang.com



WHERE WAS THE IRB



The
Economist

After New Hampshire: now what?
The great bank scare
Einstein's latest triumph
Don't dam the Mekong
The dismal science of love

JANUARY 13TH - 19TH 2014

The right way to do drugs

fig. 8

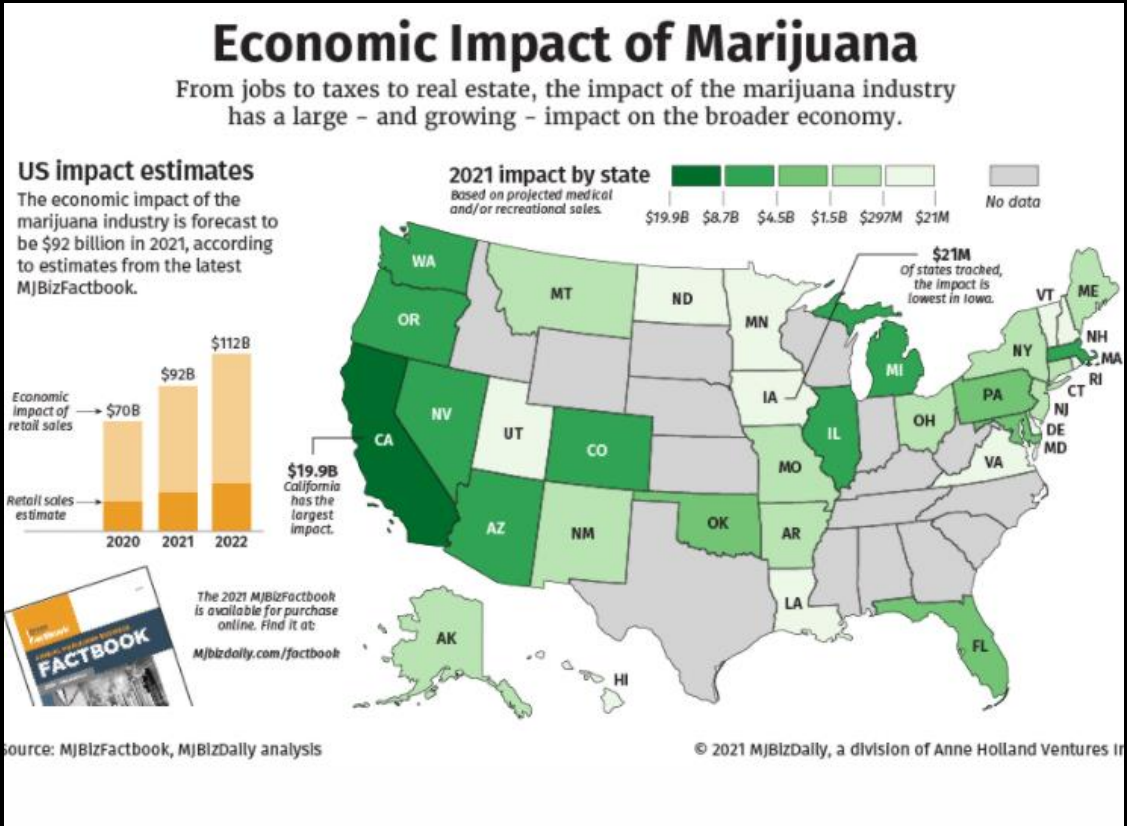


Legalising
cannabis safely

RETAIL CANNABIS



The total U.S. economic impact from marijuana sales in 2021 is expected to reach \$92 billion – up more than 30% from last year – and upwards of \$160 billion in 2025, according to analysis from the newly published [MJBizFactbook](#).



Historic High: The combination of Covid-19, the creation of new markets and the maturation of the country's existing state legal economies led to a banner year for cannabis sales. No need to Bogart! [-] ASSOCIATED PRESS

OBJECTIVES

- Review the History of Botanical/Medicinal Cannabis
- Describe the Components of the Human Endocannabinoid System and Promising Pharmacologic Applications
- Review the Recent Evidence-based Research of Cannabinoid Compounds
- Medicine by “Popular-vote” vs. Evidence-based and the State-based Cannabis Initiatives:
- Federal vs State Legal Implications and Recreational Cannabis



Americans overwhelmingly say marijuana should be legal for recreational or medical use

ACCORDING TO AN APRIL 2021 QUINNIPIAC POLL, WHAT PERCENT OF AMERICANS ARE IN FAVOR OF MARIJUANA LEGALIZATION?

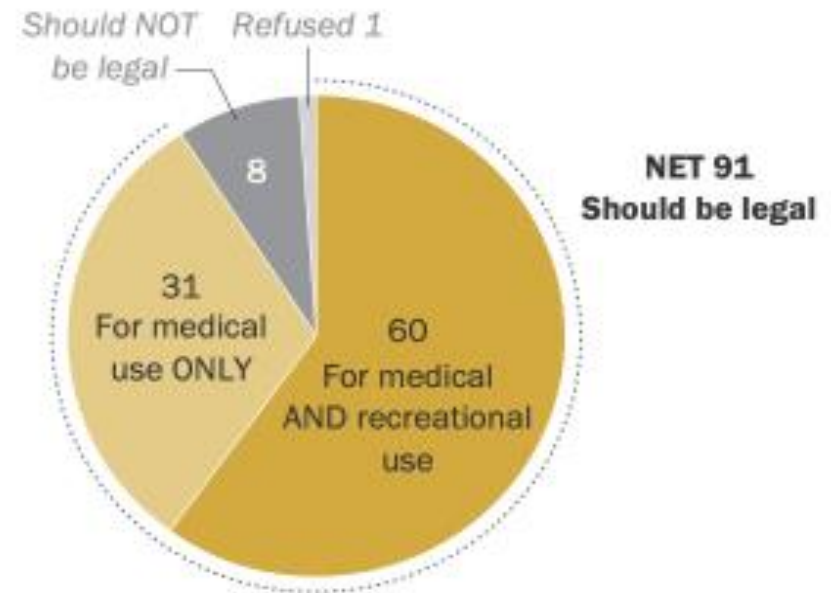


- A. 39%
- B. 49%
- C. 69%
- D. 79%

• Increase of almost 20% since 2012

Fewer than 10% of U.S. adults say marijuana should not be legal at all

% who say marijuana...



Source: Survey of U.S. adults conducted April 5-11, 2021.

PEW RESEARCH CENTER

More States Legalize Recreational Marijuana


Four states – [Arizona](#), [Montana](#), [New Jersey](#) and [South Dakota](#) – passed legislation on Election Day 2020 to legalize recreational marijuana use by adults. That, plus [New York](#), [Virginia](#), [New Mexico](#) and [Connecticut's](#) 2021 initiatives, brings the total number of states where recreational marijuana has been legalized to 19. The District of Columbia and Guam have also enacted legalization measures.

According to 2019 [U.S. Census estimates](#), more than 141 million Americans now live in a state that has legalized marijuana.

The wave of initiatives to legalize marijuana began in 2012, and has mostly been driven by coastal states. More states are likely to join their ranks in the coming years, as about two-thirds of American adults support marijuana legalization, according to a [2019 survey](#) by the Pew Research Center.


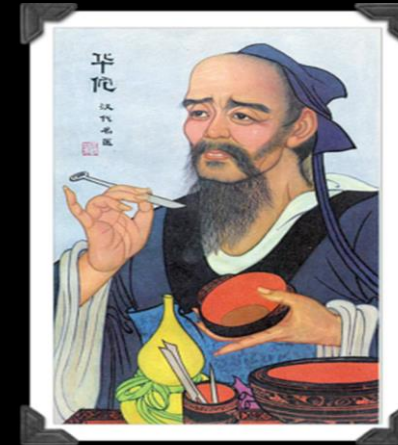


MARIJUANA AS THERAPIES: OLD NEWS



Timeline of Hemp and Human History

- 27.8 million BC**
Cannabis Sativa L. (hemp) diverges from the sister genus Humulus, which includes hops on the steppes of central Asia. (McPartland)
- 8,000 BC**
First known evidence of hemp fiber and seeds found in human tombs. (MIT)
- 1492**
Hemp sails to what Spanish explorers dub a New World as rigging on explorer Christopher Columbus' ships. The Spanish Crown orders hemp be sewn in the New World by 1545. (Campos)
- 1776**
Colonial Virginian farmers are able to pay taxes to the government in hemp. (History.org)
- 1937**
The US Marijuana Tax Act destroys the domestic hemp trade in beginning of war on cannabis. (RAND Drug Policy Research Center)
- 1942**
World War II-era shortages in fiber causes US hemp production to ramp up again to supply the Navy with rigging, due to loss of international supplies. (RAND Drug Policy Research Center)
- 1968**
Hippies adopt hemp legalization as part of broader cannabis law reform efforts.
- 1985**
Author and activist Jack Herer releases The Emperor Wears No Clothes.
- 1998**
Then-San Francisco county supervisor, and former California state senator Mark Leno moves to legalize industrial hemp in San Francisco. Industrial hemp legalized in Canada.
- 2014**
President Obama signs Farm Bill legalizing research hemp farms.
- 2018**
Kentucky Sen. Mitch McConnell signs the 2018 Farm Bill with a hemp pen, re-legalizing industrial hemp in the US.

Marijuana Law

TruthOnPot.com
Follow us!

1619



1st N. American marijuana law forces farmers to grow hemp
Jamestown Colony, Virginia

1850

Cannabis extract widely recommended & sold over-the-counter in Western pharmacies



1915-1927



Influx of Mexican immigrants into the US...

9 states pass laws outlawing the 'marihuana' they smoked

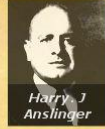
"All Mexicans are crazy and this stuff [marihuana] is what makes them crazy"

-Texas senator on the floor of the Senate

1929-1936

Recreational marijuana use spreads among minorities...

"Reefer makes Darkies think they're as good as white men"



Harry J. Anslinger is appointed as head of the Federal Bureau of Narcotics

1937

Anslinger proposes Marihuana Tax Act to Congress and testifies:

"Marijuana is the most violent drug in the history of mankind"

Act passes...

Marijuana is Prohibited



Evil Mexican Plants That Drive You Insane.

THE revolution in Mexico has brought with it not only the ravages of war, but also the degradation of the social conditions of soldiers and prisoners. One of the latest forms of dissipation in the ranks of federals and rebels alike is the habit of smoking marihuana, a deadly native plant of Mexico. According to reports many of the Mexican prisoners in the Belem prison in the City of Mexico are losing their minds as a result of smoking this weed.

The dry leaves of marihuana, alone or mixed with tobacco, make the smoker wilder than a wild beast. It is said that after the first three or four draughts of smoke the smoker feels a slight headache, then he sees everything moving, and finally loses all control of his mental faculties.

The next stage of the intoxication is full of terrors. Troops of ferocious wild animals march before the vision of the smoker. Lions, tigers, panthers and other wild beasts occupy his vision. These wild

animals are then attacked by hosts of devils and monsters of unheard-of shapes. The smoker becomes brave and possessed of superhuman strength. It is at this stage of the debauch that murders are committed by smokers of the marihuana weed.

A few Americans have experimented with the weed. A few years ago a well-known citizen of San Antonio purchased a large coffee plantation in southern Mexico. He was induced to try smoking marihuana; he became addicted to the habit, which rendered him insane and finally caused his death.

In another instance the superintendent of a mine in Mexico, who was an American, became the object of hatred of one of the men in his employ. The Mexican mixed marihuana with the American's tobacco. The latter became wildly insane from smoking the mixture, made a vicious attack upon a party of miners, was shot and killed in the affray.

Not long ago a Mexican of the lower

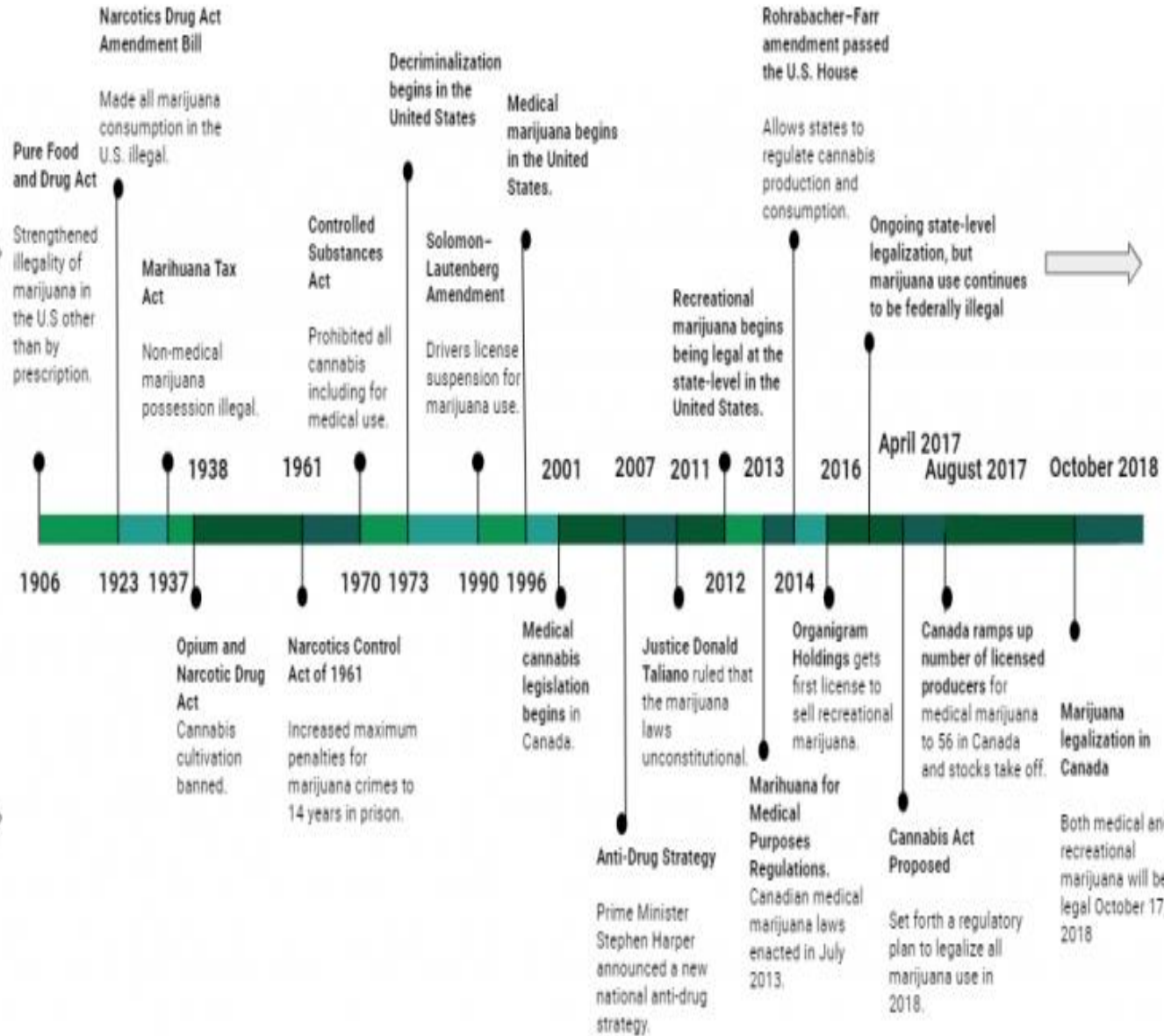
class, living in the City of Mexico, who had smoked a marihuana cigarette, became insane, attacked and killed a policeman and badly wounded three others.

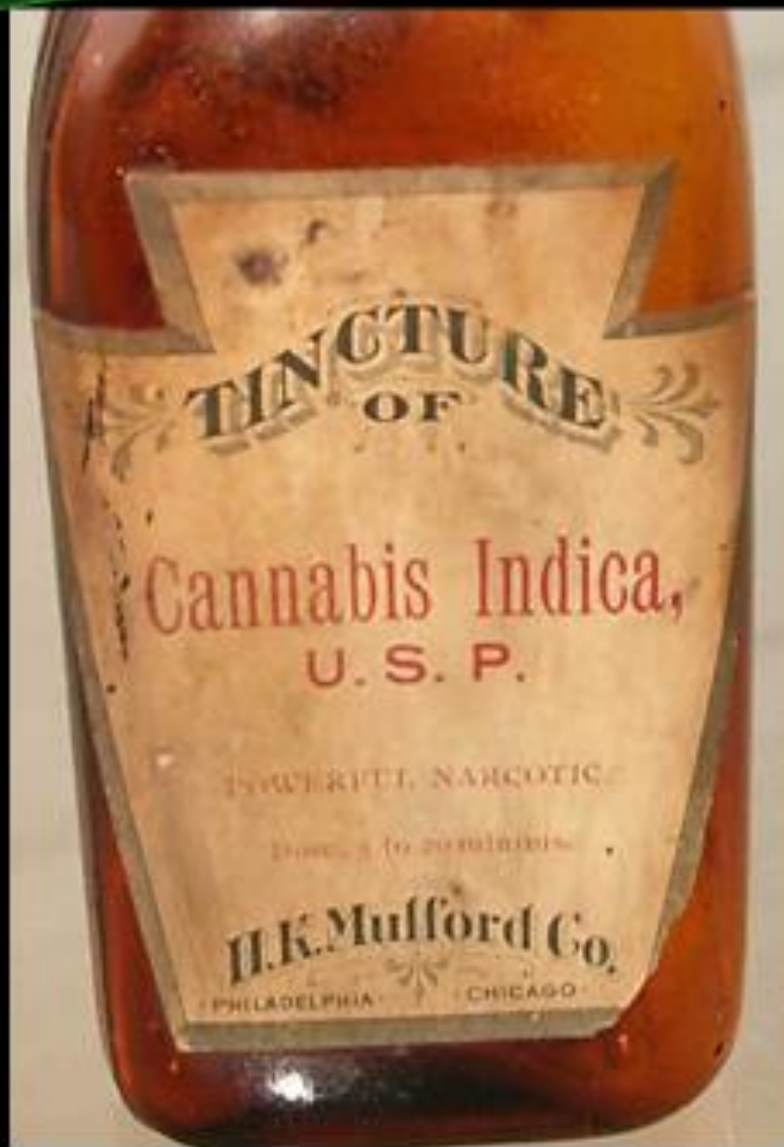
Marihuana is one of the most dangerous drugs found in Mexico. The weed grows wild in many localities in the southern part of that country. Its wonderful powers as an intoxicant have long been known to the natives, and many are the wild orgies it has produced. So dangerous is this weed that in the City of Mexico and other Mexican cities the Government keeps special inspectors constantly employed to see that it is not sold in the markets.

There is in the State of Michoacan a dangerous, among them the "toirache," a sort of "loco" weed. The seeds of this plant boiled and drunk as tea will make a person insane. Among some classes of Mexicans it is stated that Carlota, the former Empress of Mexico, lost her mind because she was given toirache as a refreshment by her enemies.

United States

Canada





MARIJUANA HX

- 1931: 29 states prohibit non-medical use
- 1937: Marijuana Tax Act
- 1942: Removed from the US Pharmacopoeia
- WWII: Federal Government encourages Hemp crop
- 1951: Boggs Act.
- 1956: Narcotics Control Act
- 1970: Controlled Substance Act

FROM THERAPIES TO PROHIBITION



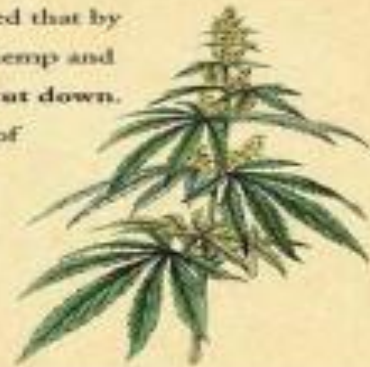
DRUG SCHEDULES

I	II	III	IV	V
Heroin Marijuana LSD Ecstasy	Adderall Hydrocodone Cocaine Fentanyl	Tylenol with Codeine Ketamine Steroids	Xanax Valium Ambien Tramadol	Robitussin AC Lyrica Lomotil Motofen

©2013 NIDA

100 YRS MISINFORMATION

In 1916, the U.S. Government predicted that by the 1940s all paper would come from hemp and that no more trees would need to be cut down. Government studies report that 1 acre of hemp equals 4.1 acres of trees. Hemp production is much more time and resource efficient. Plans were in the works to implement such programs. (U.S. Department of Agriculture)



- 1937: Essentially banned Hemp production (Marihuana Tax Act)
- 2014: President Obama signed Farm Bill to Legalize Hemp for Research Purposes
- 32 States have pro-hemp legislation
- KY very pro-active
- WV: 2016 State Dept. of Agriculture accepting application for permits
- WV Hemp Farmers Cooperative: "WV jobs for a economic downturn"
- 2018 Farm Bill: removed Hemp from Schedule I

Hemp		Marijuana
Cannabis sativa	SPECIES	Cannabis sativa
0.3 percent	PSYCHOACTIVE CONTENT	10 percent
Auto parts, soap, concrete	USES	Getting high
\$452 million	ESTIMATED DOMESTIC MARKET VALUE	\$10 billion-\$120 billion

DEFINE: MEDICAL MARIJUANA

- Whole, unprocessed Cannabis plant or its basic extracts
- Used to treat symptoms of illness or other conditions
- FDA: Has NOT recognized or approved the marijuana plant as medicine
- Unprocessed Plant Material
- Liquid or Oils
- Capsules
- Edibles
- Rectal suppositories
- Ointments, Creams, and Lotions

Types Of Weed



SATIVA

Cannabis Sativa Sativa is characterized by leaflets that are more narrow, branches that are farther apart, and coloration that tends more toward spring green. Sativa Sativa plants tend to be taller and produce fewer flowers.



INDICA

Cannabis Sativa Indica is characterized by broad leaflets that often overlap, branches that are closer together, and coloration that tends more toward deep olive green. Sativa Indica plants tend to be shorter and bushier, producing fuller, denser flower buds.



RUDERALIS

Cannabis Ruderalis is characterized by varied leaflets in the mature leaves, a shorter stature and generally small size. This subspecies is used to create S. Sativa or S. Indica hybrids with select desired traits.

www.Types-of-Weed.ORG

HORTICULTURE CONFUSION



MEDICAL CANNABIS: STRENGTHEN EVIDENCE IN THE FACE OF HYPE AND PUBLIC PRESSURE

- Lack of evidence and formalized training: Physicians are uncertain of indications and medical conditions that may benefit for cannabis
- Legalization of recreational cannabis and overwhelming marketing have primed patients
- Self-styled medical and nonmedical "Experts" project an image of knowledge and promise
- Governments and regulators worldwide have an obligation to support scientific study

Medicinal cannabis may play a significant role during COVID-19

1st October 2020

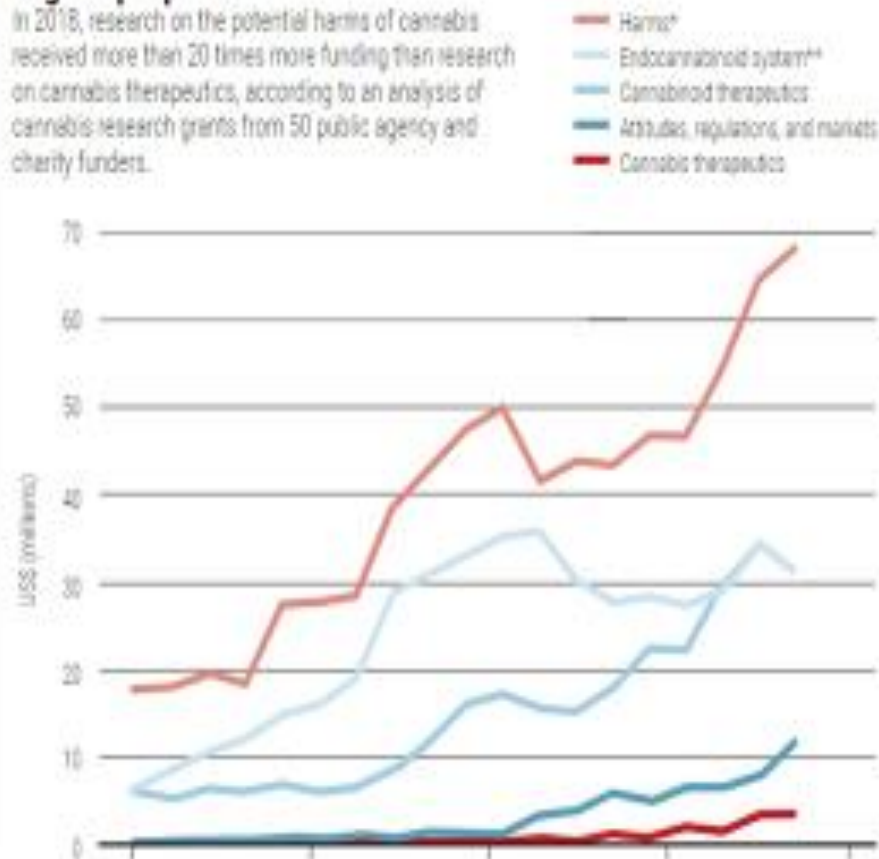


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CANNABIS RESEARCH FUNDING IN US, CANADA, UK

Higher purposes

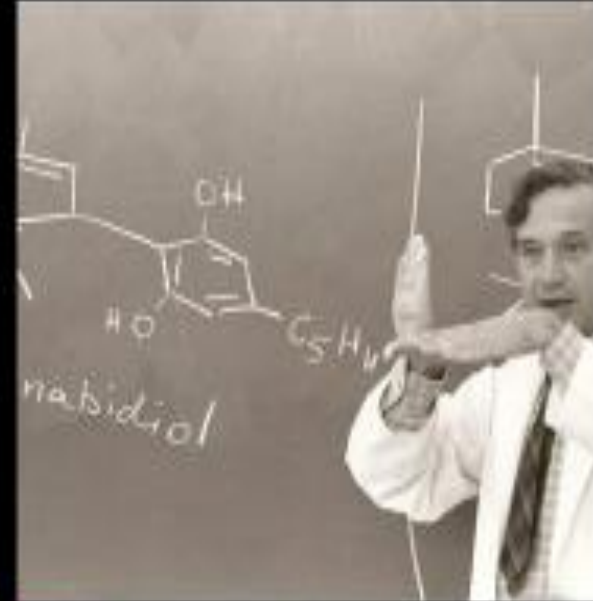
In 2018, research on the potential harms of cannabis received more than 20 times more funding than research on cannabis therapeutics, according to an analysis of cannabis research grants from 50 public agency and charity funders.



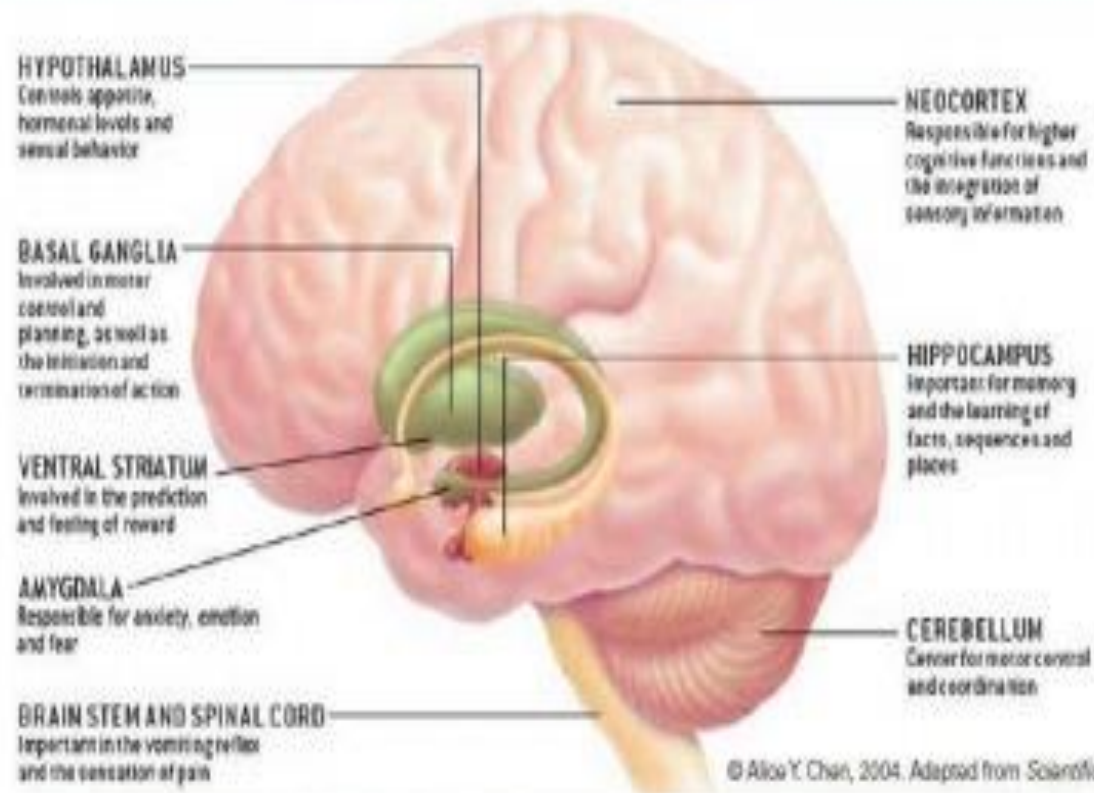
- 2000-2018: \$1.56 B
- ~50% spent on understanding the potential HARMS of the recreational drug
- Just over \$1B from the biggest funder: US NIDA
- Cannabis Use Disorder vs. Medicinal Purposes
- In 2000: \$30.2M to 2018 \$143M

"FATHER OF MODERN CANNABIS"

- Raphael Mechoulam, Ph.D.
Professor of Medicinal Chemistry
University of Jerusalem
- 1964: Isolates then synthesizes delta-9-THC
- 1992 with others-ID's human endogenous cannabinoid (endocannabinoid) natural "THC"
Names: 'anandamide' Sanskrit: "eternal bliss or supreme joy"
- 1990-Miles Herkebham: NIMH-cannabinoid receptors CB1, CB2
- "Increasing concentrations THC"



Marijuana's Effects on the Brain



When marijuana is smoked, its active ingredient, THC, travels throughout the body, including the brain, to produce its many effects. THC attaches to sites called cannabinoid receptors on nerve cells in the brain, affecting the way those cells work. Cannabinoid receptors are abundant in parts of the brain that regulate movement, coordination, learning and memory, higher cognitive functions such as judgment, and pleasure.

Brain's Chemical



Anandamide

Drug



THC

CANNABINOID BIOLOGY

- Cannabinoid receptors characterized in 1980-90's (CB1 and CB2)
- Likely have a natural role in pain modulation, movement control, and memory
- Role in immune systems is likely multi-faceted and remains unclear
- Brain develops tolerance
- Animal research demonstrates potential for dependence
- Withdrawal symptoms can be observed in animals but appear to be mild compared to opiates and benzos

ECS

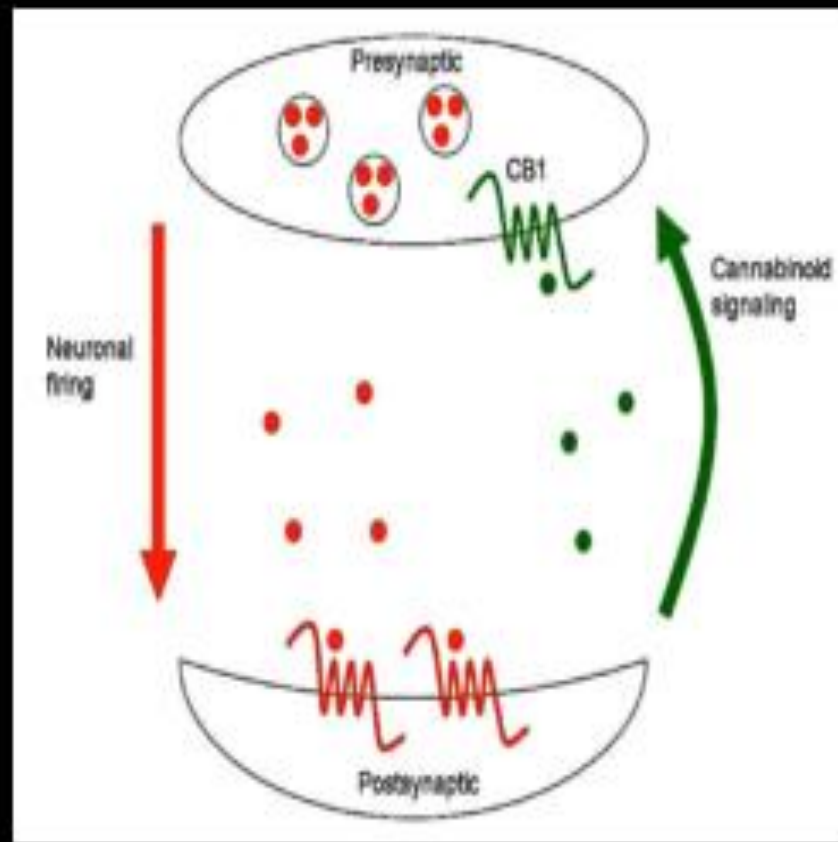
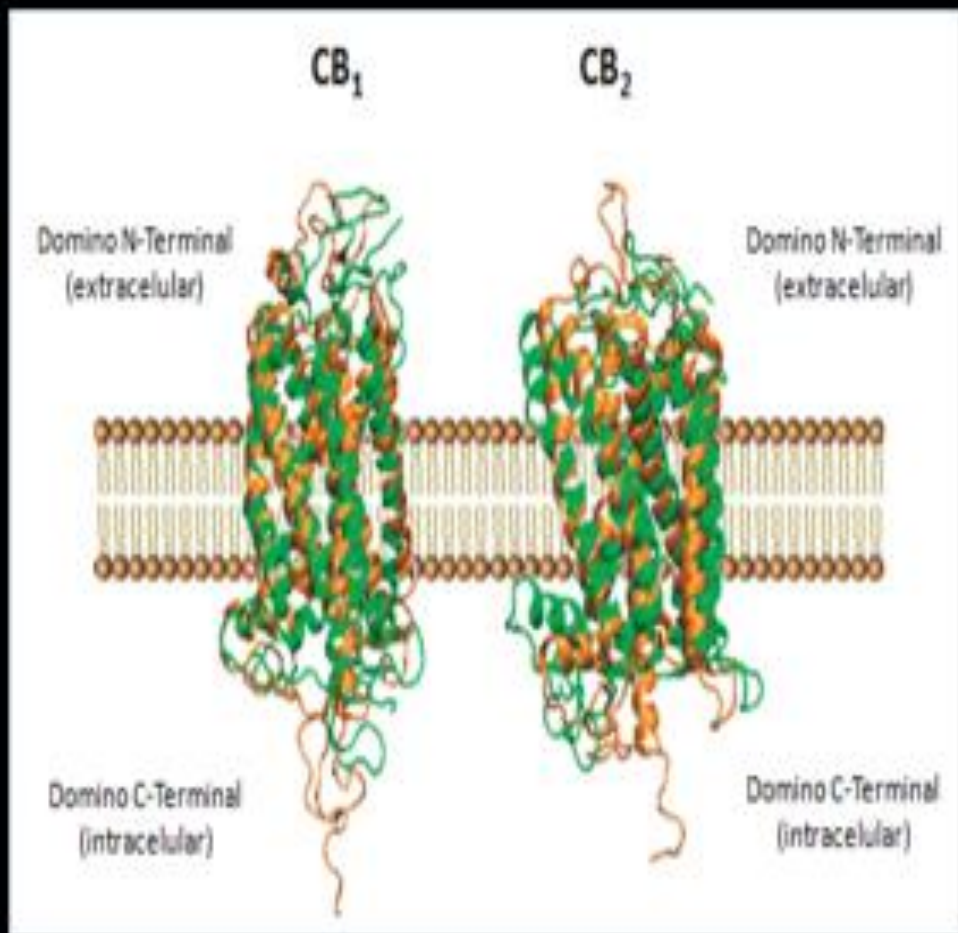
The cannabinoid receptors are further divided into 2 main subtypes, known as cb1 and cb2.



Endocannabinoid Receptors

- CB1: Brain, spinal cord, connective tissue, reproductive organs, glands, internal organs
- CB2: Spleen, tonsils, GI, thymus gland. White blood cells: T-cells, B-cells, macrophages
- GPR55, GPR18: Regulator of neuroimmune function
- GPR3, GPR6 and GPR12 orphan receptors

RETROGRADE SIGNALING





ENDOCANNABINOID SYSTEM

Take a closer look.

Concentrations of CB₁ receptors

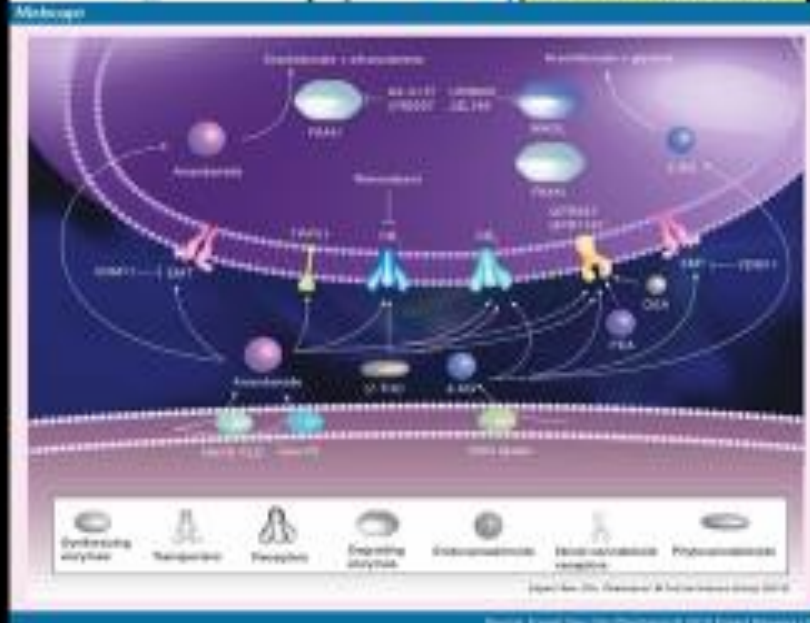
In the Endocannabinoid system

Endocannabinoids are produced in the body to help regulate a wide range of physiological processes, including appetite, pain-sensation, mood, and memory. They bind to and activate cannabinoid receptors that are primarily located in the brain and central nervous system.

The endocannabinoid system is a complex system that includes the following components:

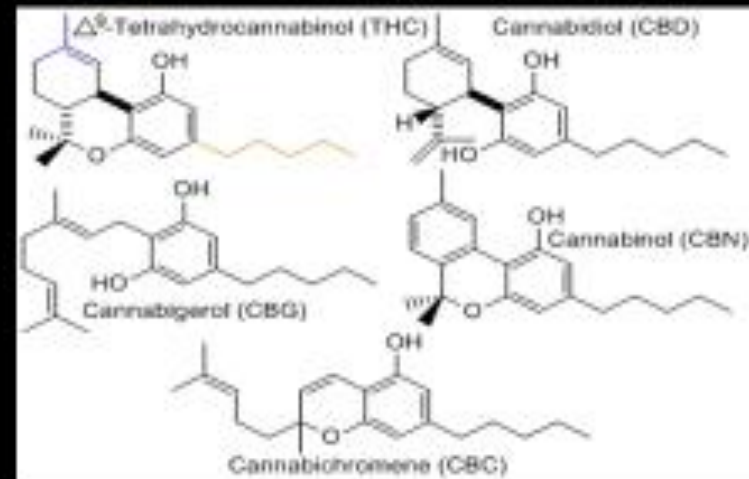
- Endocannabinoids:** These are chemical messengers that are produced in the body. They include anandamide and 2-AG.
- Receptors:** These are proteins on the surface of cells that bind to endocannabinoids. The two main types are CB₁ and CB₂.
- Enzymes:** These are responsible for breaking down endocannabinoids once they have done their job.

Endocannabinoids are produced in the body to help regulate a wide range of physiological processes, including appetite, pain-sensation, mood, and memory. They bind to and activate cannabinoid receptors that are primarily located in the brain and central nervous system.



CANNABIS AND CANNABINOIDS

- *Cannabis sativa/Indica*
- 400 chemical compounds
- 66 different cannabinoids
- 104 Unique to Cannabis Plant
- Phytocannabinoids: delta9-THC: Cannabidiol (CBD)
- Tetrahydrocannabivarin (THCV), Cannabichromene (CBC), Cannabigerol (CBG)
- All are lipophilic
- Amounts vary in growing conditions



TERPENES

- Aromatic compounds produced in the glandular flower bud
- Not phytocannabinoids
- Limonene, pinene, myrcene, etc
- Responsible for aromatic/odorous character
- May involve modulating effects of THC and CBD
- *Content ? Related to distinction of sativa vs indica*

SATIVA



DAY TIME USE

CEREBRAL HIGH

ENERGETIC

STIMULATE APPETITE

ENHANCES CREATIVITY

RELIEVES DEPRESSION

HIGHER THC LEVEL

INDICA



NIGHT TIME USE

BODY HIGH

SEDATIVE

RELIEVES ANXIETY

CAUSES SLEEPINESS

RELIEVES PAIN

HIGHER CBD LEVEL

MAY 25, 2015

TIME

The Highly Divisive,
Curiously Underfunded
and Strangely Promising
World of Pot Science

BY BRUCE BARCOTT & MICHAEL SCHERER



time.com

ACO*i*

MEDICAL CANNABIS: STRENGTHEN EVIDENCE IN THE FACE OF HYPE AND PUBLIC PRESSURE

- Lack of evidence and formalized training: Physicians are uncertain of indications and medical conditions that may benefit for cannabis
- Legalization of recreational cannabis and overwhelming marketing have primed patients
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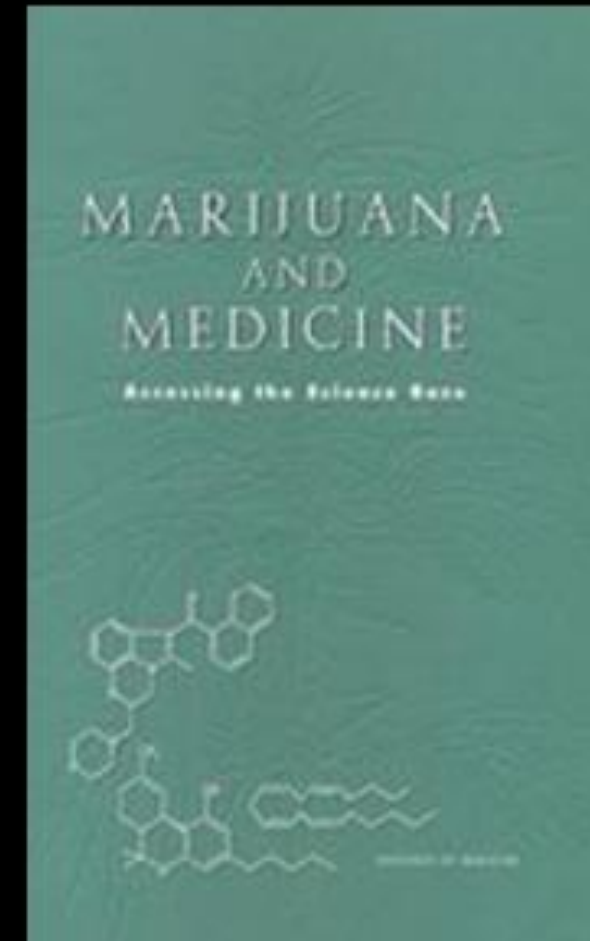
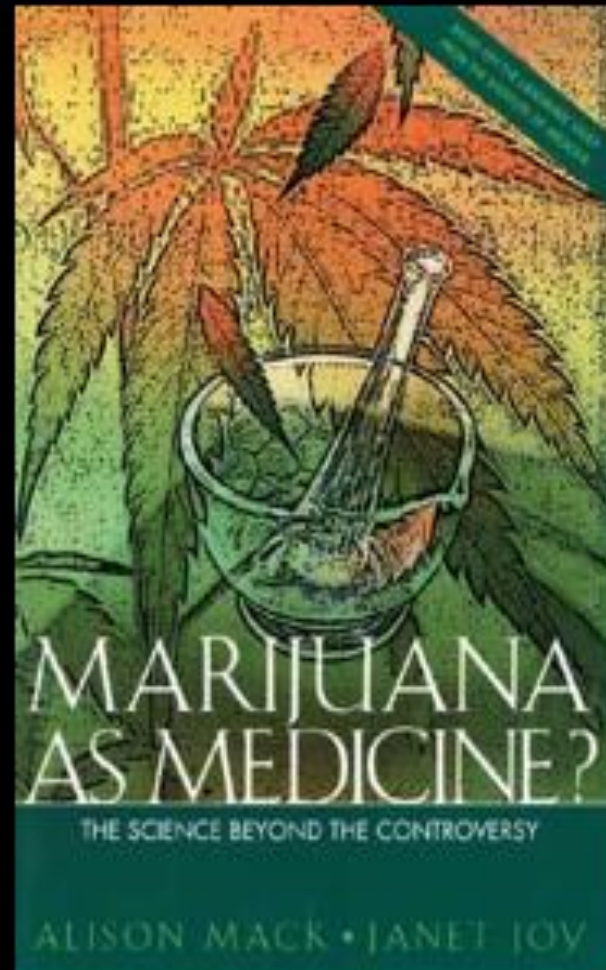
SCHEDULE I AND RESEARCH



- John W. Huffman, PhD
- NIDA research 1984
- 450 synthetic compounds
- JWH-007 to JWH-424
- In 2000 2 compounds were being sold in Germany
- "...I figured it would spread....I'm concerned it would hurt someone"
- April 2018: IL: Bleeding according CDC (4-hydroxycoumarin)



INSTITUTE OF MEDICINE: 1997 AND 2003



SUMMARY OF RESEARCH

- More than 30 yrs of clinical research
- Only small number of randomized, controlled trials of "smoked cannabis"
- Short term with a total of about 300 patients
- Indicate: reduction in neuropathic pain
- Improves appetite and caloric intake
- Spasticity relief in MS
- Better alternatives are available to Rx glaucoma and chemo-induced N & V

CANNABINOIDS FOR MEDICAL USE: 23 JUNE 2015



- Systemic Review and Meta-Analysis
- 79 Trials: (6462 participants)
- Study Selection: "Randomized clinical trials of cannabinoids for the following indications:
 - 1. Nausea and vomiting associated with ChemoRX
 - 2. Appetite Stimulation in HIV/SIDS
 - 3. Chronic Pain
 - 4. Spasticity due to MS/paraplegia
 - 5. Anxiety/Depression: Sleep Disorder
 - 6. Psychosis: glaucoma, Tourette Syndrome

CANNABINOIDS FOR MEDICAL USE (CONT)



- Most trials showed improvement in "SYMPTOMS"...Did NOT meet statically significance in all trials
- N&V: greater than average showing response comp. with placebo
- Pain: greater than average reduction in numerical pain scale rating
- Spascity: Average reduction

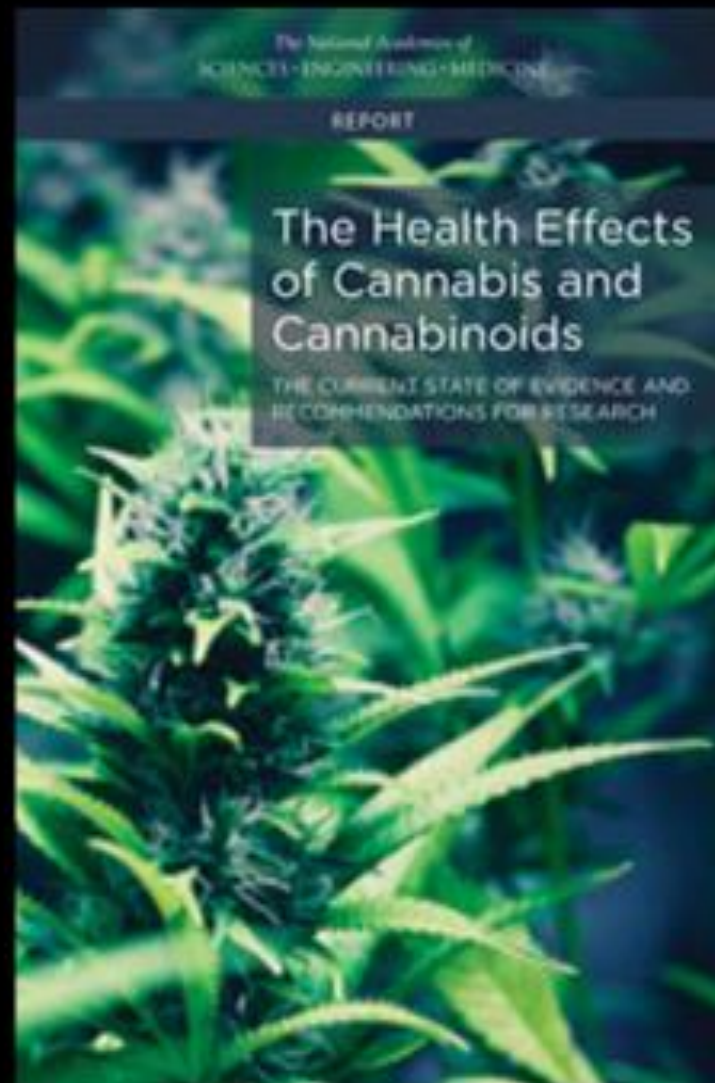
CONCLUSIONS AND RELEVANCE



- Moderate-quality evidence to Support cannabinoid use for Chronic Pain and Spascity
- Low-Quality evidence: Suggesting that Cannabinoids were associated with Improvements in N&V due to ChemoRx, Weight gain in HIV, Sleep Disorders, and Tourettes
- Cannabinoids were associated with an Increase risk of short term AE

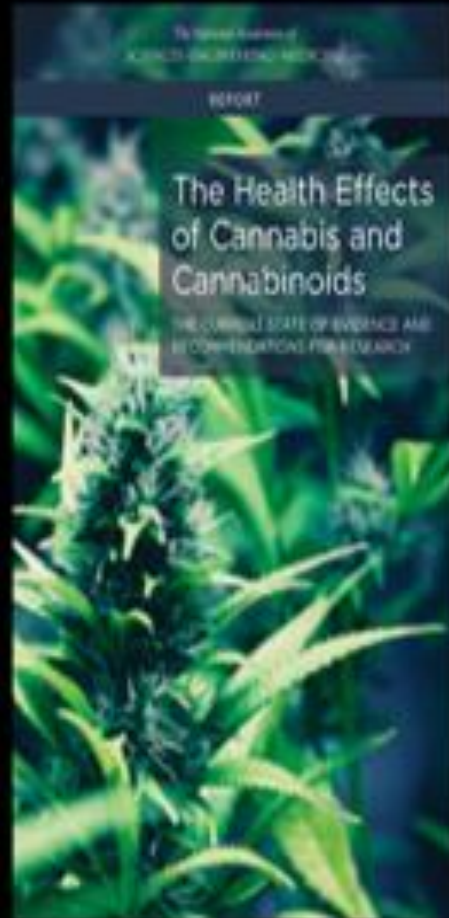
12 JANUARY 2017

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12 JANUARY 2017

The National Academies of
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- Review more than 10,700 Abstracts
- Close to 100 different research conclusions
- Health Effects
- Potential Therapeutic Uses
- Risks: Mental Health, CA, Immunity
- ? Therapeutic Use of Cannabis and Cannabinoids
- Chronic Pain, CA, HIV-related anorexia, HD, PD

The National Academies of
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- “Conclusive or Substantial”: Can treat chronic pain in adults
Nausea and vomiting in ChemoRx
Improve reported MS spasticity
- “Substantial Evidence”
 - Smoking: worse respiratory S/S
 - Increase bronchitis
 - Risk MVC
 - Low Birth weight pregnancy
 - Increase psychosis/frequent use
 - Use at “earlier age” problematic

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

- “No Evidence”: In Rx Depressive Disorders and PTSD
- “Limited Evidence”: Associated impaired academic performance and social functioning; nor increased rates of unemployment and low income
Research Barriers: Schedule I
Difficulty “to gain access to quantity, quality, and type of cannabis product necessary to address specific research questions on health effects”

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

• Recommendations:

- 1. Develop a comprehensive evidence base on the beneficial and harmful health effects of cannabis use in short and long term
- 2. Improve federal and state public health surveillance efforts
- 3. Develop Research standards and benchmarks: uniform terminology, data set for observational and clinical studies
- 4. Convene expert committee to characterize the barriers to cannabis research: with 11 endpoints; therapeutic effects, CA risk, cardiometabolic risk, respiratory risk, immunological effects, injury and death, issues with pre-, peri, and post natal exposure, psychosocial effects, mental health, problems with use and abuse of other substances

TRIAL OF CBD FOR DRUG-RESISTENT SEIZURES IN DRAVET SYNDROME

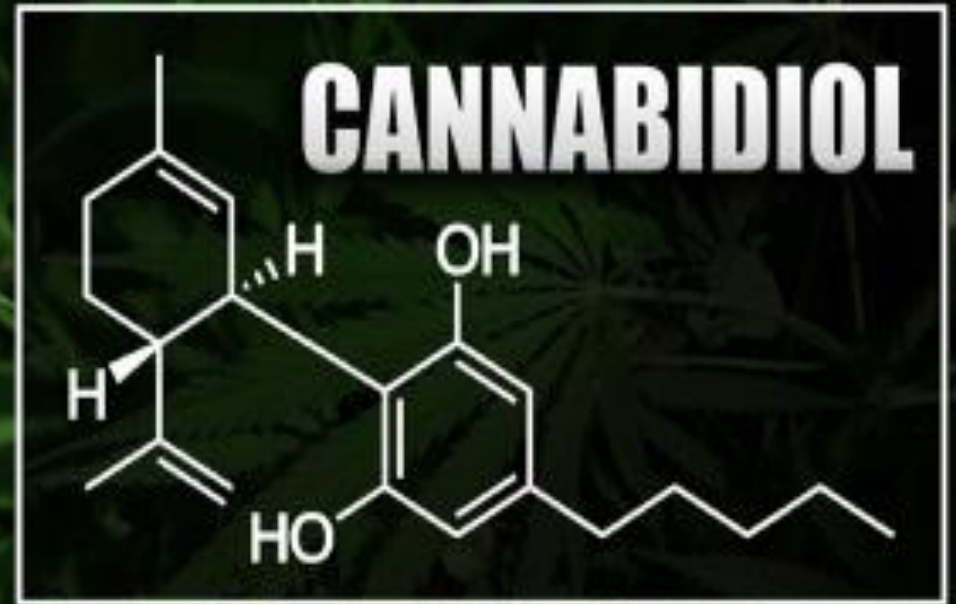


- 31 May 2017
- Complex childhood epilepsy disorder
- Double blind placebo controlled
- 120 participants: 20mg/kg
- 14 weeks
- With CBD decreased seizures/month 12.5 to 9
- Placebo 14.9 to 14.1
- AE: CBD diarrhea, vomiting, fatigue, pyrexia, somnolence, LFT
- More withdrawals in CBD
- Greater reduction in seizure frequency
- Funded by GW Pharm

19 APRIL 2018: FDA ADVISORY PANEL UNANIMOUSLY RECOMMENDS APPROVAL



CBD



USFWS

CANNABINOID RX AVAILABLE IN US AND CANADA

Table. Some Cannabinoid Products

Drug	Available Formulations	Usual Adult Dosage	Cost ^a
Dronabinol - generic			\$235.20 ^b
Marinol (Abbvie)	2.5, 5, 10 mg capsules	5 mg/m ² , 4-6 x/d ^c	545.30 ^b
Syndros (Insys)	5 mg/mL PO solution	4.2 mg/m ² , 4-6 x/d ^c	NA
Nabilone-Cesamet (Meda)	1 mg capsules	1-2 mg bid	216.20
Nabiximols ^d -Sativex (GW Pharma)	10 mL oromucosal spray ^e	4-8 sprays/d	221.50 ^f

NA = Cost will be updated when drug becomes available. WAC = wholesaler acquisition cost or manufacturer's published price to wholesalers.

^a Approximate WAC for 3 days treatment with the lowest usual adult dosage. WAC represents a published catalogue or list price and may not represent an actual transactional price. Source: AnalySource[®] Monthly, July 5, 2016. Reprinted with permission by First Databank, Inc. All rights reserved. ©2016. www.fdbhealth.com/policies/drug-pricing-policy.

^b Cost for a patient with a body surface area of 1.8 m².

^c Usual dosage for treatment of chemotherapy-induced nausea and vomiting.

^d Not available in the US.

^e Each 10-mL vial contains up to 90 sprays. Each 100-mL spray contains 2.7 mg delta-9-tetrahydrocannabinol (THC) and 2.5 mg cannabidiol (CBD).

^f Approximate WAC for one 10-mL vial, based on price from a national wholesaler in Canada (price in Ontario, July 2016).

SYNTHETIC VERSIONS OF CANNABIS EXTRACTS



- Dronabinol (Synthetic 9-THC)
- N/V CA Rx
- Appetite stim. HIV
- Analgesia neuropathic pain/MS: **OFF LABEL**
- Approved 1985 CII
- 1999 CIII
- \$150 million/yr
- 2.5-10mg/day in divided doses
- \$3000/month: Generic \$1351

SIMILAR COMPOUND: NOT IN CANNABIS PLANT

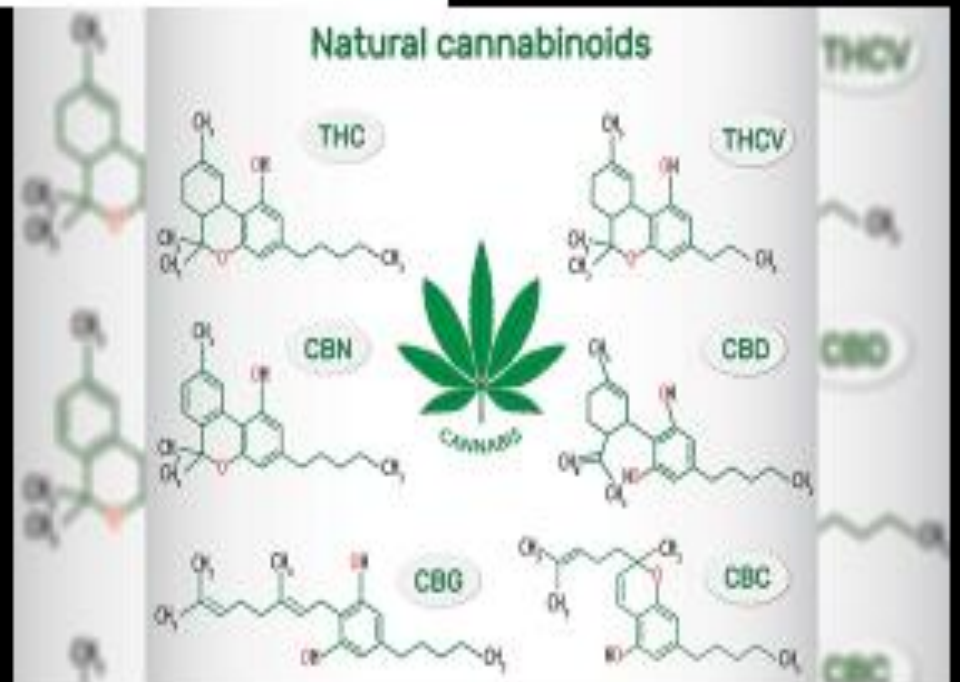
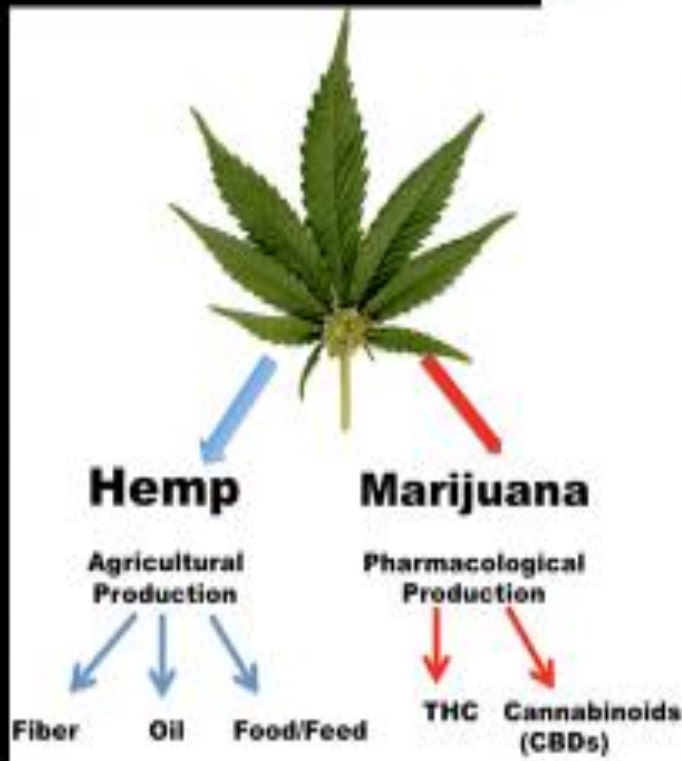
- Synthetic Analogue: similar to THC
- N/V (Refractory) associated the CA Rx
- 1985 approved but withdrawn 1989: re-approved 2006
- Warning: "Potential to affect mental state of patients"
- Rx: CESAMET; CII
- 1-2mg TID: Max 6mg/day
- Months supply \$2250

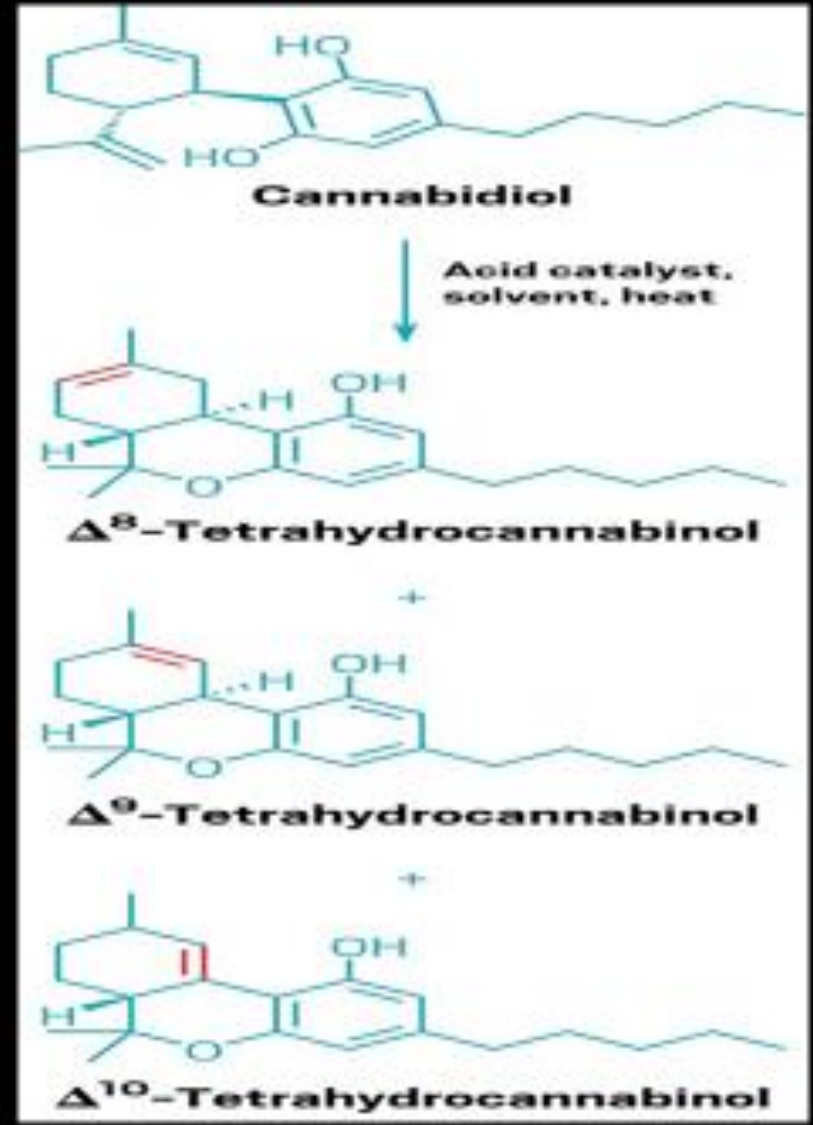
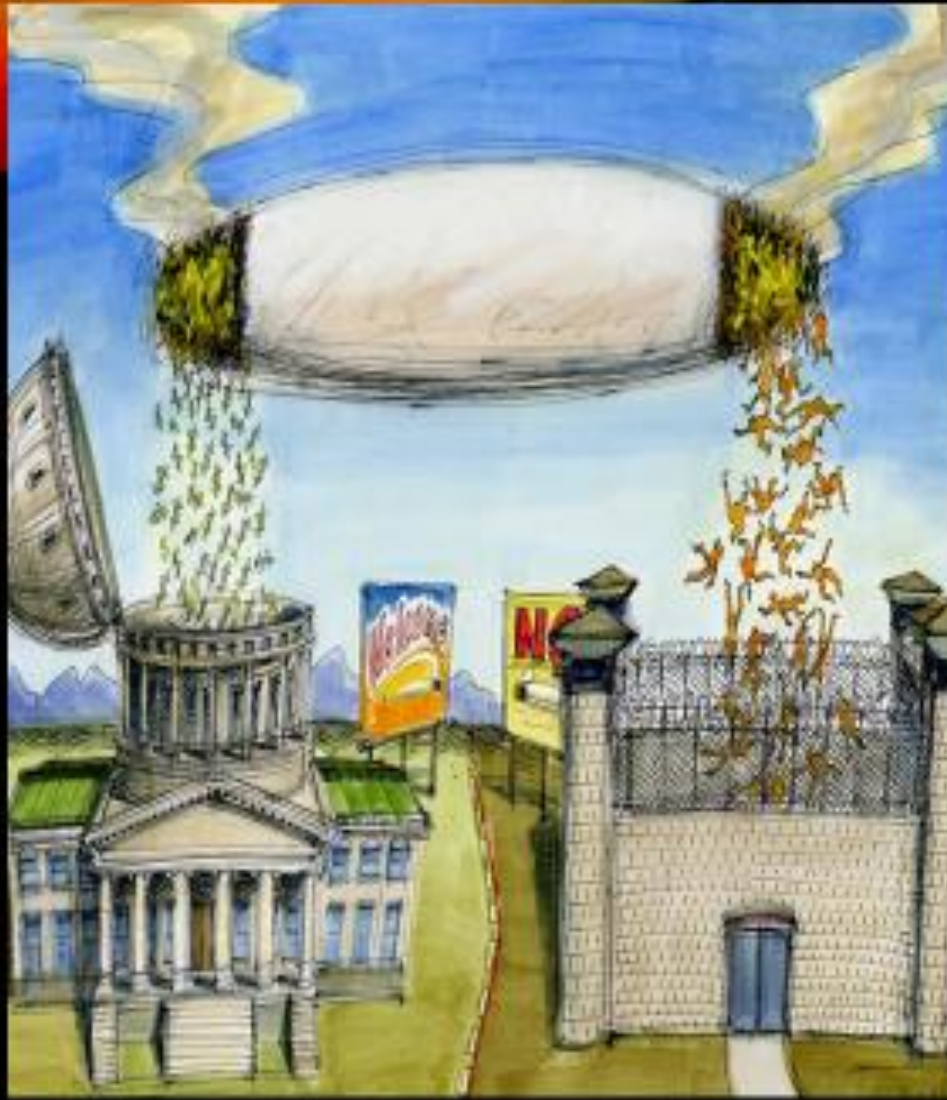


NATURAL EXTRACT FROM PLANT SOURCE



- THC and CBD (nabiximols)
Oraomucosal spray
- 2.7mgTHC/2.5mg CBD: 2.5-120mg in divided doses
- Neuropathic pain/spasticity of MS
- Analgesia: advanced CA-mod/severe
- UK, Canada 2010: First Cannabis based med
- US: Phase III trials in CA pain initial results in 2014
- GW Pharm/ Otsuka
- New Drug app: 2013 spasticity of MS





NATURAL PRODUCTS

Delta-8-THC craze concerns chemists

Unidentified by-products and lack of regulatory oversight spell trouble for cannabis synthesized from CBD

by **Britt E. Erickson**

August 30, 2021 | A version of this story appeared in **Volume 99, Issue 31**

Which tackle

Artemi COVID-

Cannab terpen

IN BRIEF

Chemists are alarmed about impurities formed during the synthesis of the cannabinoid Δ^8 -tetrahydrocannabinol (delta-8-THC), sold in gummies, vape products, and other items. Delta-8-THC is a mildly euphoric isomer of psychoactive delta-9-THC. Delta-8-THC is typically synthesized from cannabidiol (CBD) extracted from hemp. The reaction often yields a high percentage of delta-8-THC, as well as small amounts of other cannabinoids and reaction by-products. Little is known about the health effects of these impurities, and chemists have not identified all of them.

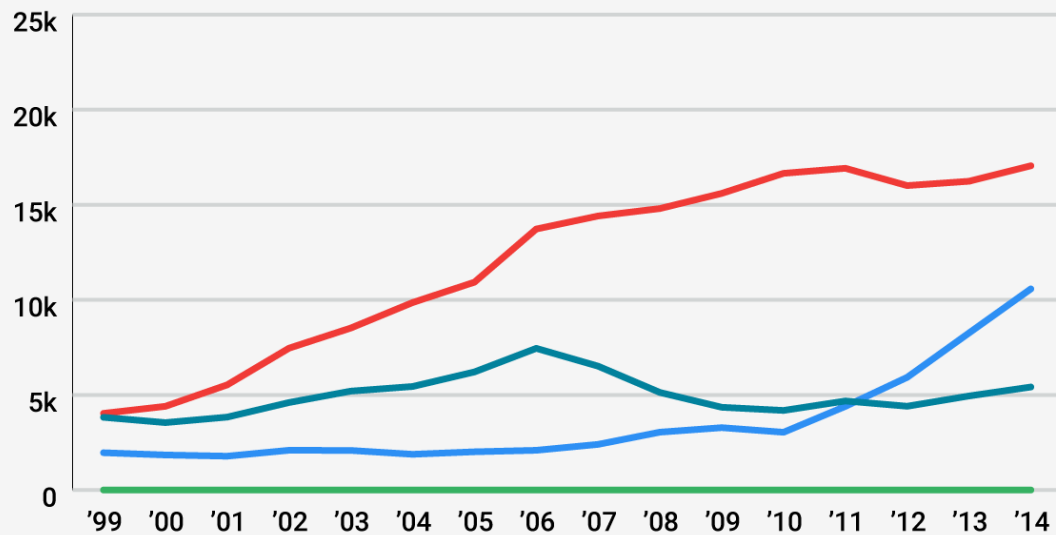


“HIGH HOPES RIDE ON LEGAL MARIJUANA AMID OPIOID CRISIS”

OVERDOSE DEATH RATES IN AMERICA

■ Opioid Pain Relievers
 ■ Heroin
 ■ Cocaine
 ■ Marijuana

All underlying causes of death*

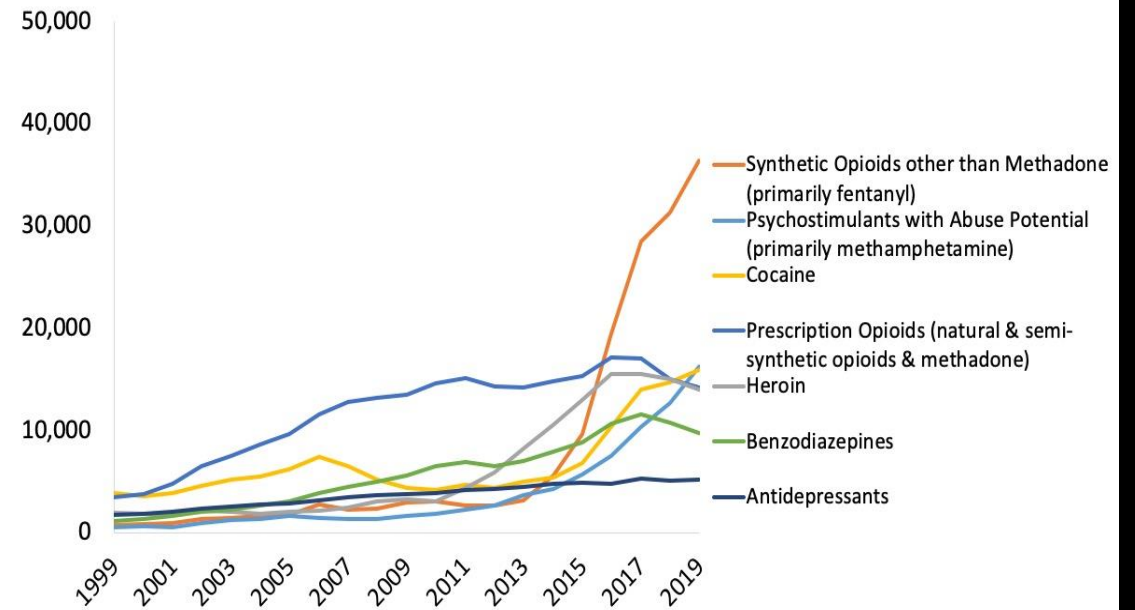


*Includes deaths from unintentional drug poisoning, suicide drug poisoning, homicide drug poisoning or drug poisoning of undetermined intent.

SOURCE: Wonder.cdc.gov; drugabuse.gov

BUSINESS INSIDER

Figure 2. National Drug-Involved Overdose Deaths*, Number Among All Ages, 1999-2019



*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

June 23/30, 2015

Cannabinoid Dose and Label Accuracy in Edible Medical Cannabis Products

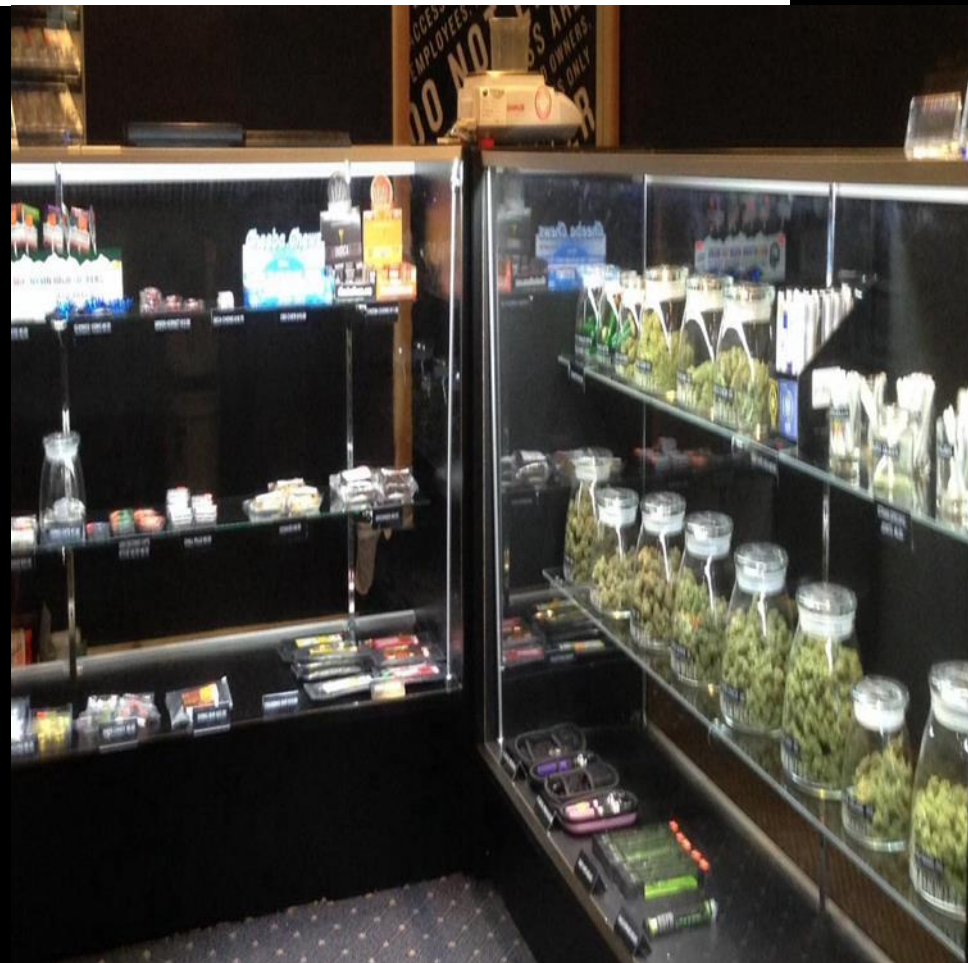
Ryan Vandrey, PhD¹; Jeffrey C. Raber, PhD²; Mark E. Raber²; [et al](#)[» Author Affiliations](#) | [Article Information](#)

JAMA. 2015;313(24):2491-2493. doi:10.1001/jama.2015.6613

Results

Of 75 products purchased (47 different brands), 17% were accurately labeled, 23% were underlabeled, and 60% were overlabeled with respect to THC content ([Table 1](#)). The greatest likelihood of obtaining underlabeled products was in Los Angeles and overlabeled products in Seattle ($\chi^2=12.94, P=.01$).

Non-THC content was generally low ([Table 2](#)). Forty-four products (59%) had detectable levels of CBD; only 13 had CBD content labeled. Four products were underlabeled and 9 were overlabeled for CBD. The median THC:CBD ratio of products with detectable CBD was 36:1, 7 had ratios of less than 10:1, and only 1 had a 1:1 ratio.



Mapping cannabis potency in medical and recreational programs in the United States

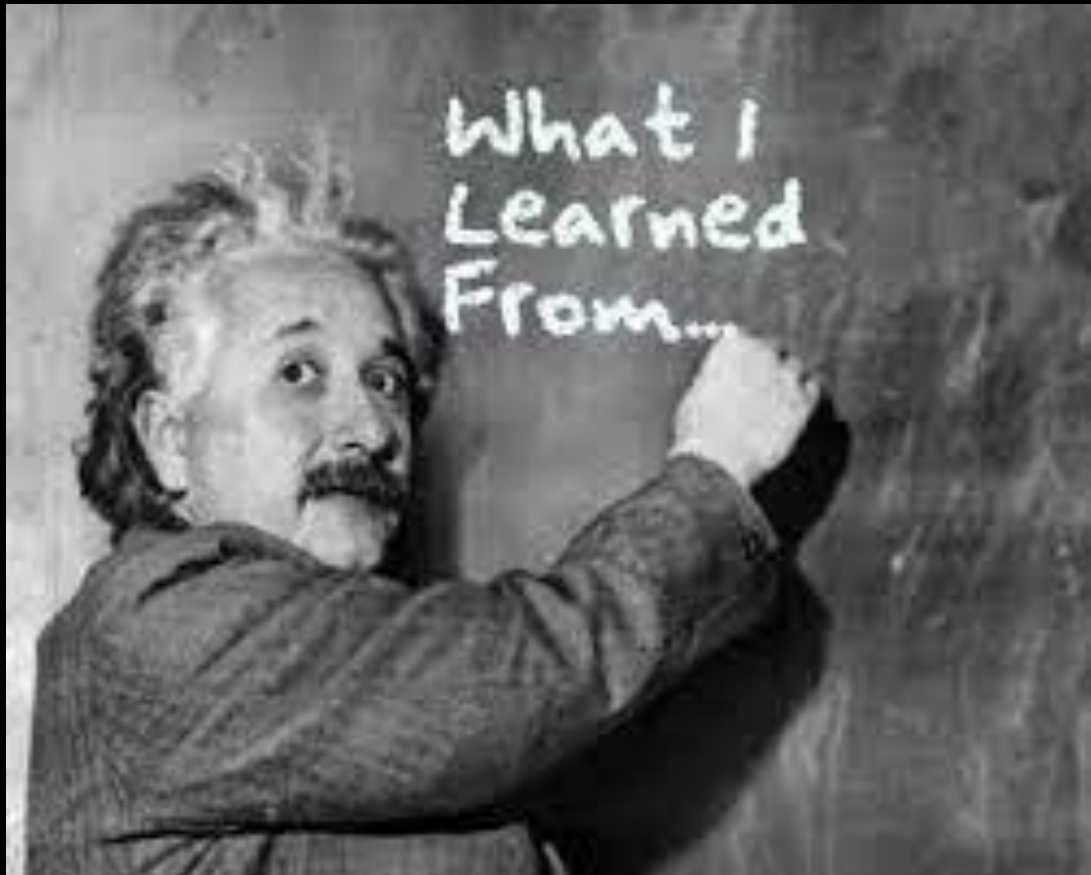
Mary Catherine Cash , Katharine Cunnane , Chuyin Fan, E. Alfonso Romero-Sandoval 

Published: March 26, 2020 • <https://doi.org/10.1371/journal.pone.0230167>

- Medical stores were deemed “essential” while recreational were closed
- 90% of the legal cannabis products offered in medicinal dispensaries exceeded the THC levels recommended for chronic pain relief
- 5% for chronic pain: analysis 35%
- Levels of THC from the medical and recreational stores startlingly similar- and HIGH
- Major difference is the store sold



WHAT'S THE TAKE HOME??



- 10% of Cannabis Users in US Report Using for MEDICAL Purposes
- 36 States Initiated Policies Allowing Use of Cannabis or Cannabinoids for specific medical conditions
- Federal Government Classifies Cannabis: Schedule I: Illegal
- Schedule I Status complicates "State" Medical Use and Research
- Evidence of the Efficacy of Cannabis to Manage Various Diseases is Often Lacking

TAKE HOME CONT.

- FDA Approved Indications and Therapeutic Use
- 1985: Cannabinoids-dronabinol and nabilone approved for: Chemo induced N & V:
- 1992: Dronabinol approved for appetite stimulation in conditions that cause weight loss e.g. AIDS
- 2018: CBD approved for 2 forms of pediatric epilepsy: Dravet Syndrome and Lennox-Gestaut Syndrome based on strength of positive RCT
- 2017: NAS,E,&M: Moderate level evidence of efficacy in pain-neuropathic
- Inconclusive that cannabinoids manage chronic pain
- Strong evidence to support relief of symptoms of muscle spasm from MS
- Insufficient evidence to support or refute claims Cannabinoids provide relief for spinal cord-related muscle spasms

TAKE HOME CONT. RECENT CLINICAL TRIALS

- 2 multicenter international trials:
Efficacy of CBD as add-on drug to manage some seizure disorders:
Promising yet relatively uncommon disorders
- Numerous other medical conditions including PD, PTSD, Tourette Syndrome have hypothetical rationale for use of cannabis or cannabinoids-based on cannabinoids effects on spasticity and C-receptors in basal ganglia and cerebellum
- Public interest in cannabis and cannabinoids continues to increase
- Number of medical conditions for which patients are utilizing cannabis and CBD and other cannabinoids continues to increase
- Evidence to support the above interest and use remains insufficient

TAKE HOME ADVERSE EFFECTS

- Impaired Learning, Attention, Motor Coordination—ADS and driving
- Acute Use: Judgement and risky decision making
- Acute Use cognitive deficits: Residual cognitive effects persisting after acute intoxication-still debated
- Chronic Use: psychosis, Cannabis Use Disorder (~daily use of >1/8 oz/week)
- CUD: 30% adult users: impairment work, school, relationships: Perinatal

CANNABINOIDS FOR MEDICAL USE: ADVERSE EFFECTS (AE)

- Common AE:
- Dizziness
- Dry Mouth
- Nausea
- Fatigue
- Somnolence
- Euphoria
- Vomiting
- Disorientation, Drowsiness
- Confusion, Loss of Balance
- Hallucination

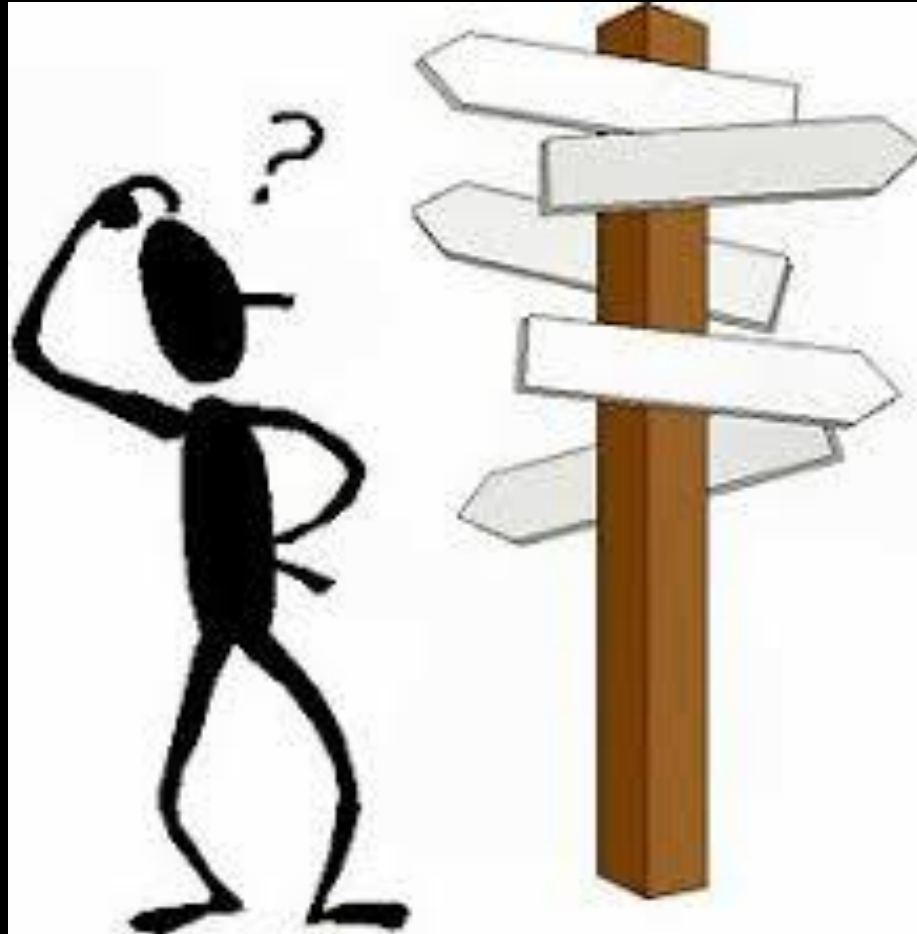
OHIO HB 523: "QUALIFYING CONDITIONS"

- Various US State Governments have recommended cannabinoids for the management of more than 50 conditions

- AIDS/HIV
- Alzheimer's Disease
- ALS
- Cancer
- Chronic Traumatic Encephalopathy
- Crohn's Disease
- Epilepsy or other Seizure disorder
- Fibromyalgia
- Glaucoma
- HCV
- IBD
- MS
- Pain "either chronic, severe, intractable"
- Parkinson's Disease
- PTSD
- Sickle Cell Anemia
- Spinal Cord Disease or Injury
- Tourette's Syndrome
- TBI
- Ulcerative Colitis
- Any other conditions added by St. Med Board



RESEARCH CONFUSION



- Cannabis/Cannabinoids are useful in **SOME** conditions
- Patients who May benefit May NOT get appropriate treatment due to insufficient awareness regarding the evidence supporting its use
- Confusion from conflicting Federal and State Laws
- Physicians remain reticent to recommend cannabis: limited scientific evidence

“SHARE YOUR KNOWLEDGE. IT IS A
WAY TO ACHIEVE IMMORTALITY”



