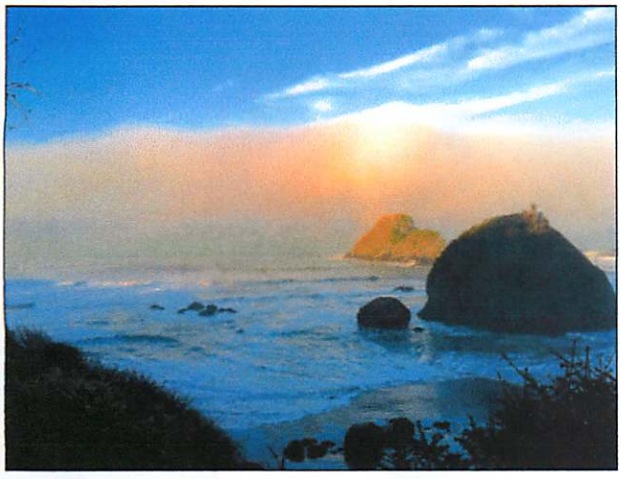


Medical Cannabis

Why does it work and what's the harm?

History of a botanical:

- 1840's--William O'Shaughnessy introduced cannabis as medicine to England and Ireland
- In 50% of patent medicines by late 1800's
- Decreased use early 1900's due to beginning use of opiates, aspirin, barbiturates, syringes, etc.

Why the controversy?

- Part racism in the early 1900's with use attributed to Jazz musicians in Harlem and Mexican farm workers
- Part politics (end of alcohol prohibition and lobbying from industrialists who objected to hemp production)
- Harry Anslinger 's propaganda

Who was Harry Anslinger?

- First Commissioner of the Federal Bureau of Narcotics--established 1930
- After repeal of alcohol prohibition in 1933, many federal employees were left without jobs
- First prohibition laws were in states with large numbers of immigrants from Mexico
- 1937 Tax Act effectively stopped use of cannabis as medicine

Harry's Quotes

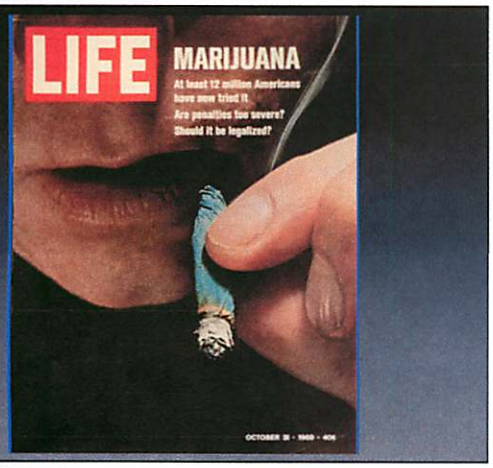
- "Marijuana is an addictive drug which produces in it's users insanity, criminality, death."
- "Reefer makes darkies think they're as good as white men."
- "The primary reason to outlaw marijuana is it's effect on the degenerate races."
- "You smoke a joint and you're likely to kill your brother."
- Marijuana is taken by musicians. And I'm not talking about good musicians, but the jazz type..."

Why I changed my mind about medicinal cannabis | Hugh Hempel | TEDxUniversityofNevada

"Prohibition... goes beyond the bounds of reason in that it attempts to control a man's appetite by legislation and makes a crime out of things that are not crimes...

A prohibition law strikes a blow at the very principles upon which our government was founded."

- Abraham Lincoln



What is in cannabis?

- Cannabinoids—estimated at about 140, including THC, CBD, etc.
- Terpenes—estimated at greater than 200 and responsible for smell and many effects--like sedative, energizing, anti-inflammatory

Research

- Raphael Mechoulam identified:
- 1963--the molecule CBD or cannabidiol
- 1964--the molecule THC
- 1988--Five other researchers found CB1 receptor in the brain
- 1990--RM found the molecule anandamide, a cannabinoid made by our bodies

Our endocannabinoid system

- CB1 receptors—most abundant in the central nervous system, but also in adipose tissue, stomach, placenta, lungs, uterus, liver, and more
- CB2 receptors—immune system, but also liver, spleen, GI tract, heart, kidney, bones, endocrine system, peripheral nervous system, and more
- and likely more receptors and endocannabinoids not yet identified

What does this system do?

- Seems to modulate our physiology through receptors—off and on and volume
- Endocannabinoid system found in all animals except insects.
- "There is barely a biological, physiological system in our bodies in which endocannabinoids do not participate." RM

Why is research in U.S. so difficult?

- Controlled Substance Act passed in 1970
- Five schedules for drugs and Schedule I is most restrictive
- Schedule one definition: "no currently accepted medical use", "a high potential for abuse", and "a lack of accepted safety"

Scheduled Drugs

- Schedule I: Heroin, LSD, Marijuana and it's cannabinoids, MDMA (ecstasy), Peyote, etc.
- Schedule II: Cocaine, amphetamine, methamphetamine, Opium, Morphine, Seconal, Phencyclidine (PCP), etc.

U. S. patent no 6,630,507
"Cannabinoids as antioxidants and neuroprotectants"

"Cannabinoids have been found to have antioxidant properties [and] this new found property makes cannabinoids useful in the treatment and prophylaxis of a wide variety of oxidation associated diseases. The cannabinoids are found to have particular application as neuroprotectants, for example in limiting damage following ischemic insults, such as Alzheimer's disease, Parkinson's disease and HIV dementia."

October 7, 2003

What does it treat?

- a plethora of diseases, conditions and symptoms—because of the receptors throughout our bodies. Including:
- Pain
- Inflammation
- Seizures
- Nausea

- Cancer/tumors—inhibiting growth in a number of ways
- Sleep disorders
- Muscle Spasms
- Psoriasis
- Exit drug—helping with drug and alcohol use/abuse

Are there dangers?

- Abuse/use disorder
- Cannabis hyperemesis disorder
- Teen use
- Schizophrenia/Psychosis
- Worsening of a medical condition

Possible dangers, continued:

- Overdose
- Use in pregnancy and breastfeeding
- Interactions with other medications
- Gateway Theory

CUD: Cannabis Use Disorder

- Cannabis abuse and dependence were combined in DSM-5
- The criteria can be very misleading

Criteria for CUD

- At least 2 of the following in a 12 month period:
- Cannabis use in larger amounts or for longer than intended
- Persistent desire to cut down
- Much time spent in obtaining cannabis, using cannabis or recovering from use

Criteria continued:

- Craving or strong urge to continue use
- Tolerance: need for increased use to maintain effect
- Interference with work, school, relationships
- Withdrawal--compared by many to withdrawal from caffeine

The problem with criteria

- Tolerance is desirable
- Naturally, patients may use more when determining effective dose
- If cannabis is an effective treatment for a condition, patients are likely to keep using it
- Patients may need to spend much time in obtaining cannabis, especially in some states

Cannabis Hyperemesis Disorder

- First described in 2004, in Australia
- Symptoms: Cyclic, involves nausea, vomiting, and abdominal cramps
- Usually worse in am
- Pain usually relieved by hot showers/baths
- Resolves with cessation of use (can take up to 3 months)

Teen use

- Much confusing controversy—studies which have been done were often poorly designed and did not control for other factors such as tobacco and alcohol use
- Cannabis is an alternative to more harmful medications and intoxicants—antidepressants, antipsychotics, alcohol, tobacco

Causes Schizophrenia/ Pyschosis?

- No causal relationship has been found
- Teens/Young Adults have often used cannabis by the time of diagnosis
- In those predisposed by personal or family history need to be very careful with cannabis use
- Helps many patients with these conditions

Worsening of a Medical Condition

- No studies or encounters with patients have shown this to be true
  - Symptoms can be exacerbated with inappropriate use
  - Anxiety--with high THC, inadequate CBD
  - Inadequate labeling--need to know entire profile--cannabinoids AND terpenes

Overdose

- No deaths attributed to cannabis use
- Can certainly be miserable the vomiting, disequilibrium, (similar to seasickness in many patients)
- Psychotic episode, rapid heart rate, anxiety possible

Pregnancy/ breastfeeding

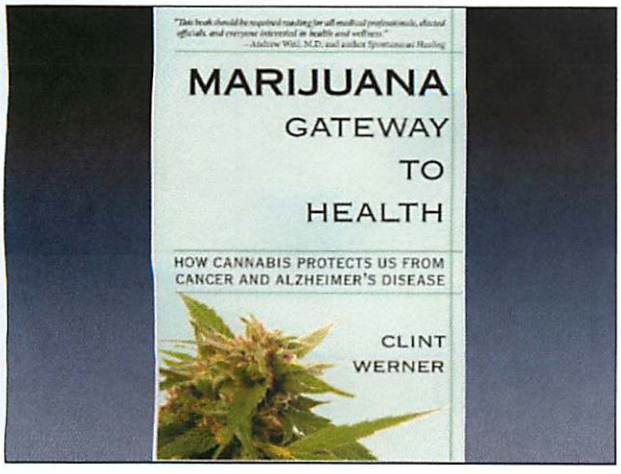
- There are NO studies showing adverse outcomes, once adjustments were made for confounding factors—like tobacco use, alcohol and other drug use, socioeconomic status, etc.
- Long term study in Jamaica in 1994-also no adverse effects identified. Follow up was in to school years.

Interactions With Other Medications

- Anti-seizure medications
- Coumadin, blood thinner
  - Doses may need to be lowered and levels monitored

Gateway Theory

- 1999 Institute of Medicine looked at the evidence
- Conclusion: No CAUSAL link to subsequent use of other illicit drugs
- Many users of cannabis start with alcohol and tobacco use, so are they gateway drugs?
- Legalization may be "anti-gateway"--by keeping cannabis users away from drug dealers



Methods of Use

- Smoking--quick titration of dose
- Vaporizing--quick titration, cost
- Dabs--a method of inhalation of cannabis concentrates
- Topical--works on peripheral nerve receptors, not psychoactive
- Oral/Sublingual/Rectal/Vaginal

Oral Route

- Edibles--sweets, savories, ice cream, tea, sodas, and beyond
- Tinctures--made with alcohol as a base or vegetable glycerin
- Sublingual preparations with oils
- Juicing--and other use of fresh leaves, flowers

Advantages of oral route

- Lasts longer than inhalation methods
- More consistent relief of symptoms
- Discrete
- Can make at home with less expensive plant material (trim, leaves)
- THC is converted to 11-hydroxy-THC by liver--more sedating (Can also be a disadvantage)

Disadvantages of oral route

- Need to determine effective dose ("Start Low, Go Slow")
- Find minimum dose felt and then titrate up for desired effect(s)
- Patients can increase dose at bedtime--to develop tolerance during sleep
- Takes about an hour to feel on an empty stomach, may be MUCH longer after eating

Concentrates

- Can be used orally, sublingually, rectally, vaporized, smoked, topically
- Important to know extraction process
- Avoid butane extracted products (illegal process AND dangerous), also risk of residual butane in the concentrate
- Vapor pens--not actually vaporizing

Vaporizors

- All heat the plant material to point active chemicals are vaporized in to the air, but the plant material never burns
- Many different types--rechargeable batteries, electric, etc.
- Price range from ~$50 to over $600

Advantages of inhalation

- *Rapid* effect--seconds to minutes
- Short acting (also a disadvantage)
- Easy to titrate for effect
- More difficult to "overdose"
- NO evidence of Lung cancer, Emphysema/ COPD associated with smoking cannabis

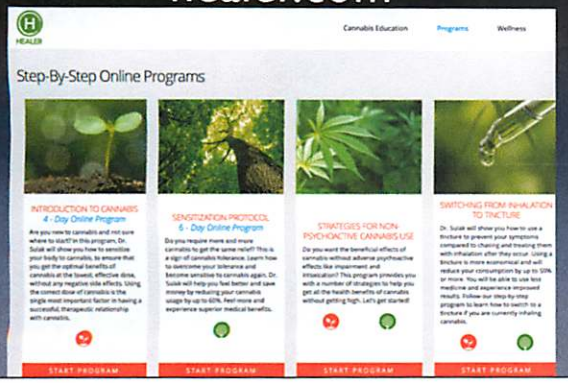
Disadvantages of inhalation

- Short acting
- Odor associated with use
- Cough possible

Valuable Websites

- healer.com, Dustin Sulak, D.O.
- projectcbd.org
- See list of websites and documentaries for more suggestions

healer.com



Conclusions:

- Prohibition is a failed public health policy
- Must be rescheduled by the Federal Government, preferably de-scheduled
- Often a safe and alternative medicine to more harmful pharmaceuticals
- Harm reduction-useful in opioid addiction, alcohol avoidance, etc.

Conclusions (more):

- The endocannabinoid system is a breakthrough discovery in science
- Health care professionals in all fields need to be taught about the endocannabinoid system in their schools
- "Just Say Know": my favorite chapter title in Marijuana Gateway to Health, by Clint Werner