

A photograph of a green house with a white picket fence in the foreground. In the bottom foreground, there are several green cannabis plants. The house has a green roof with white polka dots and several windows. The scene is set against a clear blue sky.

Hemp and Marijuana Similar but different

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January 10, 2019



OVERVIEW

- Introduction to my work
- Endocannabinoid system
- Marijuana vs hemp
- Active constituents of cannabis
- Hemp CBD
- Delivery systems
- Dosing



Integr8 Health offers cannabis education

Founded by owner Dustin Sulak, DO
and Brad Feuer, CEO in 2010

- Provides medical cannabis certifications for qualifying patients with favorable risk/benefit ratio.
- Provides personalized treatment plans with holistic approach using cannabis.
- Offers therapeutic interventions for healing including osteopathic and napropathic manipulation, Reiki, and K-Laser.

Endocannabinoid System (ECS)

Regulatory system we are born with that is dedicated to maintaining balance and homeostasis throughout the body.

- Cannabinoid receptors and endogenous cannabinoids were discovered in 1990's while trying to understand THC's mechanism of action.

Endocannabinoid System (ECS)

- It is an integral part of our ability to respond to illness and injury, how we learn and grow. Our bodies produce their own endocannabinoids via their action on the CB1 and CB2 receptors that modulate:

Appetite
Inflammation
Mood, Pain
Stress Response
Memory, Sleep
Metabolism

Cannabinoid Receptors: CB1

Expressed in:

- lungs
- kidneys
- liver
- CNS

Controls:

- brain development
- learning
- memory
- motor behavior
- appetite
- body temperature
- pain perception
- inflammation
- mood regulation

Found in:

- hippocampus
- amygdala
- emotional regulation

Cannabinoid Receptors: CB1

CB1 signaling dampens down the amygdala and activates the prefrontal cortex therefore reducing anxiety, particularly during times of high stress.

Diminishes symptoms of:

- PTSD
- depression
- insomnia
- intestinal inflammation
- high blood pressure

Cannabinoid Receptor - CB2

- CB2 receptors are in the immune system, white blood cells in bone marrow, in the tonsils and spleen.
- CB2 receptors play a roll in inflammation and pain relief.

Endogenous Compounds

Anandamide is an endocannabinoid that binds to cannabinoid receptors and found in nearly all tissues.

The name Anandamide is taken from the Sanskrit word *ananda* which means “joy, bliss, delight”.

Endogenous Compounds

- Anandamide dampens the pain receptors in the brain.
- Under psychological stress anandamide levels fall in the amygdala which increases cortisol and anxiety.

- Anandamide plays a role in
 - sleep patterns
 - pain relief
 - feeding behavior
 - motivation
 - pleasure
 - beneficial effects of exercise

Cannabis-Based Drugs

- Sativex is the first botanical drug developed in the UK in 2010 containing whole plant extracts of THC and CBD by GW Pharmaceutical.
- Oral spray which delivers 2.7mg THC and 2.5mg CBD.
- Used to treat neuropathic pain, spasticity, overactive bladder and symptoms of multiple sclerosis.
- Epiiodex CBD approved to treat rare childhood epilepsy in June 2018.
- Oral solution starting dose 2.5mg/kg and gradually increase to maximum 10mg/kg 2xday.

Cannabis Active Constituents

THC - primary psychoactive and analgesic component.

CBD - numerous medical applications, non-impairing, less potent than THC.

CBD with THC enhances benefits and mitigates its side effects.

Other cannabinoids with therapeutic properties present, including Cannabigerol (CBG), Tetrahydrocannabivarin (THCV), Cannabichromene (CBC).

Terpenes are aromatic oils that give the plants their color, aroma, and taste. Adaptive purpose is to repel predators, lure pollinators, and offer distinguishing smells and tastes.

Terpenes have widespread physiologic effects and are responsible for the distinct effects of various cannabis cultivars. may effect mood, focus, acuity, and stress relief.

Acidic & Activated Cannabinoids

- In the plant's raw state, only cannabinoid acids are present.
- CBD-A and THC-A are activated to become CBD and THC with heat and time.
- Many other cannabinoids have acidic forms.
- Activation (decarboxylation) usually occurs over 200 degrees F.
- THC-A has anti-inflammatory, anti-emetic, anti-convulsant, and neuroprotective properties without any psychoactive effect.
- CBD-A has anti-inflammatory, antibacterial and analgesic effects.

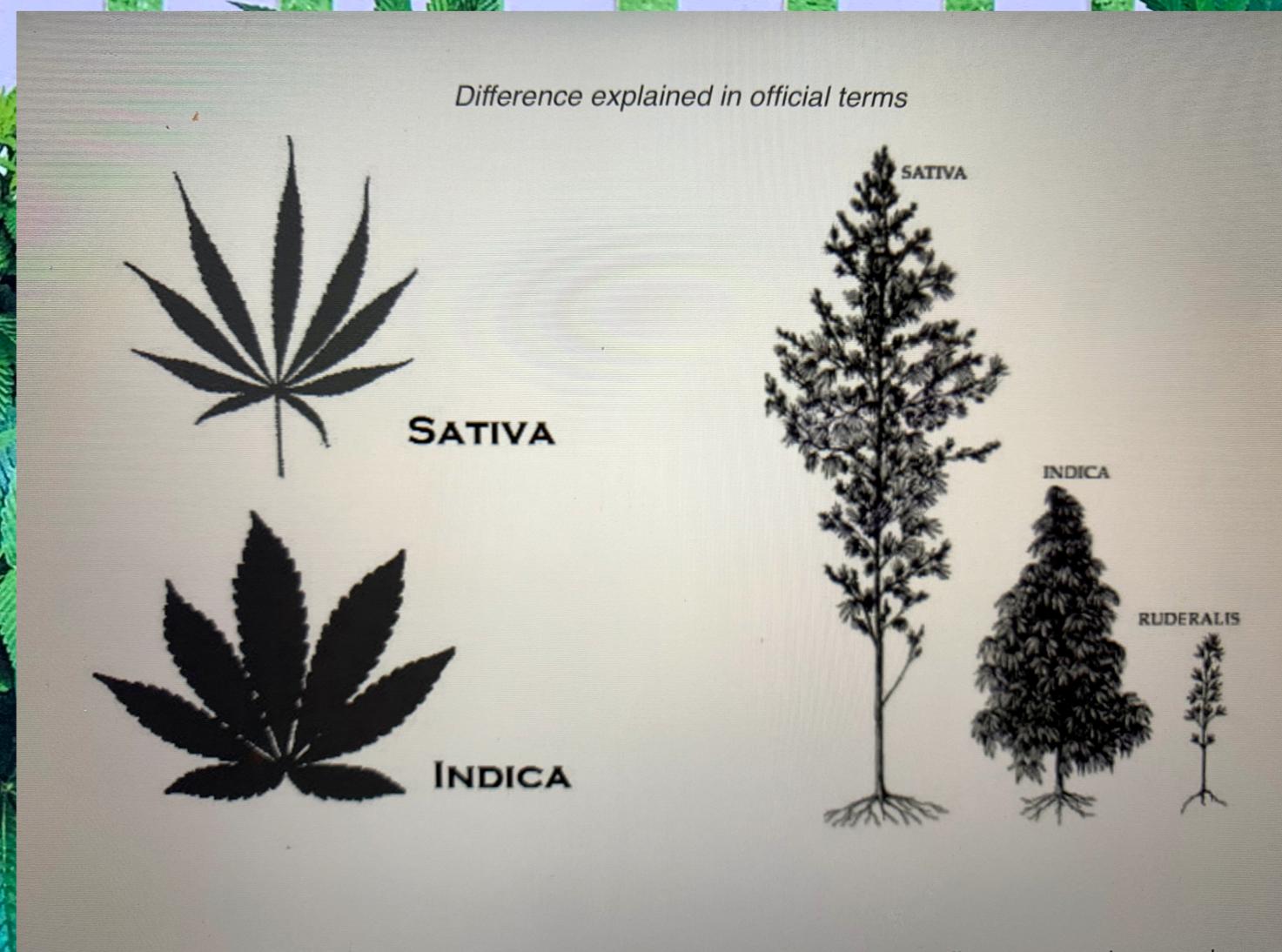
Sativa vs Indica Cultivars

Sativa:

- grows up to 20 feet tall
- loosely branched and have long narrow leaves
- higher concentration of CBD

Indica:

- shorter, wider leaves
- higher THC
- Better suited for indoor growing



Indications for Cannabis

- Increased Appetite: treats anorexia and patients suffering from nausea.
- Health improvement in asthma sufferers: Inhaling cannabis vapors has been shown to improve air conductivity in the lungs, a bronchodilator.
- Reduced Stress: diminishes effects of PTSD, anxiety and fear.
- Improved Sleep: provides relaxation and comfort without drowsiness.
- Pain Management: reduces inflammation, distances patients from their pain.
- Antispasmodic: reduces muscle spasms in Multiple Sclerosis.
- Alzheimers: THC binds at the site where amyloid clusters develop thus inhibiting disease progression.

Delivery Methods

- Smoked flower- rapid onset, easy to titrate, respiratory irritation.
- Vaporizer - device that heats flower without burning it. Often as effective as smoking without respiratory irritation. Good for breakthrough symptoms.
- Vape pens - convenient, produced from lower quality starting material, high potential for contamination and toxicity.
- Tincture or infused oil - sublingual administration, good for careful dosage titration

Delivery Methods

- Transdermal - salve, patch, suppository - good for localized pain, non-psychoactive.
- Oral via capsule or edible - capsules can offer consistency in dosing, oral route can have erratic onset and duration. Best for sleep maintenance.
- Concentrates - can be inhaled with smoking/vaping device or taken orally. Greater risk of overdosing.



Dosing

- Rule of thumb ~ Start low, go slowly, don't be afraid to go all the way.
- CBD and THC have a surprisingly broad, safe and effective dosing ranges.
- Individual responses vary widely with minimal side effects at optimal doses.
- Laboratory testing and product labeling is necessary for accurate and reproducible dosing.

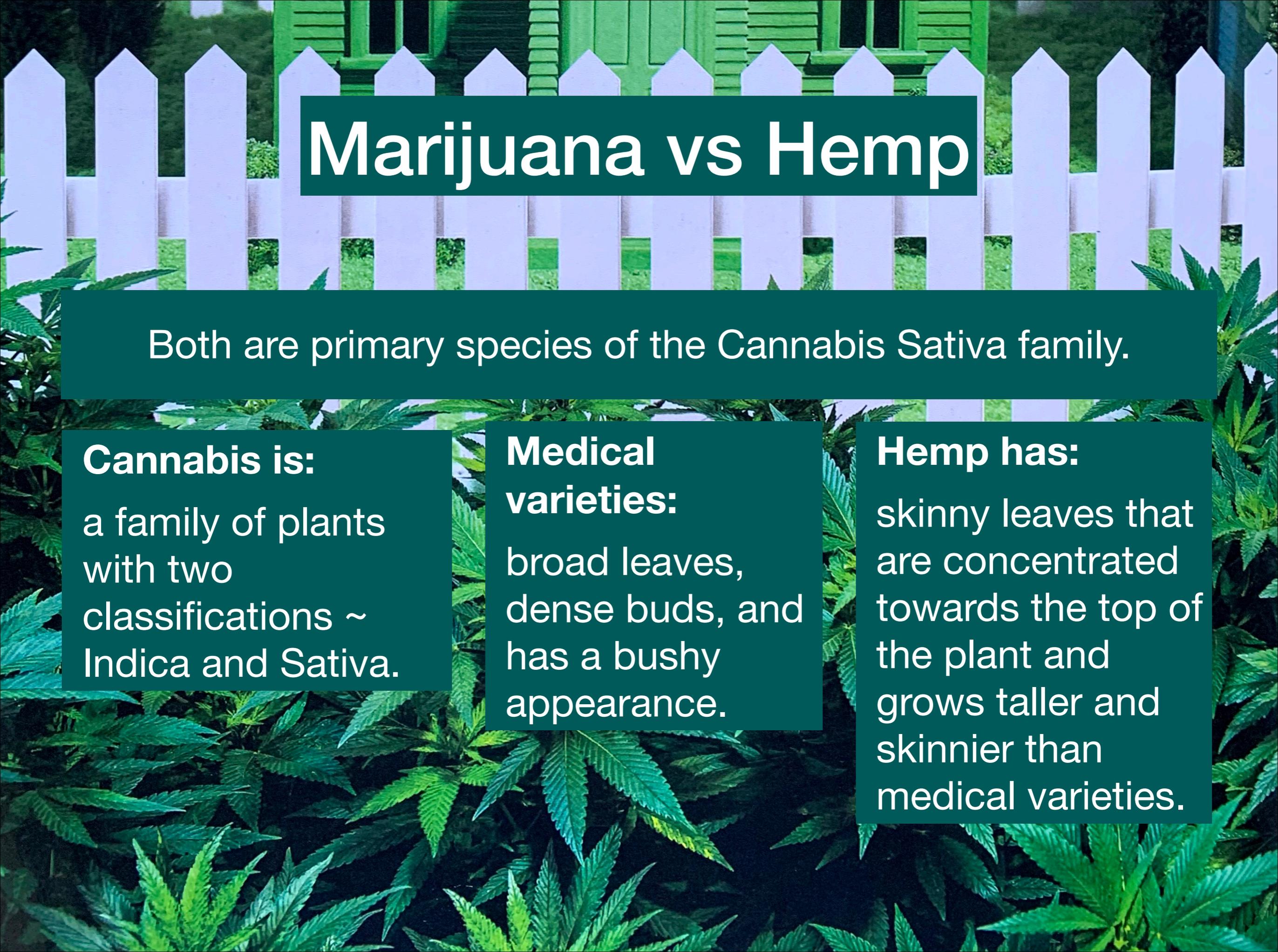
Cannabis Dosing Example

- Cannabis naive patients with chronic pain:
- Trial of THC:CBD in a 1:1 ratio.
- Starting dose 1-2mg of each THC and CBD up to 3x daily.
- Increase dose by 1 mg of each every 3 days until desired effect is attained.
- Average dose is 10mg (total) but varies widely.



Side Effects

- Impaired memory function and lowered ability to concentrate (THC).
- May increase anxiety in higher doses but relieve anxiety at appropriate doses (THC and CBD).
- Dry mouth, increased appetite, dizziness, and distortion of time.
- Paranoia, disorganized thoughts, psychosis with high doses (THC).



Marijuana vs Hemp

Both are primary species of the Cannabis Sativa family.

Cannabis is:

a family of plants with two classifications ~ Indica and Sativa.

Medical varieties:

broad leaves, dense buds, and has a bushy appearance.

Hemp has:

skinny leaves that are concentrated towards the top of the plant and grows taller and skinnier than medical varieties.



Hemp vs Marijuana

What makes hemp different from marijuana?



Industrial Hemp

- The 2015 The Industrial Hemp Farming Act allowed for cultivation of hemp for research purposes but did not remove it from the controlled substances list.
- Contains a low concentration (0.3% or less) of THC.
- Previously primarily used for industrial purposes such as making paper, clothing, building materials, biofuel, food products, oil and more.
- More recently hemp CBD oil has gained notoriety for its anti-inflammatory, anti anxiety, and analgesic properties.

Cannabidiol (CBD)

- Used topically, orally, and can be inhaled.
- Alerting and pro-cognitive, antioxidant, and anti-inflammatory.
- Diminishes undesirable effects of THC at the CB1 receptor such as impairment, sedation, and munchies.
- Effective for anxiety, seizures, MS, and schizophrenia.
- Some applications require very high doses ie: 200-1000mg/d
- Diminishes inflammation and pain perception.



Hemp CBD

- \$646 million industry according to *Hemp Business Journal*.
 - No impairing effects.
 - Minimal toxicity even at very high doses.
 - It is only one of over 130 cannabinoids in the cannabis plant.
 - Sold in states regardless of cannabis laws and online.
 - Some CBD hemp products are isolates from the whole plant so they contain only a fraction of the healing properties found in cannabis.
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Hemp Laws

- Made illegal in 1937 under the Marijuana Tax Act and formally made illegal in 1970 under the Controlled Substances Act.
- 2018 Farm Bill legalized hemp that contains less than 0.3% THC.
- No restrictions on the sale, transport, or possession of hemp-derived products within this law.

Hemp Law Restrictions

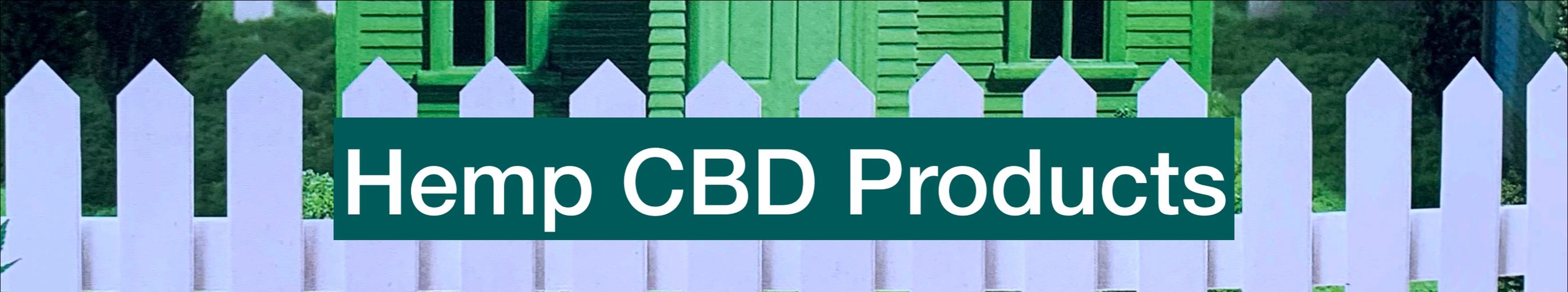
- Shared federal and state regulatory power.
- USDA must approve the state's plan to license and regulate hemp.
- USDA will construct a regulatory program for hemp cultivars in states that opt not to have a plan.
- Shared regulatory programming similar to ACA and OSHA.

Hemp Research

- Continue protection for hemp research.
- Critical Agricultural Materials Act recognizes the importance, diversity, and opportunity of hemp products and will research it as a commodity.
- Unregulated hemp is still a schedule 1 substance.

State-legal cannabis programs are still illegal under federal law.

- 33 states have legalized medical cannabis.
- 10 states have legalized cannabis for adult use.
- Under the 2018 Farm Bill, there will be more CBD products but not all CBD products are legal.
- Know the producer of your CBD products.



Hemp CBD Products

- High levels of mislabeling and contamination verified by peer-reviewed publications.
 - Therapeutic effects often require high doses due to absence of THC and other constituents.
 - Typical price is \$0.10 to \$0.30 per milligram.
 - Typical dose for pain and anxiety: 20-200mg per day.
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Softgels and Capsules by PlusCBD Oil™

America's #1 selling brand of hemp-derived CBD Oil products according to SPINS® scan data. Softgels and capsules are a convenient way to get a precise amount of CBD in each serving for daily wellness.* An excellent choice for those who are experienced with CBD usage.

Softgel Strengths

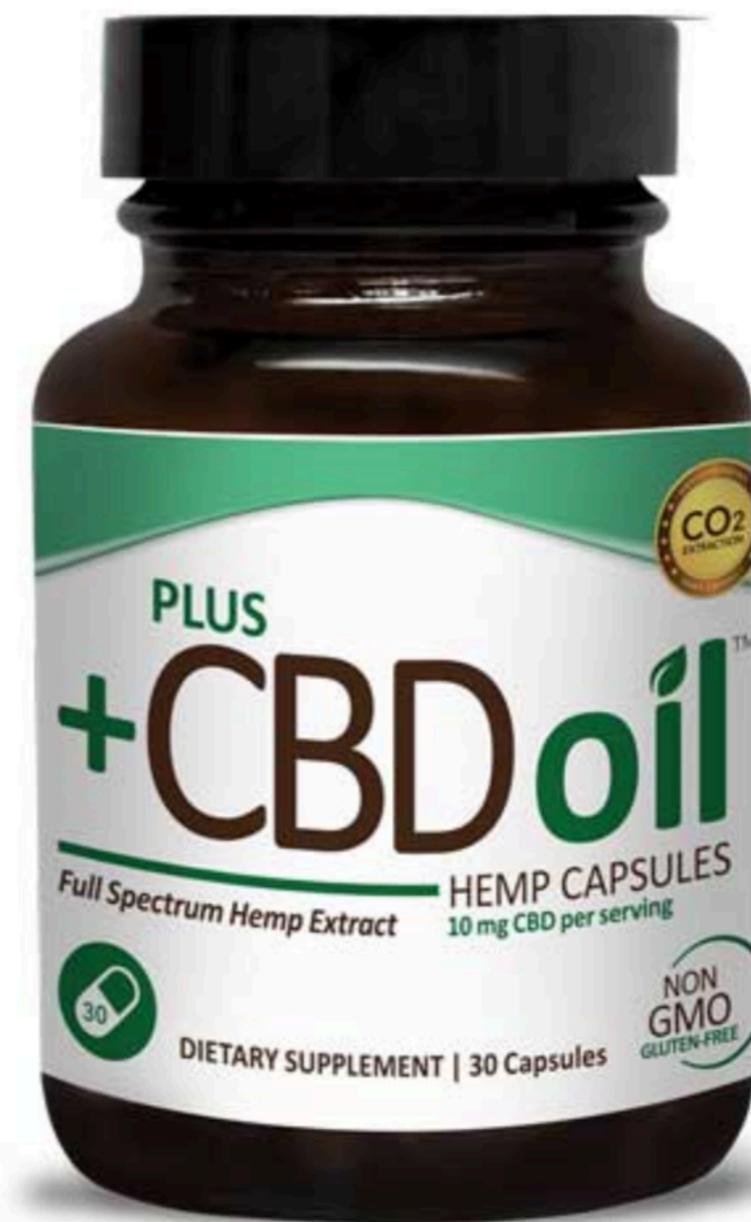
- 15mg CBD per serving (10, 30, and 60-count)

Softgel benefit: Your body absorbs softgels faster than capsules.

Capsule Strengths

- 10mg CBD per serving (30 and 60-count)
- 15 mg CBD per serving (60-count only)

Prices start at \$19.95.



PlusCBD Oil™ 10mg Capsules



Drops by PlusCBD Oil™

PlusCBD Oil drops provide an easy and convenient way to enjoy CBD on the go in drinks or smoothies.

Gold Formula

Made with CV Sciences' best-selling Gold Formula, the ultimate step in their refinement processes.

Strengths

- 1 oz, 250mg CBD
(3mg CBD per serving)
- 2oz, 750mg CBD
(5mg CBD per serving)

Flavors

- Unflavored
- Peppermint
- Goji Blueberry

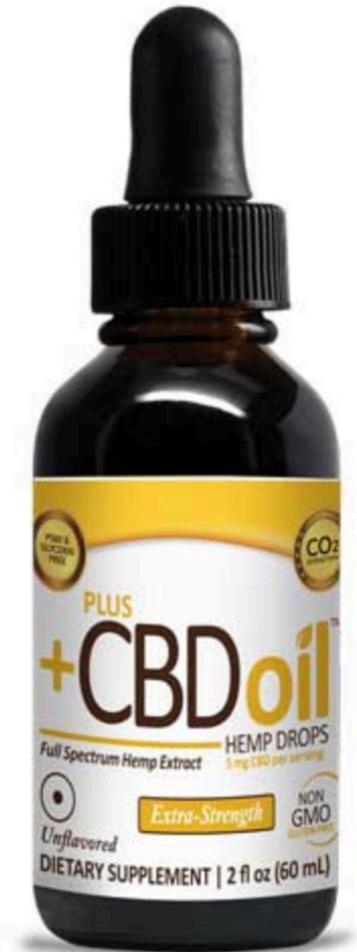
Raw Formula

Made using their raw CO2 full spectrum hemp extract, which includes cannabidiolic acid (CBDA). CBDA holds beneficial properties distinct from CBD.*



Strengths

- 1 oz, 100mg CBDA/CBD
(1mg CBDA/CBD per serving)
- 2oz, 500mg CBDA/CBD
(3mg CBDA/CBD per serving)



Flavors

- Unflavored
- Peppermint

Prices start at \$22.95.



Balms by PlusCBD Oil™

Skin care from the highest quality line of non-GMO CBD oil products on the market. Supports healthy skin and your natural human equilibrium.* Available in Extra Strength and Original, the Balms are made from agricultural hemp-derived CBD Oil.

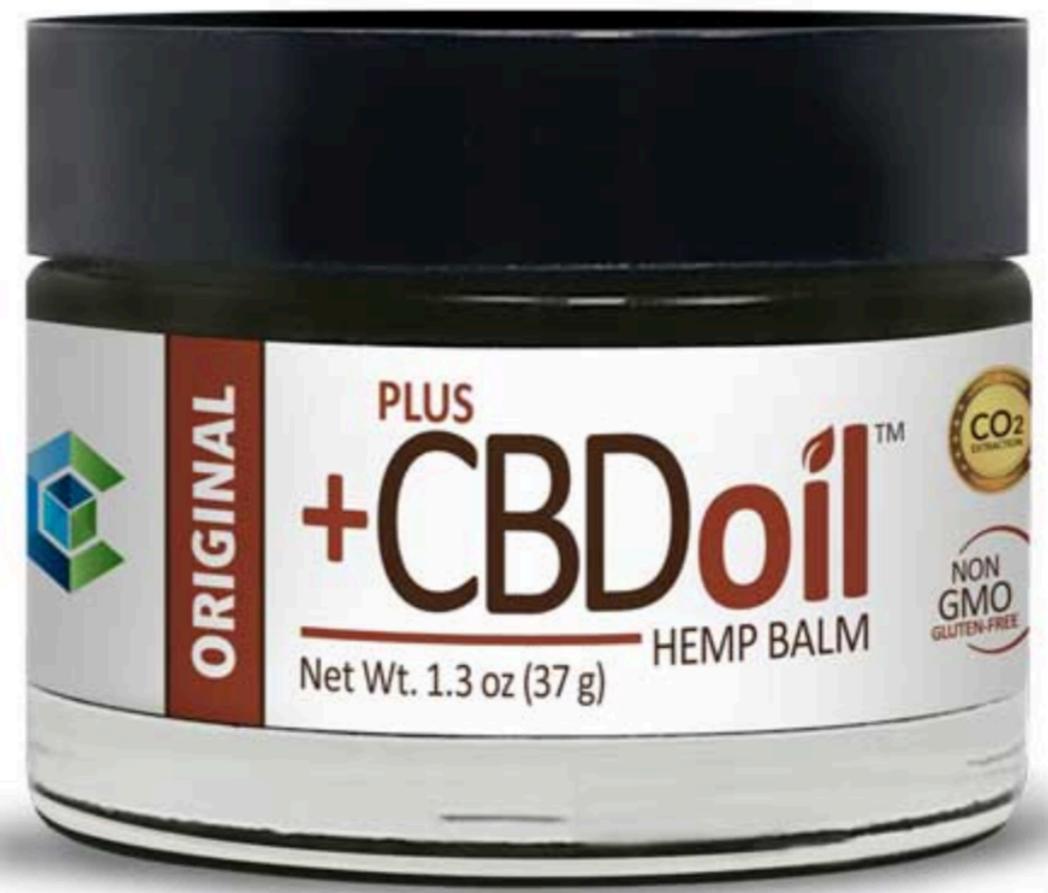
- No artificial dyes or fragrances
- Non-GMO and gluten free
- Refreshing peppermint scent

Strengths

Good For

- | | |
|---|---|
| <ul style="list-style-type: none">• Extra Strength: 100mg CBD• Original: 50mg CBDA/CBD | <ul style="list-style-type: none">• Chapped skin• Sore hands• Achy feet |
|---|---|

Prices start at \$31.95.



PlusCBD Oil™ Balm Original



Extra Virgin Olive Oil CBD Spray by PlusCBD Oil™

CBD Oil Spray is the easiest and most flexible option for people who take CBD daily. It's also a good option for people who are new to CBD oil.

Strengths

- 1 oz, 100mg CBD
(1mg CBD per serving)
- 2oz, 500mg CBD
(3mg CBD per serving)

Flavors

- Unflavored
- Peppermint
- Cafe Mocha

Prices start at \$22.95.

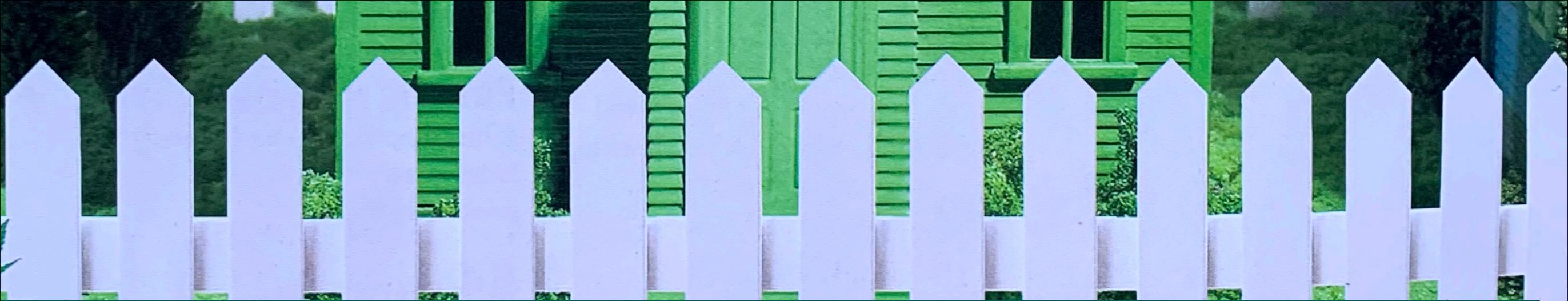


PlusCBD Oil™ Extra Strength Spray



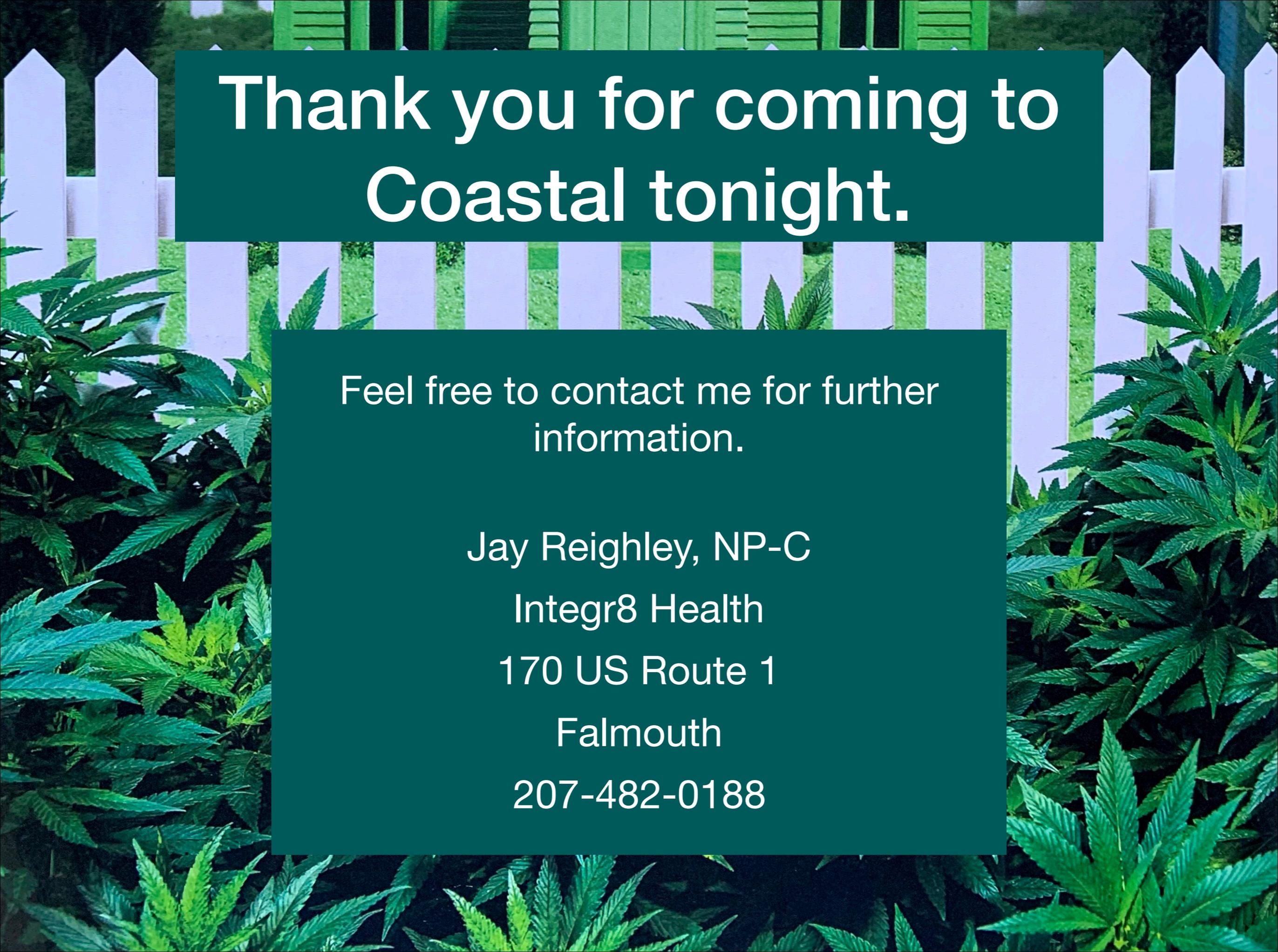
Take home messages

- Medical cannabis is a safe and effective treatment for many conditions that fail to respond to conventional therapy, including chronic pain.
- The difference between medical cannabis and hemp is the presence of therapeutic levels of THC.
- Hemp CBD is effective for pain relief, anxiety, and other symptoms but lacks the “entourage effect” of medical cannabis.
- The hemp CBD industry is unregulated and potentially dangerous. Always ask for a certificate of analysis and look for freedom from pesticides, heavy metals, and residual solvents.



- The Endocannabinoid system ubiquitous throughout our bodies and promotes balance, healing, and wellness. It is an excellent target for promoting health and treating disease.
- Certification is necessary to acquire medical cannabis from a dispensary, caregiver or “caregiver storefront”. All are registered with the state to provide cannabis to certified patients.
- Patients are no longer restricted to acquire medical cannabis from one source.
- Be sure cannabis has been laboratory tested for potency so a known quantity is consumed.
- Integr8 Health provides certifications for all patients who feel cannabis can improve their chronic health condition.





Thank you for coming to
Coastal tonight.

Feel free to contact me for further
information.

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