PainWeek

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After the Green Rush: Testing Medical Cannabis and CBD Users in Chronic Pain Patients

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Disclosure

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- Nothing to disclose

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Objectives

- Discuss drug testing methods in the context of state vs federal law
- Examine the Hemp Farming Act 2018, especially as it applies to CBD
- Explain how the "false positive drug test" can happen
- List what your patient can do about the "false positive drug test"
- Review your options in the context of marijuana use and prescription opioids

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Drug Testing in America

- In 1986, Ronald Reagan introduced the concept of a "Drug Free America"
  - At that time, J. Michael Walsh, PhD, led the way to develop what became the foundation for regulated drug testing in America*
  - Screening and confirmation methods are relied on to ensure legally valid results
    - Sample "chains of custody"
    - Highly regulated laboratories performed assays (SAMHSA Certified Lab)
    - Only 5 analytes are tested for

*https://www.walshgroup.org/drug_testing.htm

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Screens and Confirmatory Testing

- Screening tests generally are sensitive but not always specific
  - Often immunoassay methods where the target molecule (or similar) will form an antigen-antibody reaction reported as +ve
  - They are subject to cut-off thresholds, ie, threshold is 300ng/dL – 299 is reported as -ve while 301 is reported as +ve
  - Prone to cross reactivity problems, ie, "opiate +ve" is that morphine? Codeine? Or something unrelated, ie, olanzapine
  - A positive result is often made up of many different analytes, not one specific analyte
  - Some examples: EMIT, ELISA, RIA, test cups, dip sticks

* https://www.masspartnership.com/pdf/Urine%20Drug%20Testing%20in%20Clinical%20Practice.pdf, last accessed March 4th 2020

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Screens and Confirmations

- **Confirmation tests**
  - *Must be* confirmed by a 'second scientific method' ie, can't confirm by same method
    - *ie, repeating an EMIT screen twice didn't confirm the validity of the first test… it established reproducibility: "Two wrongs don't make a right!"*
  - Confirmatory tests are usually more time consuming, more labor intensive and, so, more expensive than simple screens
  - Each confirmation has a specific analyte at a minimum, threshold level to be called "confirmed"
- Typical confirmation tests are GC/MS, LC-MS/MS, etc

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Regulated Drug Testing – DMV

- Many states have altered the legal status of THC and cannabis products for medical and, in many cases, even recreational use
  - But at federal level, cannabis remains Schedule 1 (drugs with no currently accepted medical use and a high potential for abuse)
- So, where federal and state laws differ, the more stringent shall apply
  - **ie, Cannabis remains illegal in ALL of America unless / until it is rescheduled**
- Being legal does not mean it is your right to use
  - So a Medical Cannabis Card will not protect your safety sensitive job against firing

* https://www.ghsa.org/statelaws/issues/drug%20impaired%20driving

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Regulated Testing Doesn't Comment on Impairment

- With the exception of blood or breath alcohol levels, we have no scientific relationship between levels and degree of intoxication
  - That has not stopped the state regulators from setting arbitrary prohibited levels for THC in those operating motor vehicles*
- This is less a problem with alcohol because it is eliminated predictably (zero order kinetics), allowing for fairly accurate estimates of time to peak alcohol level or BAC (blood alcohol concentration) estimates at certain points of time after last drink

Franjo Grottenherman et al. Developing limits for driving under cannabis. J of American Society of Addiction Medicine 2007

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The Hemp Farming Act 2018

- The legal status of cannabis has been complicated
  - In trying to prohibit THC (the major known psychotropic in cannabis), a major source of fiber for the textile industry was lost
- So, a bill was proposed and passed that reclassified cannabis containing 0.3% THC or less as a legal entity called "hemp"
- Hemp typically contains a varying concentration of CBD, 25% or more
  - CBD extracted from hemp is **LEGAL**
  - CBD extracted from marijuana (ie, hemp with more than 0.3% THC) is **ILLEGAL**

* https://www.congress.gov/bill/115th-congress/house-bill/5485

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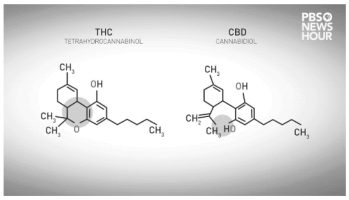
The Active Ingredients – but there are many more



https://www.analyticalcannabis.com/articles/cbd-vs-thc-what-are-the-main-differences-297486

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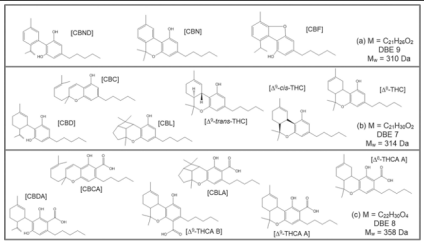
Other Cannabinoids



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Santos, Nayara & Tose, et al. (2018). Analysis of isomeric cannabinoid standards and cannabis products by UPLC-ESI-TWIM-MS: A comparison with GC-MS and GC × GC-QMS. Journal of the Brazilian Chemical Society. 30. 10.21577/0103-5053.20180152.

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"So, with CBD will I test positive?"

- Unfortunately, it depends
  - "Pure CBD oil" is rarely anything but pure (especially if "full spectrum")
    - From a legal perspective, it tends to mean "less than 0.3% by weight" of THC
    - It also may mean there are many cannabinoids OTHER than THC as well as other naturally occurring alkaloids (terpenes of various molecular weight), solvents, etc
  - It also depends on the test
    - Screen test by immunoassay may cross-react with other cannabinoids beside THC
      - CBD? Probably not. While an isomer of THC, the structure is sufficiently different not to react
      - CBN (cannabinol)? Probably yes
      - Trace THC below the legal limit of 0.3%—possibly!
    - By advanced methods, ie, LC-MS/MS, only the THC alkaloids will be considered

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Cannabinoid concentrations in blood and urine after smoking cannabidiol joints

- Study done in Switzerland
  - Herbal cigarettes made of hemp with <1% THC and CBD up to 25% are legal
  - 200mg hemp/joint; less than 1% THC; CBD <25%
  - Split population of nonsmokers and chronic smokers
    - Chronic use was modeled as 2 joints / day for 10 days
    - Blood levels of THC / CBD were determined at 4hrs and 20hrs
  - Peak levels of THC 2.7 and 4.5ng/mL and CBD levels of 45.7 and 82.6ng/mL
    - This is well above the Swiss legal limit to operate a motor vehicle of 1.5ng/mL
    - Cannabinoids in general didn't seem to accumulate BUT urinary THC-COOH did
  - REMEMBER: the starting material was scientifically quantified!

*Ulf Meier et al **Cannabinoid Concentrations in blood and urine after smoking cannabidiol joints,** Forensic Science International 291 (2018) 62–67

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"I use pure CBD oil in good faith and fail a THC drug test. What can I do?"

- If you made your own CBD oil, you're likely out of luck
  - But if a product lawfully sold in the USA can be shown to be "out of spec," ie, has more than 0.3% THC, there might be a legal case made for "involuntary intoxication"
    - You can be sure this will be a major hassle
    - More likely something that is established over time, rather than single person / product / test result
    - It will likely cost you a large amount of money

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"If I used medical marijuana, will I test +ve for THC at screen and confirmation?"

- This one is easy:
  - Smoking? Vaping? Edibles? YES
  - Topical? Probably
  - Regular pot users will be positive, above virtually any state regulator limit (DMV) even after 1 or 2 weeks abstinence!
    - This is due to the significant accumulation of THC in fat tissues associated with regular use
  - Is a person impaired after 1 or 2 weeks abstinence? NO, not likely
  - No reliable relationship between urinary, breath, saliva, or serum level of cannabinoids concentrations AND fitness to operate a motor vehicle

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Implications for Marijuana Use in Pain Management

- With federal law remaining as it is… there is risk for both prescriber AND patient, especially with concurrent controlled substance prescribing to marijuana users
  - Legally, it isn't against the law for you to prescribe a controlled substance to a person using an illicit substance (assuming you're doing this in the course of a legitimate medical practice) BUT
  - All DEA registrants are required to take steps to reduce the risk of diversion of prescribed controlled substances
- So, what does this mean?
  "Is it illegal to continue to prescribe controlled substances to someone you know is using marijuana?"

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Prescription Opioids and Marijuana

- …is it against the law to prescribe? No, but…
  There are caveats to that statement.
  1. Marijuana use is still illegal at the federal level (Schedule 1)
  2. You must take reasonable steps to limit the risk of diversion
  3. **"Ignoring risk" is not acceptable**
- So, what can I do?
  - One approach is to simply give the patient a choice: "Either Rx opioids OR marijuana, but not both"
  - An alternative is to identify the concern: "Using marijuana increases your risk so we're going to have to tighten things up to reduce that risk"
    - Smaller, more frequent prescriptions; increased clinic appointments

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"What if marijuana was legal federally and at state levels?"

- You would STILL need to assess and manage risk
  - Risk management isn't just because this is currently a Schedule 1 drug
  - Risk management is important to safely manage chronic pain patients WITH or WITHOUT the confounding issue of opioids

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Conclusions

- Statewide legalization of cannabis use adds a new dimension of uncertainty to it's role in pain management
  - Can it be medically useful? YES, but it likely increases risk
- The lack of oversite and regulatory control results in considerable risk in those who use, especially if on regular UDT or other drug testing
- If you are going to co-prescribe controlled substances to CBD or THC users, be careful: Risk does increase for you AND the patient
  - Many possible actions to take to minimize risk, but one thing you must not do is simply IGNORE IT

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References

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  - dgourlay@cogeco.ca

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