

26th Annual Geriatric Nursing Conference  
"Update for Clinical Geriatric Practice"

## The ABC's of CBD: An introduction to CBD in the Older Adult

Friday, September 11, 2020

1:15-2:45pm

Virtual live webinar

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## Goals/Objectives



**What is  
Cannabis?**







**Discuss  
Cannabis Strains  
(Cultivars)**



**Review  
of  
Cannabinoids  
and  
Intended Effects**

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## Goals/Objectives

			
<p>Difference between Hemp CBD and Cannabis CBD</p>	<p>Difference between Broad-spectrum and Full-spectrum</p>	<p>Discuss Potential Adverse Effects &amp; Cannabis-Pharmaceutical Interactions</p>	<p>Discuss Indications for CBD use with aging population</p>

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**What  
is  
Cannabis?**



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## What is Cannabis?

- Family: Cannabaceae
- Genus: Cannabis

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## What is Cannabis?

- Cannabis genus of plants contains approximately 500 compounds.
- This includes about 100 phytocannabinoids
  - Cannabinoids which occur naturally in plants
    - THC and CBD are phytocannabinoids
- Other significant compounds found in cannabis plants are terpenoids, flavonoids, and fatty acids.

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## What is Cannabis?

- CDC describes cannabis as:
  - “Marijuana, which can also be called weed, pot, dope, or cannabis, is the dried flowers and leaves of the cannabis plant. It contains mind-altering (e.g., psychoactive) compounds like tetrahydrocannabinol, or THC, as well as other active compounds like cannabidiol, or CBD, that are not mind-altering.”

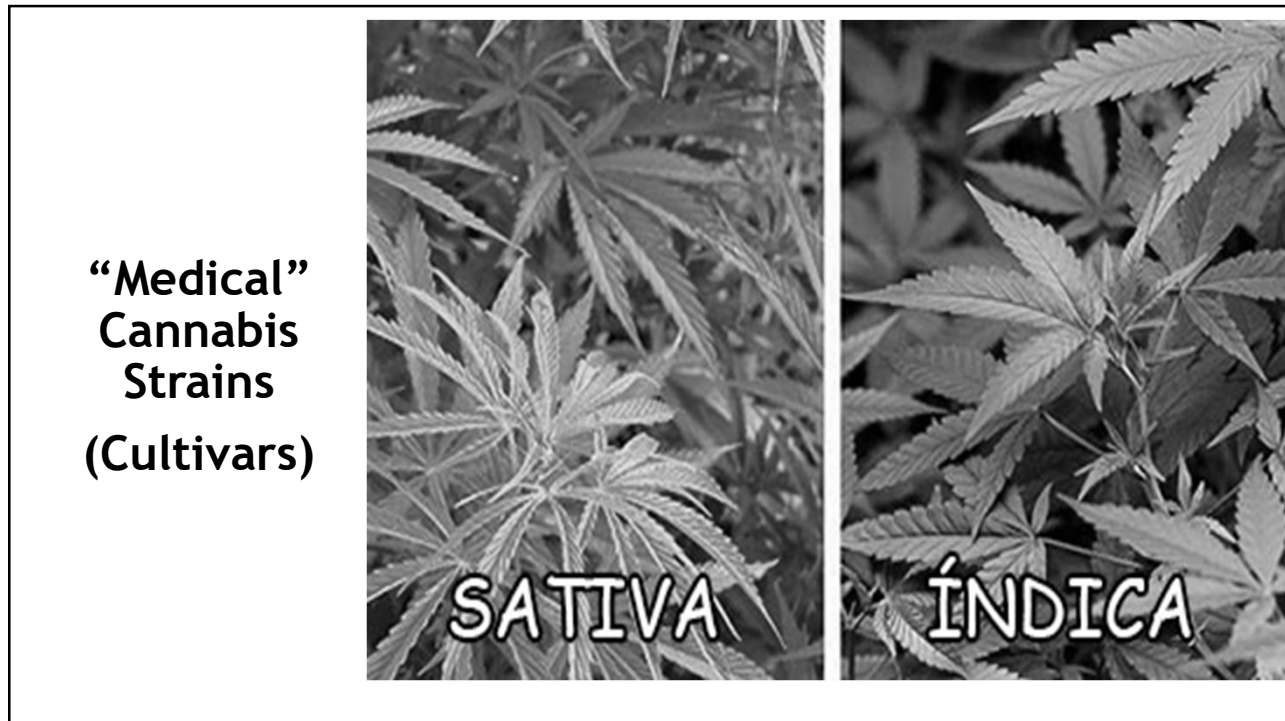
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## What is Cannabis?

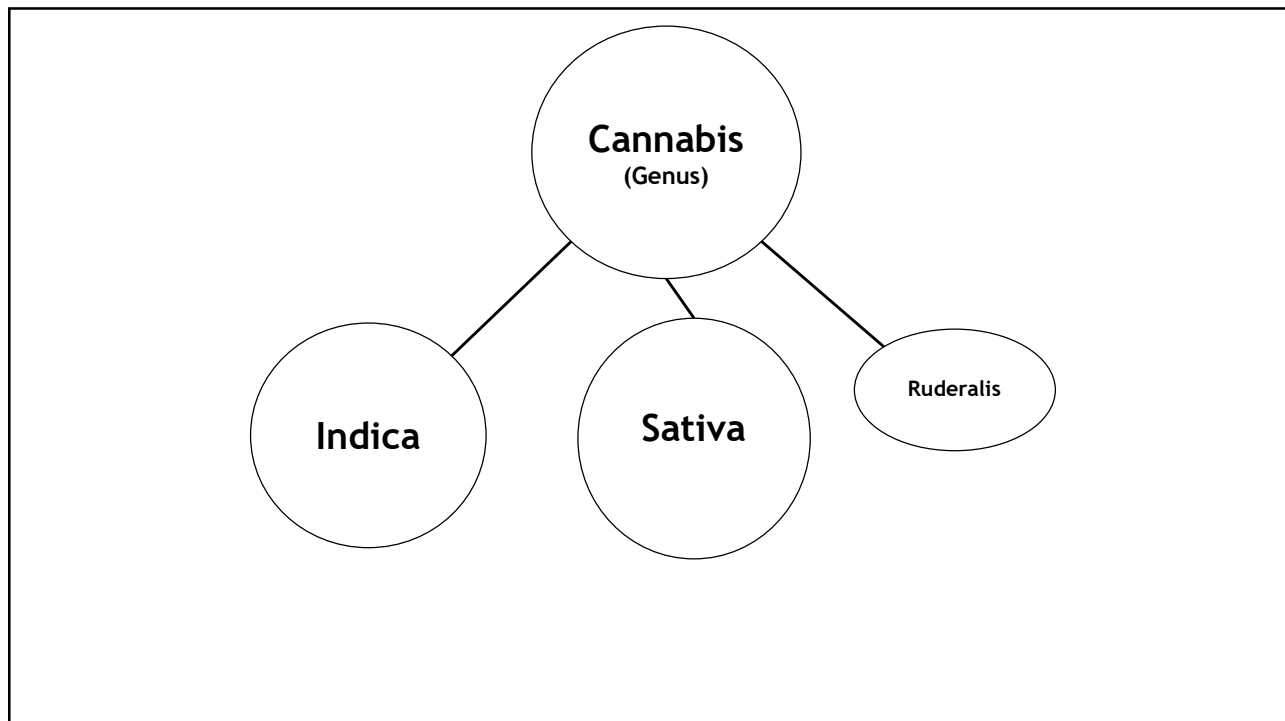
- Americans for Safe Access, a medical cannabis advocacy group, stated in its website article "Research: Definitions and Explanations" (accessed Dec. 7, 2006):
- "...there are 483 different identifiable chemical constituents known to exist in cannabis. The most distinctive and specific class of compounds are the cannabinoids (90 known), that are only known to exist in the cannabis plant.
- Other constituents of the cannabis plant are: nitrogenous compounds (27 known), amino acids (18), proteins (3), glycoproteins (6), enzymes (2), sugars and related compounds (34), hydrocarbons (50), simple alcohols (7), aldehydes (13), ketones (13), simple acids (21), fatty acids (22), simple esters (12), lactones (1), steroids (11), terpenes (120), non-cannabinoid phenols (25), flavonoids (21), vitamins (1) [Vitamin A], pigments (2), and elements (9).

(Slide Credit: Dr David Syrek)

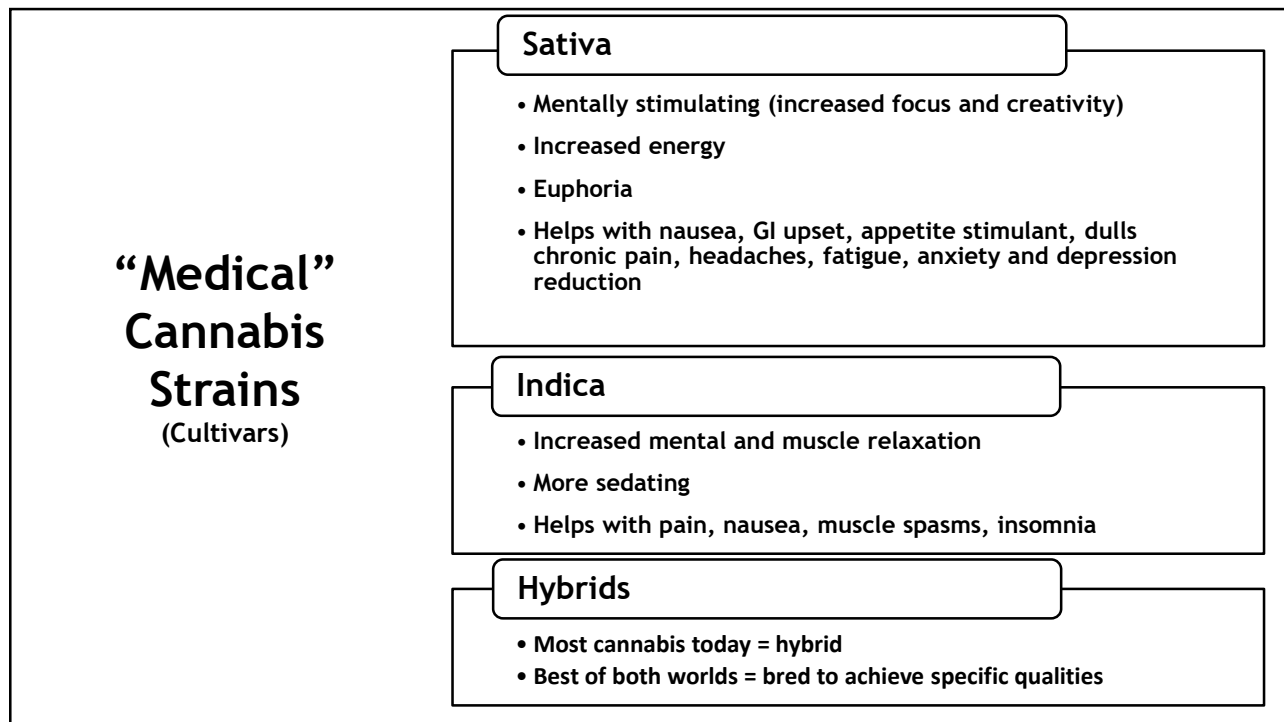
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## Cannabis “Hybrids”- It’s all about genetics

### Hybrid

Hybrids provide the best of both worlds. A hybrid is a mix of both indica and sativa cannabis varieties. Their effects vary from strain to strain. While the strain may feature traits from both cannabis species, the effects will either be slightly more mental or more physical. The overall high and growth patterns depend on each strain’s unique lineage.

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## New School Approach

- Some feel the term 'Indica' and 'Sativa' are no longer medically accurate terms. Before man starting hybridizing cannabis, all Sativa strains gave a cerebral active/energetic high while all Indica strains gave a mellow body high or "couch lock."
- This is no longer true.

(Slide Credit: Dr David Syrek)

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## New School Approach

(continued)

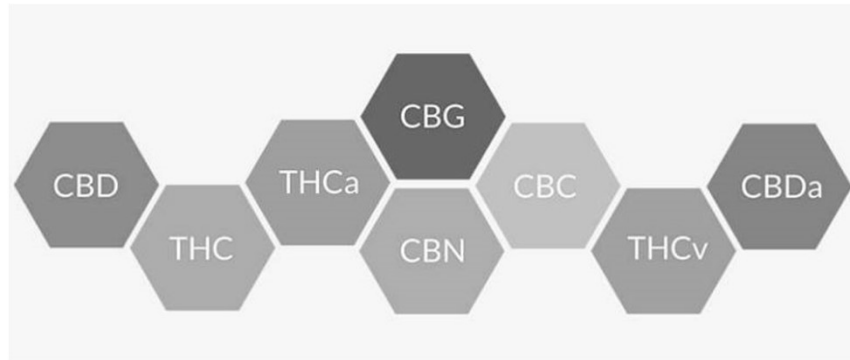
- **Cannabis strain selection:** In cannabis therapy, Strain selection is very important and is based on several factors
  - Different strains have different phenotypes (chemotypes) which means that they have a wide variety cannabinoids, flavonoids and terpenoids at different ratios which are unique to the different phenotypes.
  - For a given ailment, strains are selected based on the main "ingredients" and ratios.

**\*\*\*REMEMBER- IT'S ALL ABOUT THE RATIOS\*\*\***

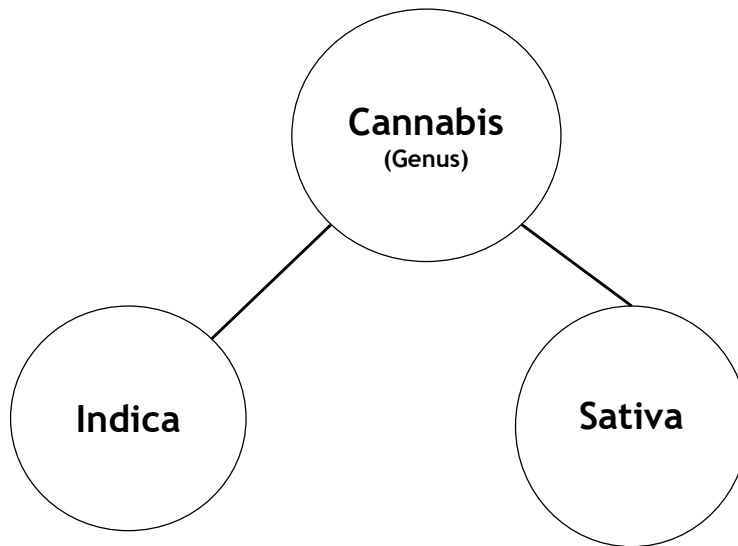
(Slide Credit: Dr David Syrek)

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## Review of Cannabinoids and Intended Effects

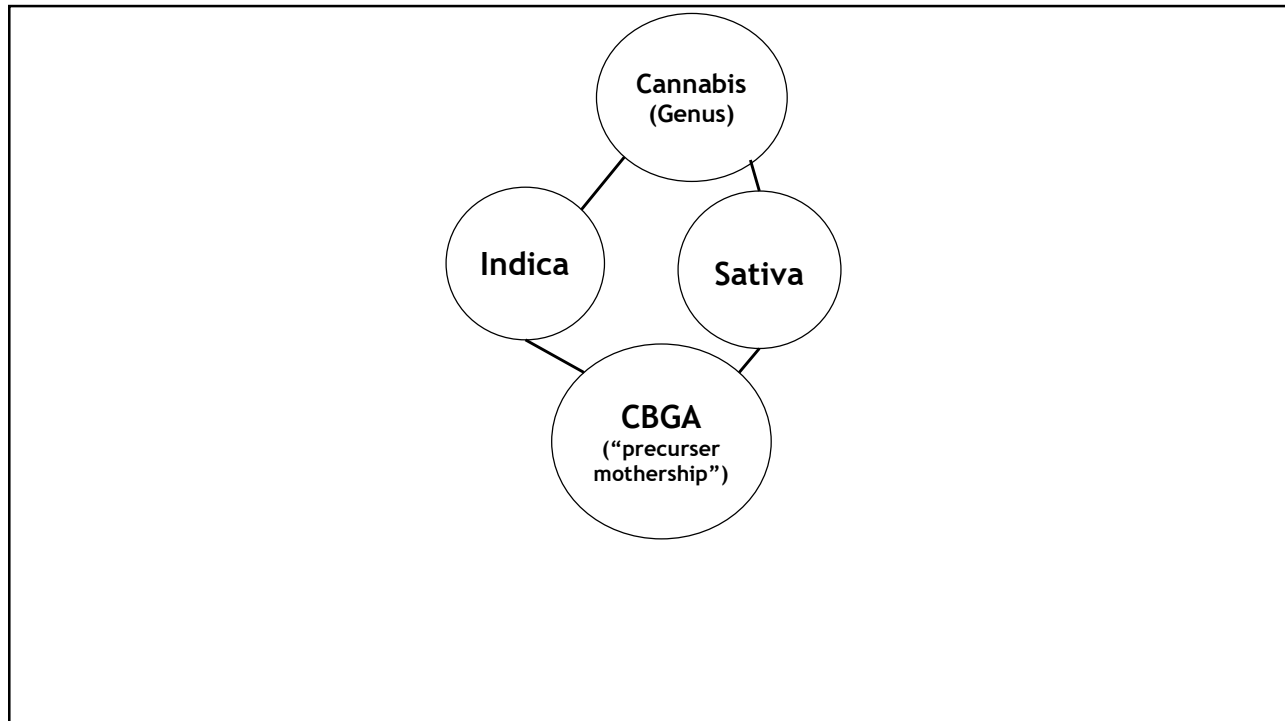


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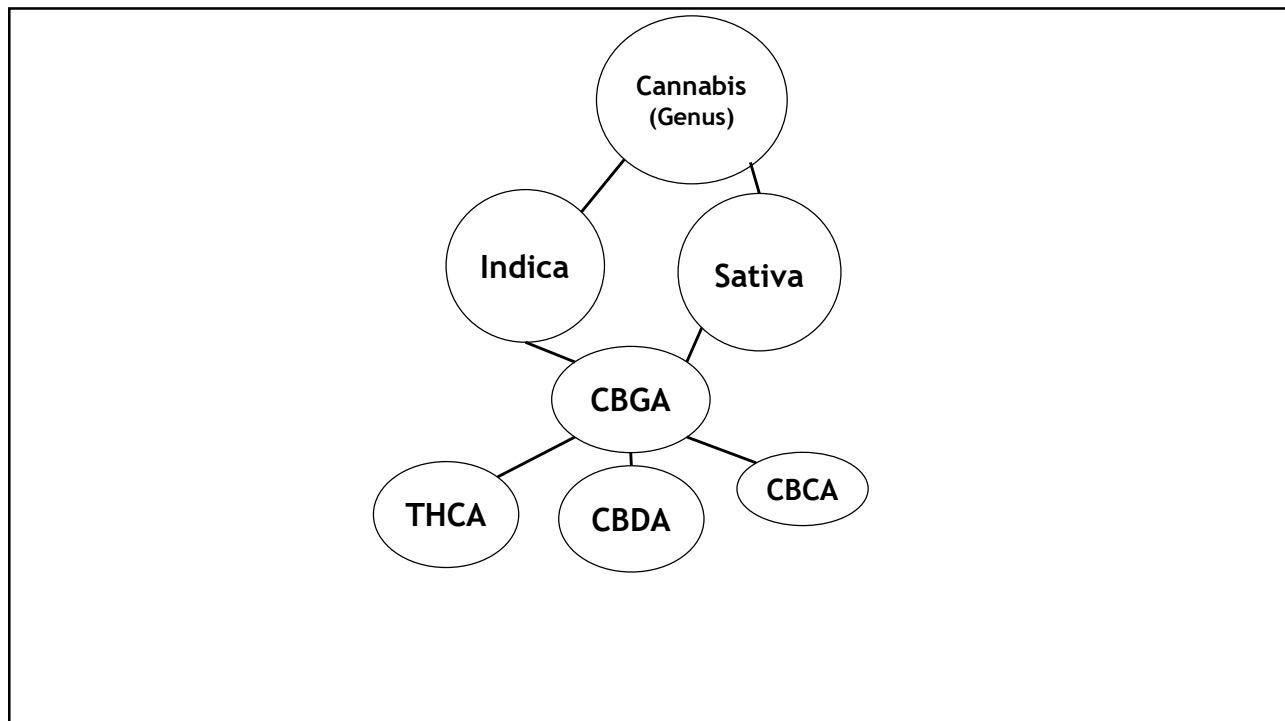


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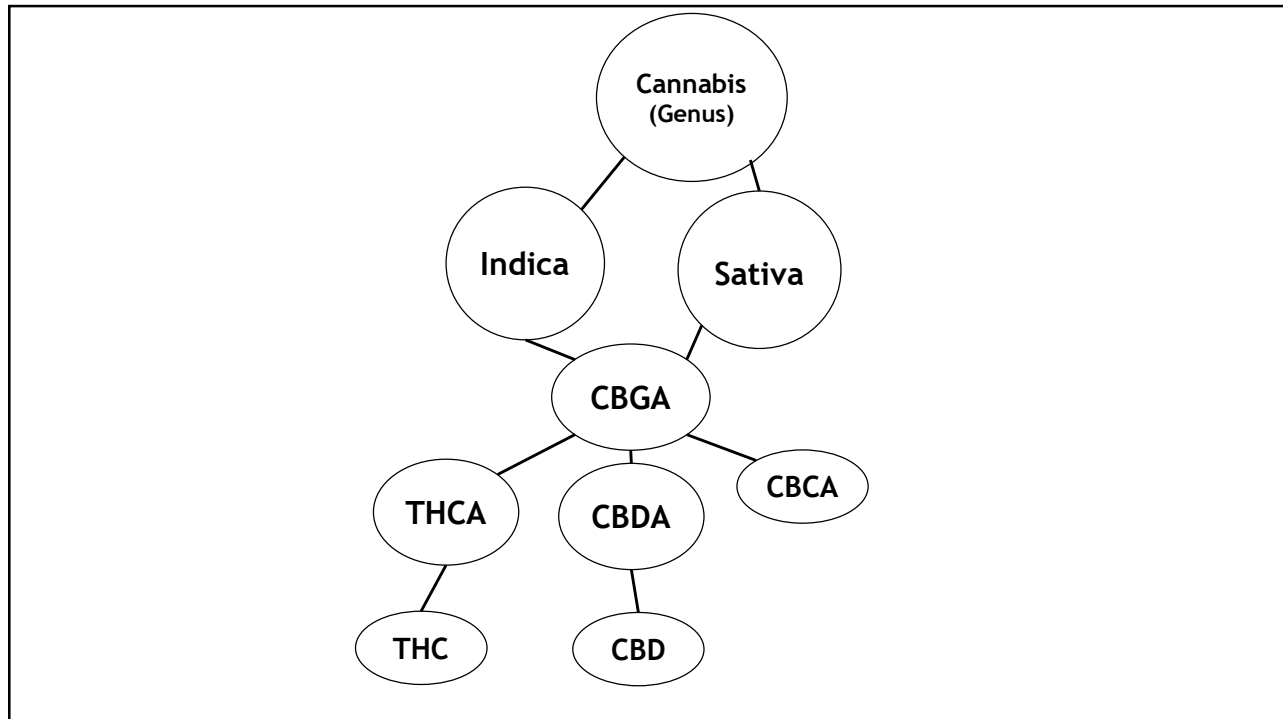




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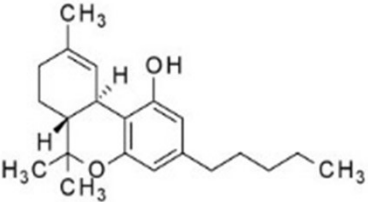
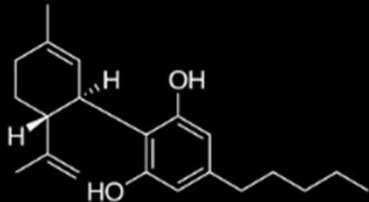



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## Cannabinoids

- Chemical compounds (over 300)
- Two most well-known Cannabinoids:
  - Tetrahydrocannabinol (THC) - Major psychoactive compound
    - Anti-inflammatory properties
    - Used for nausea, appetite stimulant, muscle spasms, euphoria, decreased nightmares, increased restorative sleep
  - Cannabidiol (CBD) - Major non-psychoactive compound
    - Activates 5-HT1A serotonergic & TRPV1-4 receptors (serotonin neurotransmission)
    - Calms the “high” from THC
    - Anti-inflammatory and neuroprotective effects
    - Used for pain, seizures, anxiety, psychosis, and inhibiting tumor cell growth

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THC	CBD
	
<p><b>Medical Benefits</b></p> <ul style="list-style-type: none"> <li>- Psychoactive. Create the high! Euphoric</li> <li>- Relieves pain and inflammation</li> <li>- Causes anxiety for new users</li> <li>- Create sense of relaxation and wellbeing</li> <li>- Induces sleep</li> <li>- Appetite stimulant</li> </ul>	<p><b>Medical Benefits</b></p> <ul style="list-style-type: none"> <li>- Non-psychoactive</li> <li>- Combats inflammation and pain</li> <li>- Combats anxiety and depression</li> <li>- Suppresses Seizure activity</li> <li>- Combat neurodegenerative diseases</li> <li>- Combat psychosis</li> <li>- Combats tumors and cancer cells</li> <li>- Appetite suppressant</li> </ul>
 <p style="font-size: small;">www.MontpeBlvd.com</p>	

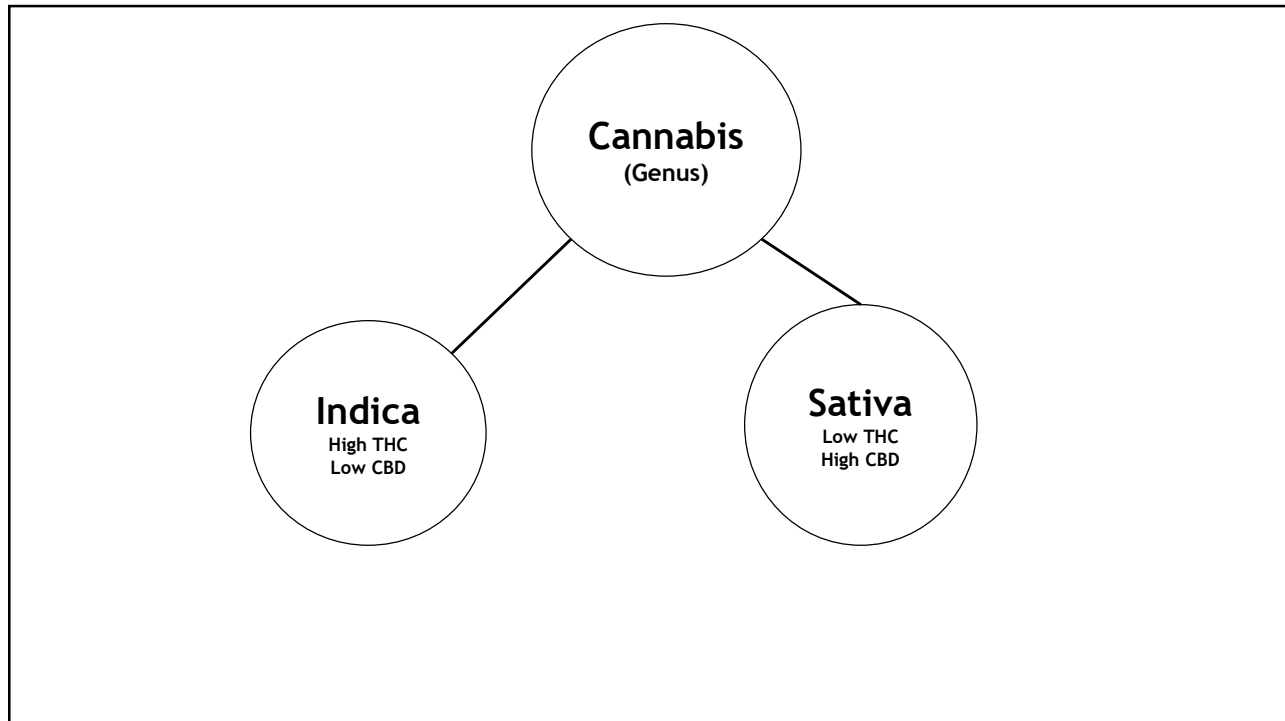
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## Cannabinoids: Cannabidiol (CBD)

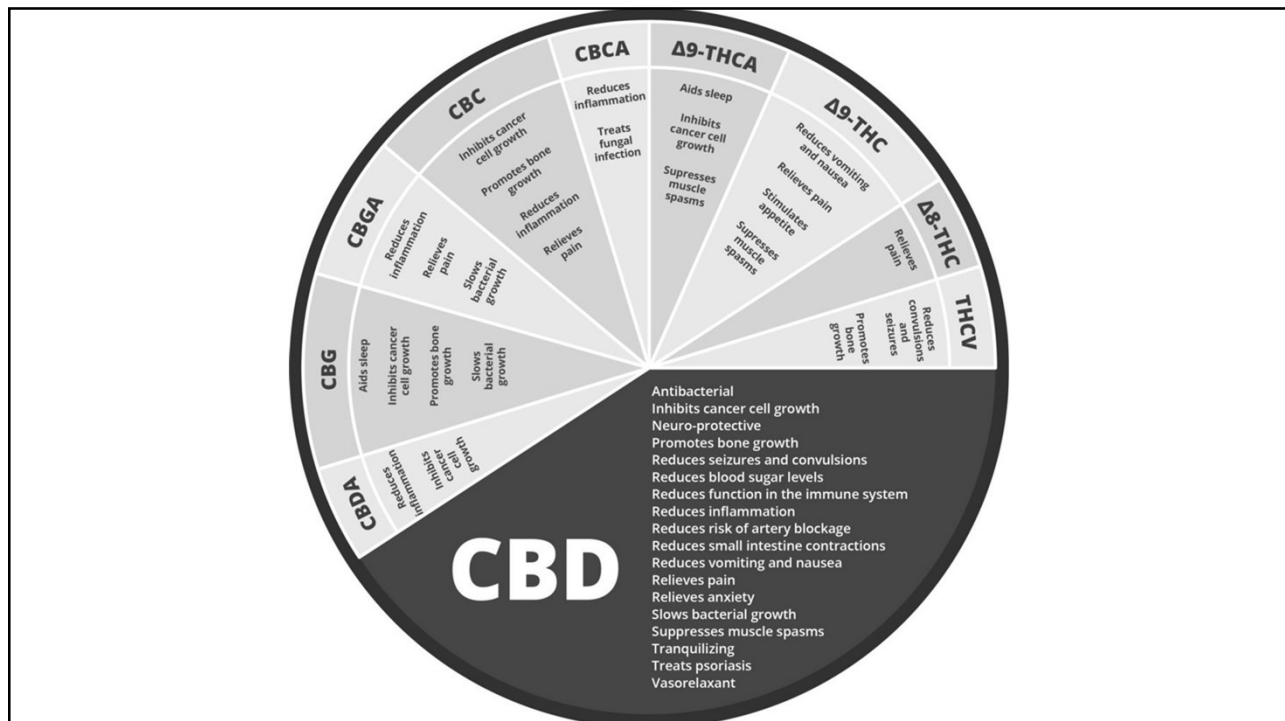
- Antagonizes undesirable effects of THC
  - Intoxication
  - Sedation
  - Tachycardia
- Enhances the analgesic, anti-emetic and anti-carcinogenic properties of THC (Russo & Guy, 2006)
- CBD often requires high doses when used alone

Slide Credit: Dr Sulak

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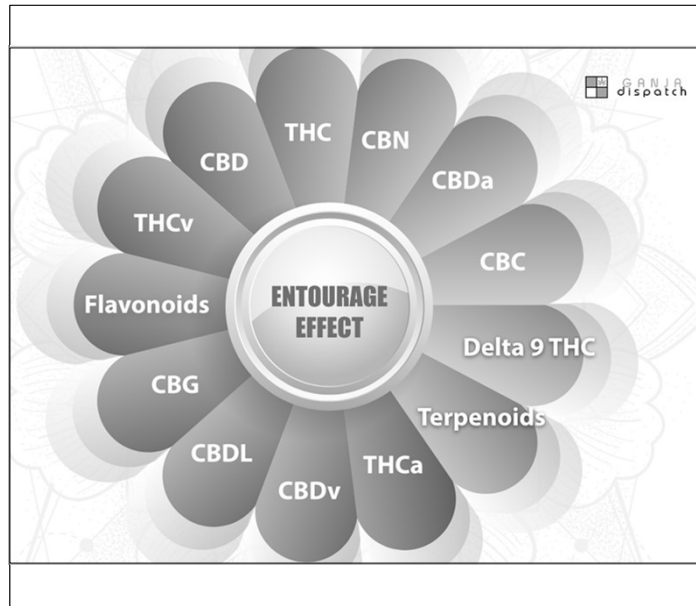
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## What is the Entourage Effect?

- Entourage Effect = effects produced from the synergistic interaction of the cannabinoids, flavonoids, terpenes, and fatty acids naturally found in cannabis.
- Refers to beneficial effect of all these compounds working together as opposed to just one or two of these compounds working in isolation.
- Simply put: the Entourage Effect is the benefit you get from ingesting multiple components of the cannabis plant together instead of ingesting one component at-a-time.



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## Entourage Effect

- Cannabinoids do not work as well when synthesized and isolated
- For instance, CBD is not fully activated medicinally without some THC, and THC is not as effective without some CBD
- Full plant extractions or full plant-based medicines are the most effective.
- When cannabinoids of the cannabis plant work together, this is known as "The Entourage Effect."

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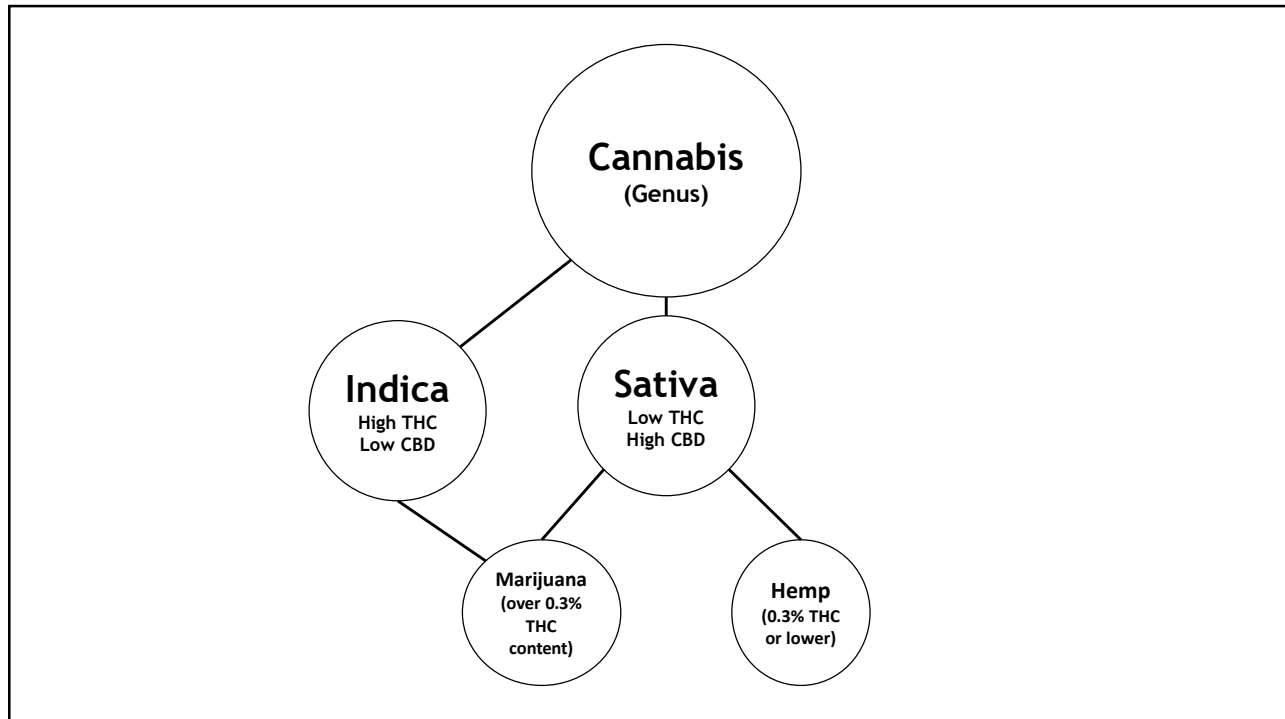
**What Questions can I answer before continuing?**

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**Difference  
between  
Cannabis CBD  
And  
Hemp CBD**



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## Difference between Hemp CBD and Cannabis CBD

### • Hemp CBD

- Very low THC content (< 0.3%)
- Can get “over the counter”
- Recently passed 2018 Farm Bill

### • Cannabis (Marijuana) CBD

- Higher THC content (> 0.3)%
- Entourage effect
- Must be certified as a qualifying patient

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# HEMP VS. MARIJUANA

What's the difference?

## Hemp

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Low THC (<0.3%)  
Non-psychoactive  
Federally Legal



## Marijuana

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High THC (5-35%)  
Psychoactive  
Controlled

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## Difference between Broad-spectrum & Full-Spectrum



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## What is difference between Broad-Spectrum and Full-Spectrum CBD?

### • Broad Spectrum

- Entourage effect WITHOUT THC
- No psychoactivity
  - Good for those with THC sensitivity
- Negative drug test for THC

### • Full Spectrum

- Entourage effect WITH THC
- Increased symptom relief
- Stronger smell and taste
- Potential false positive drug test with heavy use

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## CBD Isolate



- Pure CBD
- No entourage effect
- Ideal for cooking or mixing with food/beverages
- Extraction requires great deal of additional work
  - Decarboxylation (CBD-A → CBD)

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# CBD: Certificate of Authenticity/Analysis (CoA)



- Official report of CBD product
- Should include:
  - Cannabinoid content
  - Terpene content
  - Heavy metal content
  - Pesticide content
- Should be conducted by third-party company


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Here is where you will find the listed Lot Number and other sample information.

Here is where you will find the amounts of cannabinoids. ND means "Non Detected". This is because they are trace amounts.

Here is where you will find the amount of THC. All tests will prove our products contain less than 0.3% THC, in compliance with the Federal Farm Bill.

Here is where you will find the amount of CBD in each ml.



Test Certificate

Certificate ID: 42227    Received: 10/29/18

Client Sample ID: CR102418 25mg/ml    Scan QR Code for analysis

Lot Number:    3531 S-Ballville Rd



Memo: Tincture - MCT Oil    Winchester, KY 40391

Attn: Ben Pasley

Authorization: Jon Podgorni, Lab Manager

Signature: *Jon Podgorni*

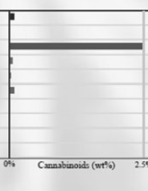
Date: 11/29/2018

The data contained within this report was collected in accordance with the requirements of ISO/IEC 17025:2005. I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the one article listed in this report. Reports may not be reproduced except in their entirety.

**CN: Cannabinoid Profile & Potency [WT-10-17]**    Analyst: LG    Test Date: 11/21/2018

The client sample was analyzed for plant-based cannabinoids by Liquid Chromatography (LC). The collected data was compared to data collected for certified reference standards at known concentrations.

ID	Weight %	Conc.	
D9-THC	0.09 wt %	0.83 mg/mL	
THCV	ND	ND	
CBD	2.50 wt %	25.89 mg/mL	
CBDV	0.06 wt %	0.52 mg/mL	
CBG	0.03 wt %	0.30 mg/mL	
CBC	0.08 wt %	0.79 mg/mL	
CBN	ND	ND	
THCA	ND	ND	
CBDA	ND	ND	
CBGA	ND	ND	
<b>Total</b>	<b>2.76 wt%</b>	<b>26.35 mg/mL</b>	0%    Cannabinoids (wt%)    2.5%
<b>Max THC</b>	<b>0.09 wt%</b>	<b>0.85 mg/mL</b>	
<b>Max CBD</b>	<b>2.50 wt%</b>	<b>25.89 mg/mL</b>	

Ratio of Total CBD to THC: 28.1-1

Max THC (and Max CBD) are calculated values for total cannabinoids after heating, assuming complete decarboxylation of the acid to the neutral form. It is calculated based on the weight loss of the acid group during decarboxylation: Max THC = (0.877 x THCA) + THC. ND = None detected above the limits of detection (LLD).

FM-10-05, Rev. 1, DCN:14-0001

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www.ProVerdeLabs.com

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**What Questions can I answer before continuing?**

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**Potential Effects  
&  
Cannabis-  
Pharmaceutical  
Reactions**



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## Potential Effects of CBD

- Dry Mouth
- With larger dosages (over 500 mg/daily):
  - Increased tremors & involuntary muscle movement
    - Decrease dose to eliminate symptoms
  - Drowsiness

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## Potential Effects of CBD (with THC)

- Smoking
  - ?? Increased risk of cancer
  - Hypertension
  - MI
  - Lung disease
- Short-term effects
  - Dry mouth/Dry eyes
  - Coughing (if smoking)
  - Tachycardia
  - Anxiety
  - Panic attacks
  - Confusion
  - Paranoia
  - Lightheadedness/dizziness (more common high/low blood pressure)

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## Potential Effects of Cannabis (with THC)

- Long-term side effects
  - Chronic bronchitis
  - Cannabinoid Hyperemesis Syndrome
  - Memory loss \*\*\*
  - Cognitive impairment\*\*\*
- Possibility of exacerbation (personal/family hx):
  - Schizophrenia
  - Bipolar disorder
  - High anxiety (agoraphobia)

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## Drug Interactions

### Cytochrome P450

- THC = Metabolized by CYPs 2C9, 3A4
- CBD = Metabolized by CYPs 2C19, 3A4
- “Studies of THC, CBD, and CBN inhibition and induction of major human CYP-450 isoforms generally reflect a low risk of clinically significant drug interactions with most use, but specific human data are lacking.”

Stout et al 2014  
(Slide credit: Dr Dustin Sulak)

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## Drug Interactions: THC CYP2C9

- Patients who are poor metabolizers of CYP2C9 have been shown to have THC concentrations that are about 3-fold higher than those of extensive metabolizers of CYP2C9.
- Based on genetic studies, inhibitors of CYP2C9 would be expected to *increase* the plasma concentration of THC.
  - Amiodarone
  - Cimetidine
  - Cotrimoxazole (combination sulfamethoxazole & trimethoprim)
  - Metronidazole
  - Fluoxetine
  - Fluconazole

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## Drug Interactions: THC CYP3A4

- CYP3A4 inhibitors that may *increase* peak concentration of THC:
  - Ketoconazole
  - Clarithromycin
  - Erythromycin
  - Cyclosporine
  - Verapamil
  - Itraconazole
- CYP3A4 inducer *reduces* THC levels:
  - Rifampin (reduces THC levels by 20%-40%)

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## Drug Interactions: CBD CYP3A4

- CYP3A4 inhibitors that may *increase* peak concentration of CBD
  - Ketoconazole (2-fold)
  - Clarithromycin
  - Erythromycin
  - Cyclosporine
  - Verapamil
  - Itraconazole
- CYP3A4 inducer *reduces* CBD levels:
  - Rifampin (reduces CBD levels by 50%-60%)

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## Drug Interactions: CBD CYP2C19

- Omeprazole, a modest inhibitor of CYP2C19, did not alter the plasma concentration of CBD in one study.

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## Potential Drug Interactions: CBD Other FYIs

- CBD is a potent inhibitor of CYP3A4 and CYP2D6
- As CYP3A4 metabolizes about a quarter of all drugs, CBD may *increase* serum concentrations:
  - Macrolides
  - Calcium channel blockers
  - Benzodiazepines
  - Cyclosporine
  - Sildenafil
  - Antihistamines
  - Haloperidol
  - Antiretrovirals
  - Tamoxifen
  - And some statins (atorvastatin and simvastatin = NOT pravastatin or rosuvastatin)

(Flockhart 2007, Watanabe et al 2007)

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## Potential Drug Interactions: CBD Other FYIs

- CBD is a potent inhibitor of CYP3A4 and CYP2D6
- CYP2D6 metabolizes many antidepressants, so CBD may increase serum concentrations:
  - SSRIs
  - Tricyclic antidepressants
  - Antipsychotics
  - Beta blockers
  - Opioids (including Codeine and Oxycodone)

(Flockhart 2007, Watanabe et al 2007)

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## Potential Drug Interactions: THC & CBD Other FYIs

- THC and CBD are CYP1A2 inducers
- THC and CBD may *decrease* serum concentrations:
  - Clozapine
  - Duloxetine
  - Naproxen
  - Cyclobenzaprine
  - Olanzapine
  - Haloperidol
  - Chlorpromazine
  - Imipramine
  - Theophylline
  - Tizanidine
  - Triamterene

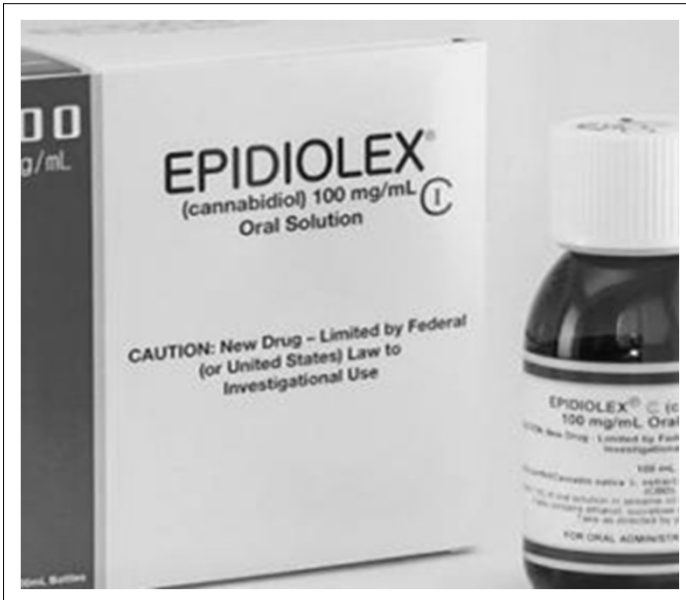
(Flockhart 2007, Watanabe et al 2007)

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**Cannabidiol  
(CBD)  
Pharmaceuticals**



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## Cannabis Pharmaceuticals: Epidiolex (Cannabidiol)

- First FDA-approved cannabinoid medication
- Oral solution of cannabidiol (CBD)
- Treatment for seizures related to two rare and severe types of epilepsy
  - Lennox-Gastaut syndrome
  - Dravet syndrome

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**What Questions can I answer before continuing?**

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## Indications for CBD use in Aging Population



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## CBD Indications for Use: Aging Population



- Glaucoma
- Eating disorders
  - Anorexia & lack of appetite
- Chronic pain
  - Arthritis
  - Neuropathic pain
  - Sciatica
- Neurogenerative diseases
  - Multiple sclerosis
  - Parkinson's disease
  - Alzheimer's disease (& other dementias)

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## CBD Indications for Use: Aging Population

- Go for smaller dosing
  - 5 mg twice daily
- Know potential interactions with prescriptives
- Rule of Thumb:
  - If you can't have grapefruit, you shouldn't take CBD



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## CBD Indications for Use: Aging Population

- Anxiety
  - Low dose CBD → Anxiolytic
  - High dose CBD → Anxiogenesis



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## **Anecdotal Findings from my Patients using CBD**

**Over the last 4 years**

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## **CBD: How I've seen my Patients benefit**

- Pain
  - Decreased pain
  - Decreased spasms/spasticity (full spectrum)
  - Increased restorative sleep
  - Decreased anxiety
  - Increased functionality

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## **CBD: How I've seen my Patients benefit**

- **Multiple Sclerosis**
  - Decreased pain
  - Decreased spasms/spasticity (full spectrum)
  - Increased ability to swallow (3:1 CBD:THC ratio)
  - Increased restorative sleep

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## **CBD: How I've seen my Patients benefit**

- **Parkinson's disease**
  - Decreased spasms/spasticity (full spectrum)
  - Decreased tremors (full spectrum & at least 1:1 CBD:THC ratio)
  - Increased ability to swallow (3:1 CBD:THC ratio)
  - **Improvement in ambulation**
    - (full spectrum, more pronounced with 1:1 CBD:THC)

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## **CBD: How I've seen my Patients benefit**

- **Alzheimer's disease/other dementias**
  - **Increased cognition** (both full and broad spectrum)
  - **Improvement in ambulation**
    - (full spectrum, more pronounced with 1:1 CBD:THC)
  - **Decreased agitation & psychosis**
  - **Increased ability to swallow** (3:1 CBD:THC ratio)
  - **Increased restorative sleep**

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## **Cannabis Research**



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Evidence for Cannabis Effectiveness	Level of evidence of efficacy	Benefits
	Conclusive or substantial evidence	Adult Chronic pain Multiple Sclerosis/ spasticity Chemotherapy induced nausea-vomiting Intractable seizures: Dravet and Lennox-Gestaut syndromes (CBD)
	Moderate evidence	Sleep disturbances related to pain, MS, Fibromyalgia, Sleep apnea Intraocular pressure in glaucoma
	Limited evidence	Dementia Parkinson's disease Schizophrenia PTSD Appetite/ weight issues HIV/AIDS Traumatic brain injury Anxiety (CBD) Tourette's
	Insufficient evidence	Depression IBS symptoms Cancer treatment Cancer associated anorexia ALS symptoms Dystonia Addiction abstinence

(MacCallum & Russo, 2018)  
(Slide credited to Carey S. Clark, PhD, RN, AHN-BC, RYT)

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## Cannabis Research Challenges

- It is important we understand the limitations of research in the United States and educate ourselves about those restrictions

- Federally illegal
- NIDA approval
- Limited access
- CBD or THC alone
- Many recreational use studies

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## Cannabis Research: Notable Sources

[ncbi.nlm.nih.gov/pubmed/](https://ncbi.nlm.nih.gov/pubmed/)

[scholar.google.com](https://scholar.google.com)

[researchgate.net](https://researchgate.net)

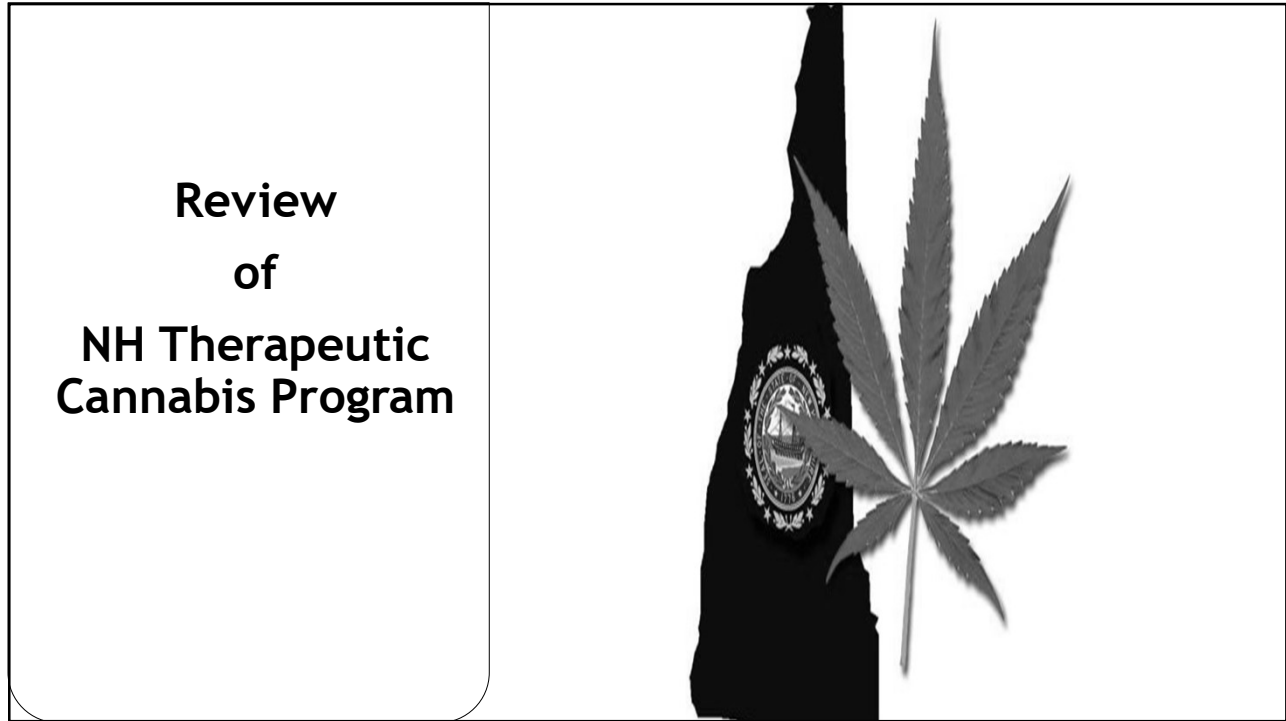
[sci-hub.tw](https://sci-hub.tw)

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<http://www.cannabis-med.org/studies/study.php?search=extended&sort=year>

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**IMPORTANT INSTRUCTIONS – PLEASE READ:**  
 1. Complete EITHER Box A – Condition / Symptom (both sections), OR Box B – Condition Only  
 2. Sign and date at the bottom of the page

**A. Condition / Symptom (Check all that apply)**  
 I certify that I am treating \_\_\_\_\_ (Patient Name) \_\_\_\_\_ who has the following condition(s):

<input type="checkbox"/> ..Acquired immune deficiency syndrome	<input type="checkbox"/> ..Lupus
<input type="checkbox"/> ..Alzheimer's disease	<input type="checkbox"/> ..Multiple sclerosis
<input type="checkbox"/> ..Amyotrophic lateral sclerosis	<input type="checkbox"/> ..Muscular dystrophy
<input type="checkbox"/> ..Cancer	<input type="checkbox"/> ..One or more injuries or conditions that has resulted in one or more qualifying symptoms listed below
<input type="checkbox"/> ..Chronic pancreatitis	<input type="checkbox"/> ..Parkinson's disease
<input type="checkbox"/> ..Crohn's disease	<input type="checkbox"/> ..Positive status for human immunodeficiency virus
<input type="checkbox"/> ..Ehlers-Danlos syndrome	<input type="checkbox"/> ..Spinal cord injury or disease
<input type="checkbox"/> ..Epilepsy	<input type="checkbox"/> ..Traumatic brain injury
<input type="checkbox"/> ..Glaucoma	<input type="checkbox"/> ..Ulcerative colitis
<input type="checkbox"/> ..Hepatitis C	

**AND who has a severely debilitating or terminal medical condition, or its treatment, that has produced at least one of the following qualifying symptoms or side effects:**

<input type="checkbox"/> ..Agitation of Alzheimer's disease	<input type="checkbox"/> ..Seizures
<input type="checkbox"/> ..Cachexia	<input type="checkbox"/> ..Severe pain that has not responded to previously prescribed medication or surgical measures or for which other treatment options produced serious side effects
<input type="checkbox"/> ..Chemotherapy-induced anorexia	<input type="checkbox"/> ..Severe, persistent muscle spasms
<input type="checkbox"/> ..Constant or severe nausea	<input type="checkbox"/> ..Wasting syndrome
<input type="checkbox"/> ..Elevated intraocular pressure	
<input type="checkbox"/> ..Moderate to severe vomiting	

**OR**

**B. Condition Only (Check all that apply)**  
 I certify that I am treating \_\_\_\_\_ (Patient Name) \_\_\_\_\_ who has the following condition(s):

<input type="checkbox"/> ..Moderate or severe post-traumatic stress disorder
<input type="checkbox"/> ..Moderate to severe chronic pain
<input type="checkbox"/> ..Severe pain that has not responded to previously prescribed medication or surgical measures or for which other treatment options produced serious side effects

**SIGNATURE**

Signature of Certifying Provider \_\_\_\_\_ Date \_\_\_\_\_

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## Who Can “Prescribe” Therapeutic Cannabis?

- Two important concepts to understand:
  - Medical provider does NOT prescribe.
  - Medical provider is simply signing a paper certifying the patient suffers from qualifying medical condition(s) with associated symptom(s).

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## Who Can Provide Certification?

- Physician
  - MD
  - DO
- APRN
  - Nurse Practitioner
  - Nurse Midwife
  - Nurse Anesthetist
- Physician Assistants



**\*\*\*MUST have DEA prescriptive authority for controlled substances.\*\*\***

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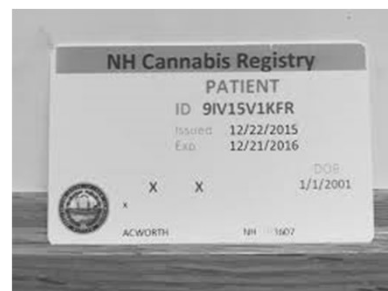
## Process: Requirements for Certification Process

- Physician, APRN or Physician Assistant
- In-person full medical assessment
- Provider to provide education regarding potential effects of cannabis
- Written Certification/Application to DHHS
- Provider required to follow-up with patient for monitoring of effects

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## Application (for patient) to obtain Registry Identification Card

- Application to NH DHHS:
  - Written Certification from Provider
- Patient application to NH DHHS:
  - Check for \$50
  - Proof of residency
- To be processed within 20 calendar days



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## Appointment at Alternative Treatment Center



- Appointment with Alternative Treatment Center Agent (ATC)
- Verification of qualifying medical condition and symptom assessment
- Determination of cannabis type and route
- Dispensing of cannabis

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## Four Alternative Treatment Centers

- Dover
- Lebanon
  - New satellite location in Keene to open in ????
- Merrimack
- Plymouth
  - New satellite location in Conway

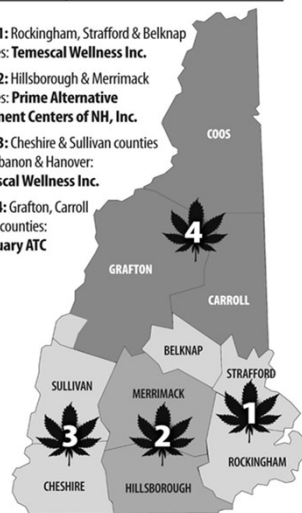
### Medical marijuana: Who and where

**AREA 1:** Rockingham, Strafford & Belknap counties: **Temescal Wellness Inc.**

**AREA 2:** Hillsborough & Merrimack counties: **Prime Alternative Treatment Centers of NH, Inc.**

**AREA 3:** Cheshire & Sullivan counties plus Lebanon & Hanover: **Temescal Wellness Inc.**

**AREA 4:** Grafton, Carroll & Coos counties: **Sanctuary ATC**



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## Required Ongoing Follow-up

- Follow patient clinically at appropriate intervals at discretion of provider
- Provide follow-up care and treatment for qualifying medical condition
- Monitor effects of cannabis



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## Process: Requirements for Certification Process

- Physician, APRN or Physician Assistant
- In-person full medical assessment
- Provider to provide education regarding potential effects of cannabis
- Written Certification/Application to DHHS
- Provider required to follow-up with patient for monitoring of effects

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Thank you for coming today. What Questions can I answer for you?

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