Marijuana and CBD

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Objectives

- Facts
- History
- Difference between THC and CBD
- Strains/composition/dosages
- Clinical aspects good and bad
- Workers' Compensation

Marijuana is illegal?

- 10 states + District of Columbia Recreation and Medically legal in
- 23 States Medical Marijuana legal
- 14 states Medical Marijuana is legally prohibited but limited use of CBD approved for certain conditions
- 3 states all forms prohibited (Nebraska, Idaho and Kansas)



Facts

- 183 million people use cannabis worldwide
- 2400 different strains
- Predominant varieties
  - Sativa: high levels of THC claims good for exercise, enhanced mood and creativity
  - Indica: feeling of relaxation, makes user sleepy referred as the night time strain
  - Ruderalis: Low THC and Higher CBD content
- So much cross breeding it is difficult to understand what you are buying
- Terpenes

Cannabis

- Family of plants which includes both hemp and marijuana
- Cannabis contains multiple compounds called cannabinoids
  - Delta-9-tetrahydrocannabinol (THC)
  - Cannabidiol (CBD)
- THC is the psychoactive component of the plants which causes “the high”
- CBD in literature has been helpful in treatment of seizures, mental illnesses, anorexia
- THC and CBD levels vary among different strains and between hemp and marijuana
- Marijuana contains 15% to 40% THC
- Hemp contains 0.3% or less of TCH



Hemp



- On December 20th, 2018, President Trump signed the 2018 Farm Bill and passed it as law
- Hemp can now be cultivated, processed, and sold as an agricultural product.
- As part of the **Farm Bill 2018, industrial hemp** cannot contain any more than trace amounts of THC – 0.3%
- Hemp can be traded as an industrial product
- Freely transported across state borders.
- Hemp-derived food products though have been given a more benign GRAS or Generally Recognized as Safe rating
- CBD can be derived from Hemp so this market will escalate

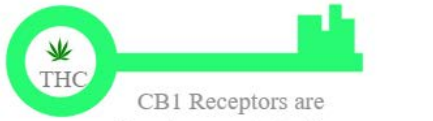
How it effects the user

- If smoked or vaped impact felt within moments
- High lasts 2 to 3 hours with peak at 30 minutes
- Slowing of response (reflexes)
- Dream state: slowing of time
- Increased heart rate
- Anxiety/panic
- Cannabinoid hyperemesis
- Disorganized thoughts
- Psychosis/schizophrenia (may not be reversible)

Pharmacology

CB1 Receptor: THC Binds

- Brain
  - Mood/Thinking
  - Emotion
  - Pain
  - Memories
  - Appetite enhancement
  - Muscle coordination and movement



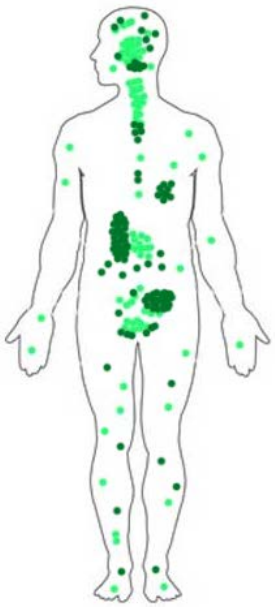
CB1 Receptors are found concentrated in the brain and central nervous system.





CB2 Receptors are present mostly in organs associated with the immune system.





CB2 Receptor:

- Immune system
  - Induce macrophage
  - Beta Amyloid plaque associated with Alzheimer's

Cannabidiol does not bind to either receptor but stimulates both

Cannabidiol (CBD)

CBD strengths vary depending on the formulation and route of administration

- Oral
  - Paste
  - Drops
  - Tincture
  - Capsules
  - Edibles
  - Mouth strips
- Topical
  - Lotions
  - Balms
  - Cream
  - Patch

Dosage Form	Dose Range	Steady State
Vape Oil	25-300mg	5-10 minutes
Drops	300-1000mg	20-40 minutes
Capsules	25-300mg	> 60 minutes



Cannabid

- Side effects
  - Increased liver fat
  - Diarrhea
  - Nausea and vomiting
  - Anxiety
- Contraindications:
  - Psychiatric conditions
  - Cardiovascular disease
  - Immunological disorder
  - Liver disease
  - Kidney disease



FDA approved EPIDIOLEX 6-25-18

- Epidiolex is cannabidiol (CBD)
- CBD is the chemical component of cannabis
- CBD does not cause intoxication or euphoria that comes form tetrahydrocannabinol (THC) the active ingredient in marijuana
- FDA reclassified from Schedule I to Schedule V drug class Sept 2018
- Drug available October 2018
- Approved for 2 types of seizure epilepsy disorders in children



Drug Name	Dose	Indication	Side Effects	AWP
Nabilone Cesamet ® (THC)	1mg	Cancer induced nausea and vomiting	Drowsiness, dizziness, euphoria, depression, lack of concentration, sleep disorder, dry mouth.	RX- $2352 per 50 tabs
Dronabinol Marinol® (THC)	2.5mg-10mg	Cancer induced nausea and vomiting	Euphoria	RX $353-$1351 per 60 Tabs
Epidiolex® (CBD)	100mg/ml	Epilepsy (LGS or DS)	Drowsiness, lethargy, sedation, fatigue, malaise, insomnia.	RX- $2708 per month

Cannabidiol (CBD)

- Drug Interactions:
  - Opioids (Codeine and oxycodone)
  - Benzodiazepines (Xanax)
  - Additive CNS depressant effects with alcohol and barbiturates
  - Antidepressants and antipsychotics
  - Sildenafil (erectile dysfunction)
  - Antihistamine
  - Antiretroviral
  - Statins (Atorvastatin and Simvastatin)
  - Calcium channel blockers and Beta Blockers (heart)
  - Macrolides (antibiotics)

Dispensaries

- Menu of options
  - Buds
  - Pre-rolled joints
  - Vape oils
  - Breath mints
  - Gummy bears
  - Brownies
- Labeled as dominant THC or dominant CBD



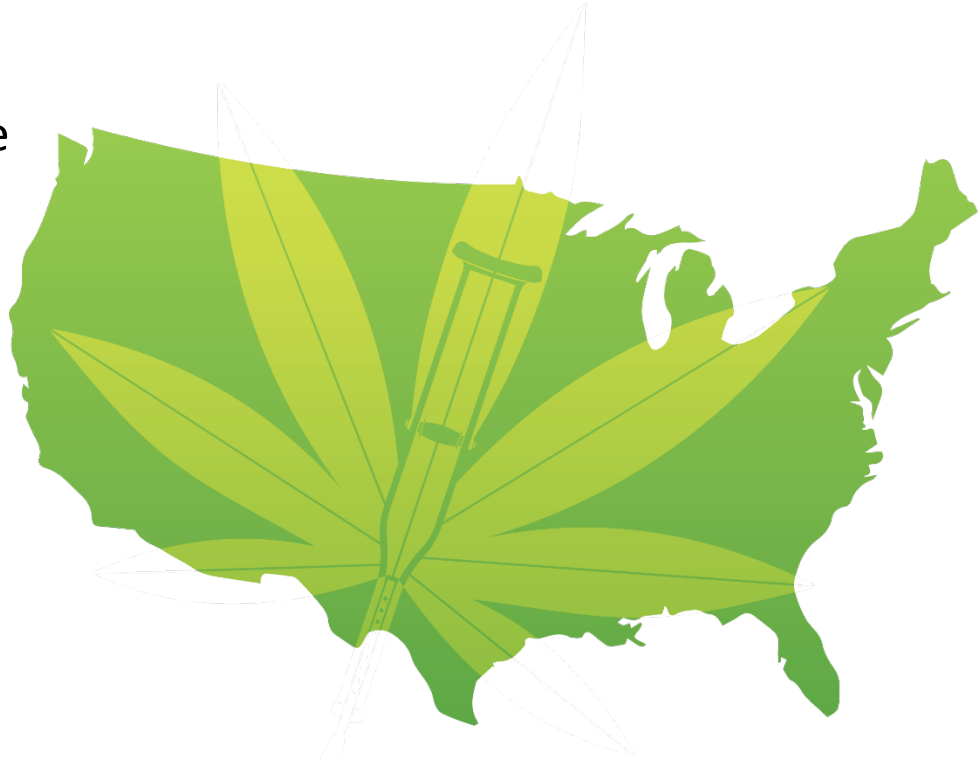
Problems

- No standardized lab
- A lot of cross breeding
- Labs may not label contents correctly and may leave out pesticide information
- Entourage effect: the balance of THC + CBD + Terpenes = cumulative impact of the strains working together



Problems

- Dose
- Doctor may recommend but fails to mention
  - Strain
  - How many times per day
  - What form to use/consume



Drug testing

- Stored in fatty tissue body content dependent
- Slowly released into blood stream
- In urine 1 to 5 days after single use
- In urine up to six weeks for regular users
- Positive drug test does not equal impairment
- Legal limit for DUI for marijuana is 5 nanograms

Testing methods

BREATHALYZER

Hounds Lab (trying to bring to market 2020)

- Measures use of both smoked and edible marijuana
- Gets results in minutes
- Detects THC in the breath in a trillionth of a g/L, for 2-3 hours after usage

Cannabix Technologies

(available perhaps in 2020)

- Low-cost portable breathalyzer device
- Could be used at home, work-place or by law enforcement

URINE TESTING

- Qualitative cannabinoid (THC) test
- Confirmation by mass spectrometry is automatically performed on positive samples

SALIVA

- Dräger DrugTest® 5000
- Point-of-care or on-site testing
- Can take 1-4 minutes
- High percentage of false positive (82.9% accurate)

Current state marijuana

- Marijuana is still a Schedule I controlled substance and its use is prohibited federally
- Medical marijuana has low quality of evidence available that it may be used to treat chronic pain
- Why? It is illegal and difficult to study
- It also has euphoric effects so it is difficult to conduct randomized double blinded studies
- Some studies touted in the press are not studies at all but surveys of individuals who are currently using marijuana for chronic pain and report a decrease in pain symptoms



Small studies

- Studies that are conducted on a smaller scale compared medical marijuana (THC + CBD) against placebo, CBD, and low dose THC and concluded that medical marijuana ***might*** be beneficial for pain, but only at higher doses.
- However the risk of side effects like depression and anxiety increase with increase in THC dose and there is no functional improvement or quality of life.
- CBD alone does not provide any clinical benefit in the management of pain except perhaps neuropathic more research is needed

Legal aspects

- FDA has jurisdiction of sale of all drugs
- Alcohol tobacco and firearms (ATF) has jurisdiction of alcohol and tobacco
- **Marijuana does not fit into either category and is not regulated**
- States are ignoring federal law
- Manufacturing of marijuana cannot be controlled, thus severe bio alteration can occur
- No nation-wide registry exists to track efficacy/safety of marijuana use



Health risks of medical marijuana

- Smoking risks
- Testicular cancer links
- Psychosis
- Myocardial infarction
- Marijuana is not necessarily “less addictive” and may lead to additional drug use. One study showed increase in recreational opioid use
- Stroke
- Lower IQ if used regularly especially in teens
- Anxiety



Health benefits

- Chronic pain (research unclear)
- 2018 Journal of Clinical Psychology revealed marijuana may help those with alcohol or opioid dependence
  - National Academy of Sciences disputes the findings
- Being studied for Depression and PTSD
- Helps with side effects of cancer related nausea and vomiting
- Improves spasticity in multiple sclerosis
- ALS spasticity voice and limbs



NFL and DOD

- NFL and NFLPA, have agreed on mandating a mental health practitioner for each team and forming a joint committee to study and assess pain management alternatives including cannabis
- Many NFL players use cannabis to alleviate pain and try their best to avoid the drug testing policies
- VA documents cannabis use in veterans and tracks it, however, has taken a strong policy that no physician in the system may recommend it as it is federally illegal. Marijuana use does not impact eligibility for VA benefits. Marijuana, Alcohol and Opioids are the top Substance Use Disorders (SUD)in the VA

Workers' Compensation perspective

- Federally illegal
- Specific pay code in Juris 309 for tracking and reporting
- Clients have many safety sensitive jobs and zero tolerance for drug use in the work place
- Judges are ordering payment for pain in states where it is legal
- Marijuana Review process

Recent legislation relating to hemp/marijuana

- 2/19 Massachusetts: due to state and federal discrepancy in law, WC can not be required to reimburse for medical marijuana
- 2/19 Arizona's federal District Court ruled that an employee, who was authorized to use medical marijuana, could sue her employer for violating the state's MML antidiscrimination clause
- 2/19 Michigan's Court of Appeals ruled that an employer did not violate MML by refusing employment to a candidate who tested positive for marijuana on a drug screening, even though it was for medical use
- 3/19 New Hampshire's Supreme Court held that the state's medical marijuana law does not prohibit reimbursement under workers compensation. It also clarified insurer is not required to reimburse either

Recent legislation relating to hemp/marijuana

- 6/19 Illinois 11th state to legalize recreational use
- 8/19 New York softened penalties max penalty $50 and no longer criminal
- 2/20 New Hampshire House trying to pass bill for recreational marijuana
- 4/20 Virginia decriminalized

Thank you for your attention

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