



Medical Marijuana  
Awareness Webinar

# CBD MIRACLE CURE OR SNAKE OIL

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# CBD Miracle Cure or the new Snake Oil ?

## A REVIEW OF CBD



# CBD: Where Dose it Come From?

CBD and THC, along with over 100 different cannabinoids come from the plant Cannabis, which has different species. Ruderalis has very little THC and CBD and offers little value.

Sativa is the source of the HEMP plant which is high in CBD and low in THC.

There are other Indica Strains and Sativa strains that are high in THC and low in CBD and have specific chemical profiles that may exert different profiles.



SATIVA

- > Very tall
- > Long branches with large distances between nodes
- > Expansive root system
- > Long, thin leaves



INDICA

- > Small, compact size
- > Condensed root system
- > Robust stalks
- > Wide leaves
- > Dense, heavy buds



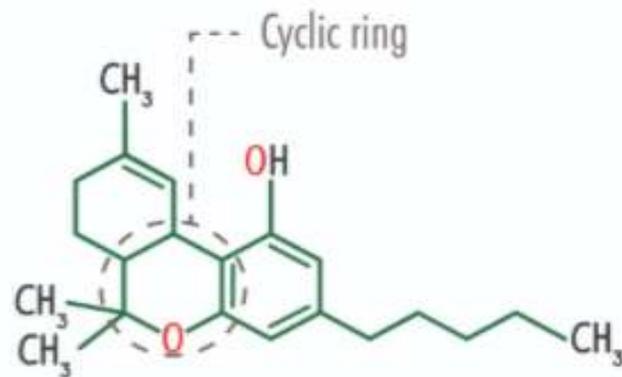
RUDERALIS

- > Small in size and wild-looking
- > Fewer branches than Sativa or Indica specimens
- > Conical shape

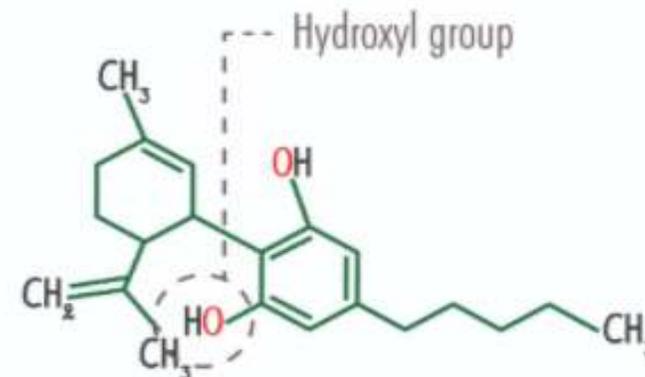
# CBD: What is CBD?

- ▶ CBD is a cannabinoid. It is one of over 100 cannabinoids that have been identified.
- ▶ CBD is a phytocannabinoid, it comes from plants, *Cannabis Sativa*
- ▶ CBD and THC are the two most common and recognized cannabinoids
- ▶ CBD, and other cannabinoids, mimic the activity of endocannabinoids
- ▶ Endocannabinoids are endogenous(occur naturally in the human body) lipid-based neurotransmitters
- ▶ The Endocannabinoid System [ECS] is the most prevalent receptor system in the human body and functions to maintain homeostasis [system balance]

# CBD vs THC Chemical Structure



Tetrahydrocannabinol (THC)



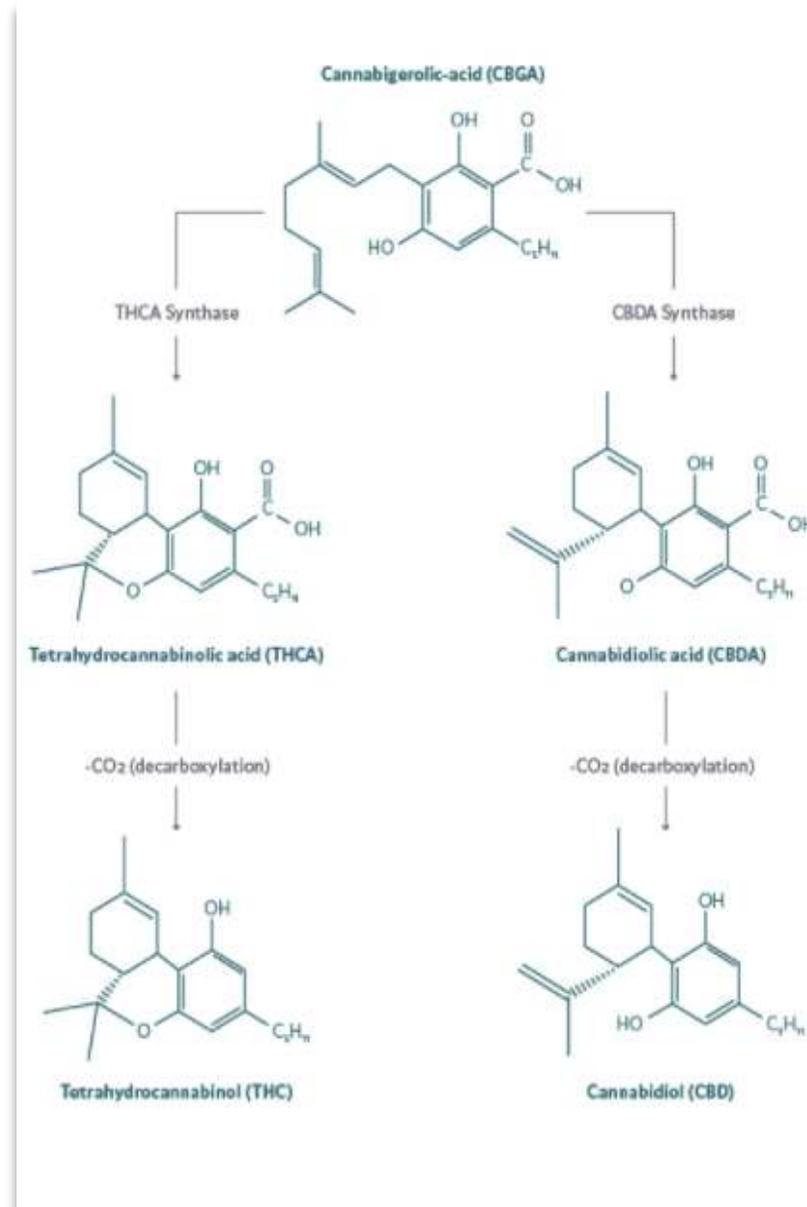
Cannabidiol (CBD)

While the Chemical Structure of CBD and THC are similar, their effects are much different.



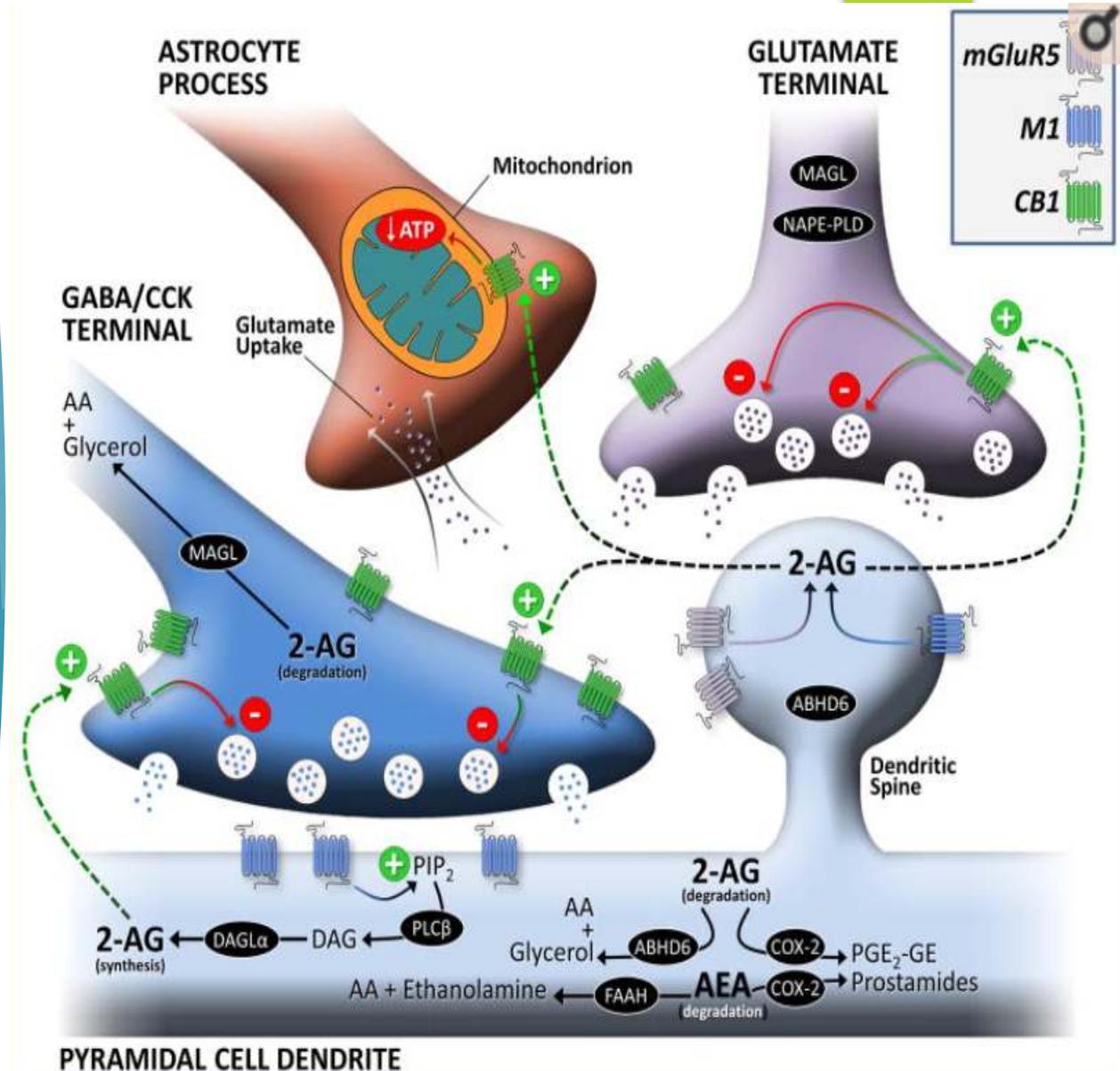
# CBD Synthesis

The biosynthesis of THC and CBD in cannabis also follows a very similar pathway. **Cannabigerolic acid (CBGA)**, the precursor to all natural cannabinoids, is cyclized into tetrahydrocannabinolic acid (THCA) and cannabidiolic acid (CBDA) by THCA and CBDA synthase, respectively. The final products of THC and CBD are formed via decarboxylation of these acidic forms. Structurally, however, there is one important difference. Where THC contains a cyclic ring (see Figure 1), CBD contains a hydroxyl group. It is this seemingly small difference in molecular structure that gives the two compounds entirely different pharmacological properties.



# CBD and Endocannabinoids

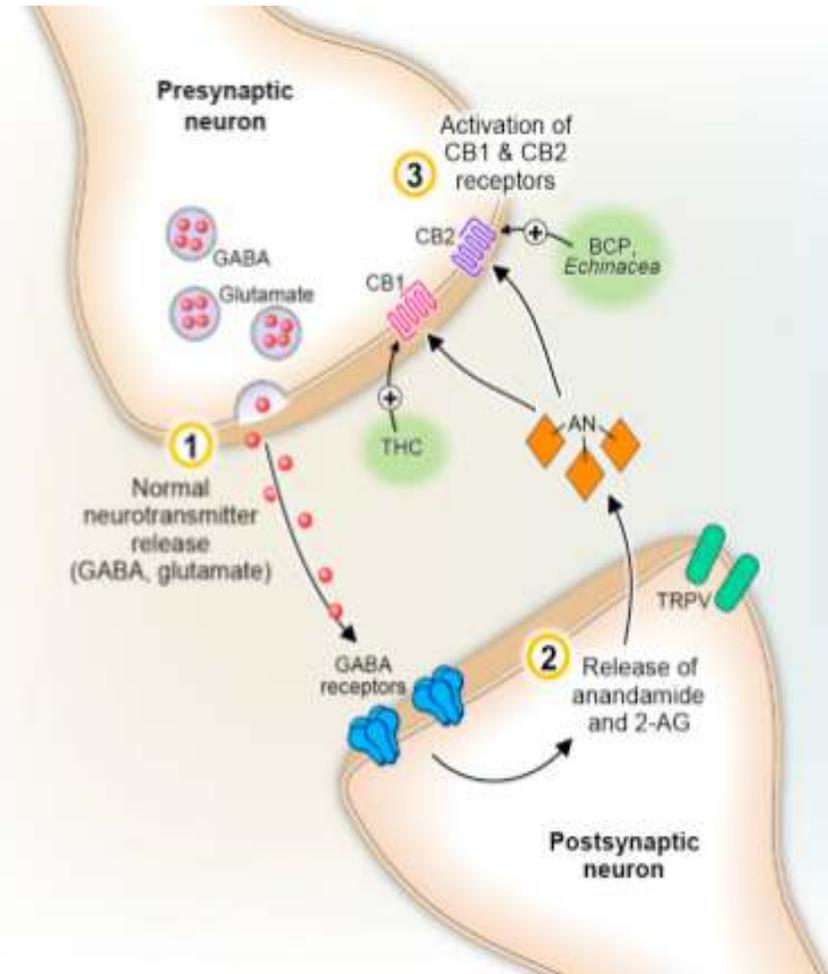
The endocannabinoid system (ECS) works by sending signals through two main compounds; anandamide and 2-arachidonoyl glycerol (2-AG). These messengers are created on demand, made when needed, and are degraded, broken down by other chemicals FAAH, COX2 and NAAA. Anandamide and 2-AG are created on demand when there is an imbalance in signaling at that site and work to maintain balance and homeostasis.



## CBD: How do Neurotransmitters work?

To understand how CBD works you need a basic understanding of how neurotransmitters work. All messages and signals are mediated through neurotransmitters. The ability of the body, and more importantly the Central Nervous System (CNS) work for sending signals via neurotransmitters which sent chemical signals and trigger further chemical and electrical messages to other sites.

Signals are sent between pre and post synaptic neurons.



# CBD: How Does it Work?

- ▶ CBD interacts at the CB1 and CB2 receptor sites
- ▶ CBD has Direct influence on Oxidative Stress via various pathways, mainly xanthine oxidase (XO) and NADPH
- ▶ CBD interacts at other receptor sites involved with oxidative stress, such as TRP, GPR, PPAR, 5HT, TNF and Adenosine
- ▶ CBDA, a derivative of CBD, through CB1/CB2 sites work as COX2 and Prostaglandin inhibitors with anti-inflammatory properties.
- ▶ CBDV, a derivative of CBD, interacts with GPR55 with anticonvulsant effects.
- ▶ CBDA interacts with TRPA1 and TRPV2, analgesic and cancer
- ▶ CBG, a derivative of CBD, through 5HT has antidepressant effects.
- ▶ CBD interacts with mu and opiate sites to influence analgesia.

# CBD Receptor Sites

There are CBD receptor sites throughout the body. These receptor sites are part of the Endocannabinoid System (ECS), which is the most prevalent receptor system in the human body

## CB1

Receptors are concentrated in the brain & the central nervous system but are also present in some nerves and organs.

## CB2

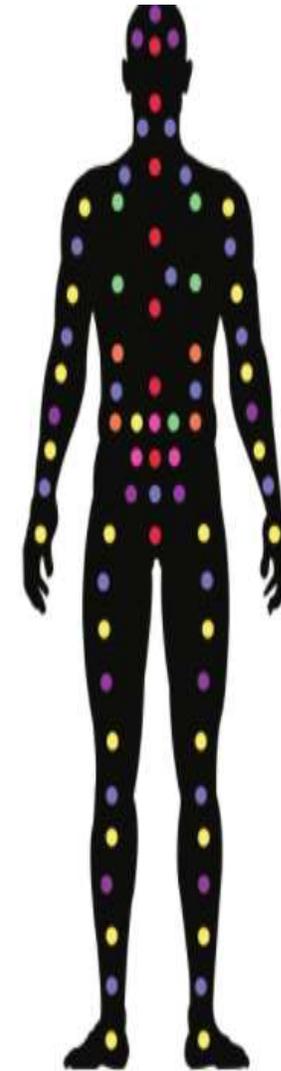
Receptors are mostly in peripheral organs, especially cells associated with the immune system.

## TRPV1

Receptors are concentrated in the blood, bone, marrow, tongue, kidney, liver, stomach & ovaries.

## TRPV2

Receptors are concentrated in the skin, muscle, kidney, stomach & lungs.



## GPR 18

Receptors can be found primarily in bone marrow, the spleen and lymph nodes, and to a lesser extent the testes

## GPR55

Receptors are found in the bones, the brain, particularly the cerebellum, and the Jejunum and Ileum.

## GPR 119

Receptors are found predominantly in the Pancreas and the intestinal tract, in small amounts



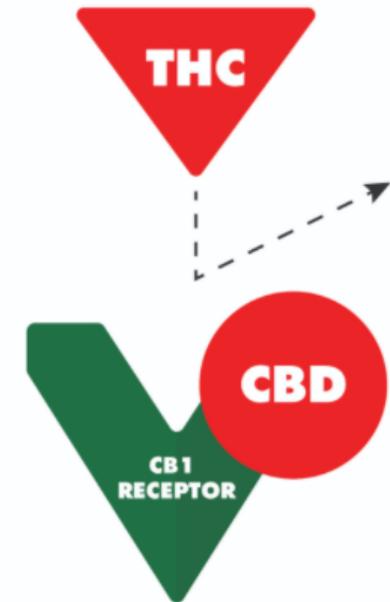
# CBD: CB1 Receptor Activity

CBD binds to CB1 receptors and blocks the activity of THC, it functions as a modulator at the site to block the activity of THC. The benefit of this, is that CBD can help reduce the psychoactive effect of THC.

Specifically it has been identified that this occurs in the hippocampus via extracellular-signal kinase (ERK).



THC is a potent partial agonist of CB1



CBD is a negative allosteric modulator of CB1

## The Potential Benefits and Side Effects

CBD Cannabidiol	THC Tetrahydrocannabinol
Non-psychoactive	Psycho-active
Neuro-protective	Relaxant
Anti-convulsant	Appetite stimulant
Antioxidant	Drowsiness
Anti-psychotic	Analgesic
Anti-inflammatory	Euphoria
Anti-tumoral	Paranoia
Minimal to no side effects	Anxiety

## CBD v THC

CBD has some notable advantages over THC. The main benefit is the absence of a psychoactive effect. It does not get you high. In addition CBD can mitigate the psychoactive effect of THC. It has many benefits, most notably with anxiety, inflammation/pain with little to no adverse effects.

# CBD: Minor Cannabinoids

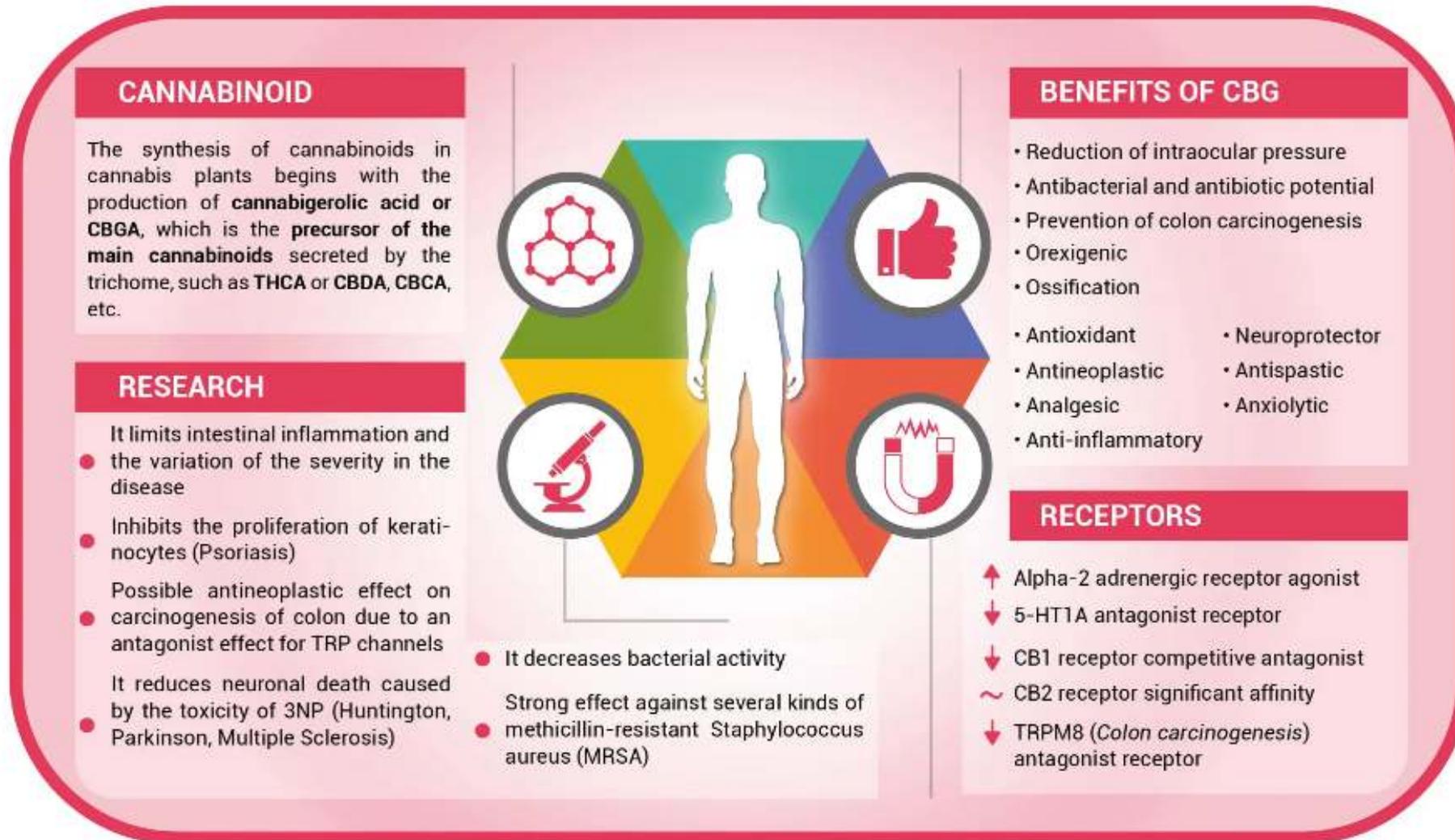
- ▶ **CBG** has been recognized to offer additional benefit with inflammation and additional potential benefits with cancer.
- ▶ **CBN** has been recognized to be helpful with sleep, it is effective as a sedative hypnotic(sleep aid)
- ▶ **Delta 8 THC** is typically minimally psychoactive and offers many of the benefits of Delta 9 THC, interacting with CB1 and CB2, but much better tolerated due to the lower psycho-activity.
- ▶ Choosing products with different cannabinoid profiles can help manage specific symptoms.

	THC	CBD	CBG	CBN	CBC	THCv	CBGA	CGCA	CBCA	THCA	CBDa
Relieves pain Analgesic	●	●		●	●		●				
Suppresses appetite/Helps with weight loss Anorectic						●					
Kills or slows bacteria growth Antibacterial		●	●						●		
Reduces blood sugar levels Anti-diabetic		●									
Reduces vomiting and nausea Anti-emetic	●	●									
Reduces seizures and convulsion Anti-epileptic		●				●					
Treats fungal infection Antifungal									●		
Reduces inflammation Anti-inflammatory		●	●		●		●	●		●	●
Aids sleep Anti-insomnia				●							
Reduces risk of artery blockage Anti-ischemic		●									
Inhibits cell growth in tumors/cancer cells Anti-proliferative		●	●		●					●	●
Treats psoriasis Anti-psoriatic		●									
Tranquilizing, used to manage psychosis Antipsychotic		●									
Suppresses muscle spasms Antispasmodic	●	●		●						●	
Relieves anxiety Anxiolytic		●									
Simulates appetite Appetite Stimulant	●										
Promotes bone growth Bone Stimulant		●	●		●	●					
Reduces function in the immune system Immunosuppressive		●									
Reduces contractions in the small intestines Intestinal Anti-prokinetic		●									
Protects nervous system degeneration Neuroprotective		●									

# CBD is not alone

There is more to Hemp/Cannabis than just CBD and THC. There are over 100 different minor cannabinoids. Of those studied, CBG, CBN and Delta 8 have been identified to offer additional benefits with managing various symptoms.

# CBG CANNABIGEROL

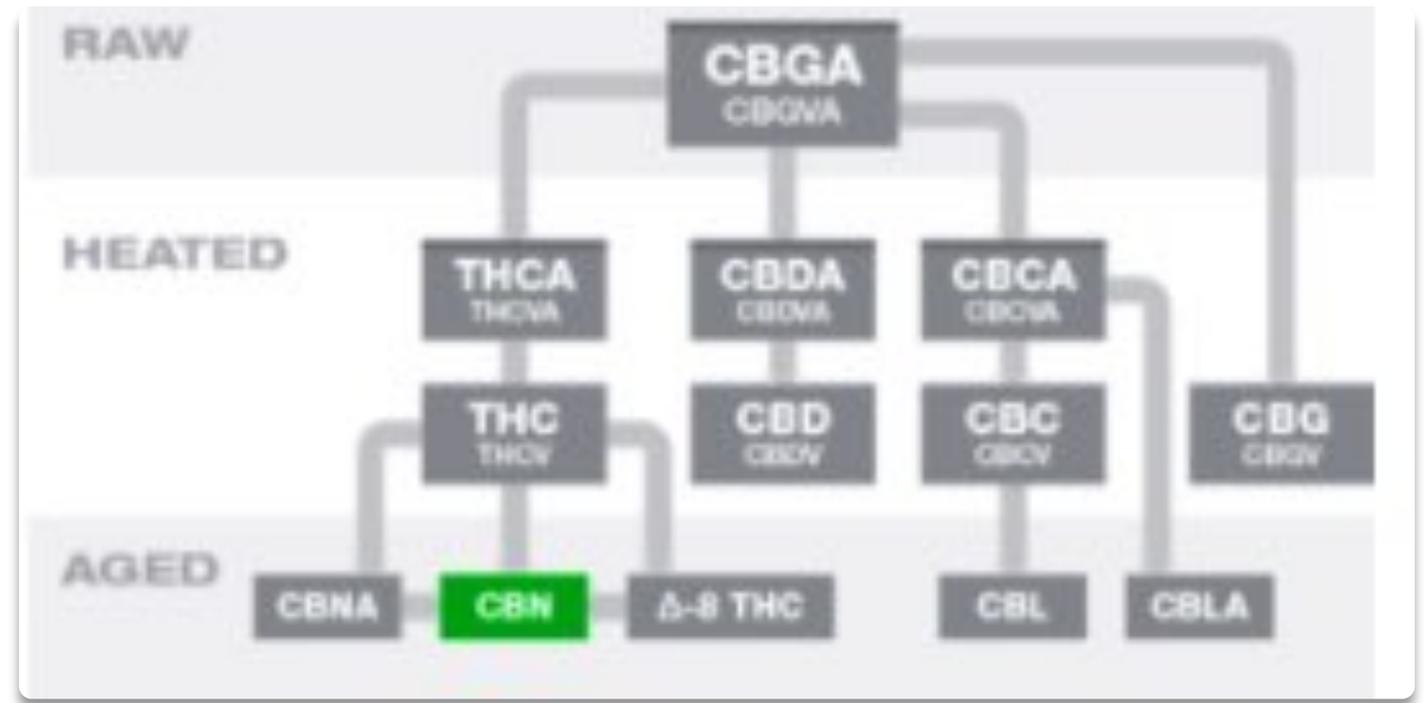


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CBG has unique properties, separate from CBD, that offers potential benefit for various conditions such as pain, inflammation, IBS, as well as Parkinson's Disease, Multiple Sclerosis and Huntington's Disease

# CBD and minor cannabinoids: CBN

**CBN** has been identified as an effective sedative hypnotic, sleep aid. It has additional benefits in Breast Cancer, as well as analgesic and with psoriasis



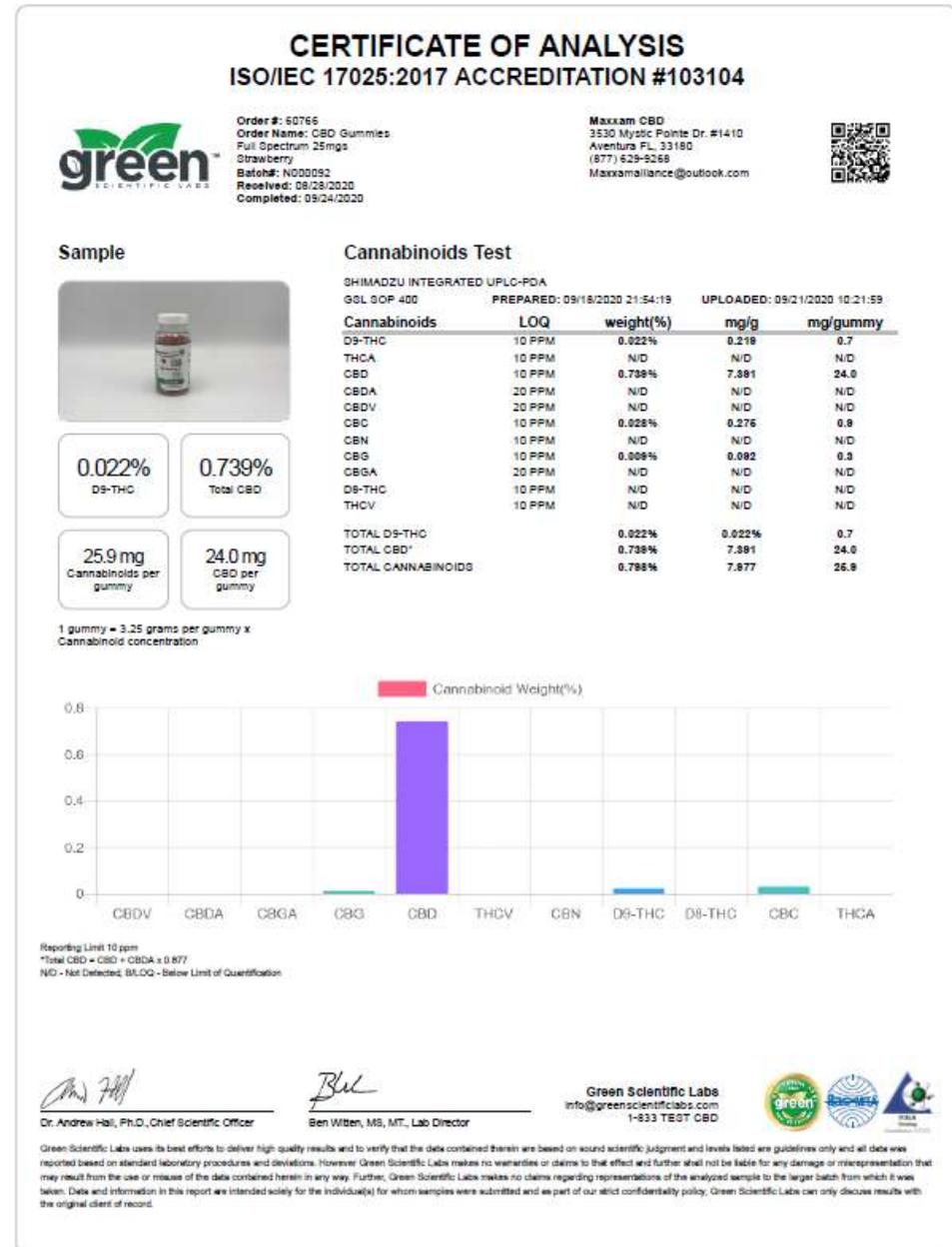
# CBD and minor cannabinoids: Delta 8 THC

- ▶ Delta 8 THC is structurally similar to Delta 9 THC
- ▶ It binds to both CB1 and CB2 receptors like Delta 9 THC
- ▶ It has lower affinity for the CB1 receptor and thus has less psychoactive effects
- ▶ It has been studied to be effective for pain and inflammation, Nausea, appetite stimulation and Anxiety.
- ▶ Is a more desirable option to achieve the benefits of THC, via CB1 and CB2 receptors, without the adverse effects associated with Delta 9 THC.
- ▶ When using CBD, maximizing the entourage effect improves the overall efficacy of a given product.
- ▶ The entourage effect suggests that when more cannabinoids are present the therapeutic benefit than any isolated cannabinoid

# CBD, knowing what you are buying

It is important to know what you are buying. Understanding how to read and review the Certificate of Analysis (COA) is critical. This report will help confirm that is in the bottle and what is not in the bottle.

- ▶ Is the amount of CBD in the bottle what is on the label?
- ▶ Are there other minor cannabinoids?
- ▶ Is the product Full Spectrum, Broad Spectrum or Isolate?
- ▶ Are there any contaminants in the product, heavy metals, pesticides, etc.



# CBD Products, what is the difference?

- ▶ **Full Spectrum** - ideally has additional minor cannabinoids, with THC content <0.3%
- ▶ **Broad Spectrum**- ideally has other minor cannabinoids with No Detectable THC
- ▶ **Isolate** - Has only CBD, not other cannabinoids and Zero THC
- ▶ Delivery options:
  - **Tinctures** - Oil Drops to be placed under the tongue or swallowed. Absorbed sublingually and in the stomach. Bio-availability 15-20%
  - **Gummies** - Chewed and swallowed, absorbed in the mouth and stomach. Bio-Availability 15-25%
  - **Vapes** - Inhaled and absorbed in the lungs. Bio-availability 60-80%
  - **Topical** - absorbed through the skin. Bio-availability up to 45% but works locally.



# CBD Delivery Options

- ▶ **Inhalation** is the fastest route. Enters the body quickest with highest absorption. Avoids liver metabolism. Enter in minutes and lasts for 1-2 hours.
- ▶ **Tinctures and Gummies** enter slower, 15-30 minutes, last 3-5 hours. Sublingual absorption is quicker, may require to be held under tongue 2-3 minutes. When swallowed will require digestion and liver metabolism.
- ▶ **Topicals** - take longer to start working, may absorb more slowly and typically works locally. It may last more than 4-6 hours.
- ▶ **Nano Emulsion Formulations** offer notable advantages. The process results in smaller particle size and creates a product that behaves like a water-soluble product. Absorption is quicker and higher.
- ▶ With Oral products taking after food will increase the duration of action.



# CBD Nano Formulations

- ▶ CBD is an Oil, and as we all know water and oil do not mix. We do not absorb oil well.
- ▶ Nano Formulations offer significant advantages as a delivery system for CBD. It has been used in the food and beverage industry for many years.
  - The process involves a mechanism to shear a particle and make it smaller in size, in this case smaller than 30nm.
  - The particles are then mixed with an emulsifying agent to keep the particles from coalescing back into larger sizes. The smaller particle size creates an effectively water-soluble product.
  - This allows the product to absorb more quickly, bypass liver metabolism.
    - ✓ Bioavailability can be as high as 90%
    - ✓ Tinctures Edibles-15-20%
    - ✓ Topicals 45%

# CBD: Where to Buy?



Maxxam Wellness offers CBD products.

- ▶ Tinctures
- ▶ Gummies
- ▶ Topicals Nano Emulsified
- ▶ Nano Beverage Enhancers
- ▶ CBG, CBN and Delta 8 products

All Products are made with Organic CBD, Organic ingredients, All natural, Vegan, Non-GMO, Gluten Free and Kosher



# CBD Dosing

- ▶ There is no established dose for CBD, or any other cannabinoid for any specific symptom or condition.
- ▶ We suggest to at least work up to a reasonable dose of CBD before deciding it is ineffective for you.
- ▶ CBD is not effective for everyone, but a big reason many people fail CBD is due to inadequate dosing. They do not take enough, either by inadequate dosing or product quality.
- ▶ We suggest that everyone start with a low dose but to at least increase to a dose of 50mgs a day of CBD, 25mgs twice a day.
- ▶ For Tinctures dosing may need to be at least twice a day and may require three times a day. Same for Gummies.
- ▶ Topicals can be applied every 4-6 hours. Vaping would require dosing every 2-3 hours.

# CBD Dosing continued

Condition Range	Size Person 31-60 lbs	Size Person 61-100 lbs	Size Person 100-175 lbs	Size Person 175-250 lbs +
Mild <b>1</b>	2mg-4mg +	4mg-6mg +	6mg-8mg +	8mg-10mg +
<b>2</b>	4mg-8mg +	6mg-12mg +	8mg-18mg +	12mg-20mg +
Medium <b>3</b>	8mg-12mg +	12mg-18mg +	18mg-24mg +	22mg-30mg +
<b>4</b>	12mg-18mg +	18mg-24mg +	24mg-32mg +	32mg-40mg +
Severe <b>5</b>	18mg-30mg +	24mg-40mg +	32mg-60mg +	42mg-60mg +

Dosing guides like these are easily found online. Response to CBD varies for everyone. Since it is safe to take it is nearly impossible to overdose. You would likely give up due to cost before you would notice any adverse effects. It is important to be patient and gradually increase your dose or dose frequency.



# CBD Dosing continued: Reading labels

- ▶ Tinctures come in different dosing sizes.
  - 1500mg CBD has 1500mg of CBD in the bottle (30ml). Full Dropper has 50mg
  - 3000mg CBD has 3000mg of CBD in the bottle, Full Dropper has 100mg
- ▶ Gummies come in different doses
  - Gummies 750mg, will have 30 count of 25mg CBD per Gummy
- ▶ Topicals will also vary by total CBD per bottle and dosing can vary by how much is applied.
- ▶ Take time and figure out how much CBD you need to take to manage symptoms and calculate your cost of CBD per mg. Find larger sized packaged sizes to save money.

# CBD Safety Profile

- ▶ Drug interaction: CBD is metabolized by the liver, via CYP3A4. It is an enzyme inhibitor, which means it slows down the process and thus increase potential levels of other drugs that require the same enzyme for metabolism. In converse other medications may impact metabolism of CBD.
  - Over 60% of prescribed medications are metabolized by CYP34A
  - Anti-hypertensives, anti-convulsants, blood thinners would warrant monitoring.
- ▶ Adverse effects: Drowsiness, dry mouth, nausea (high doses), low blood pressure.

# CBD Summary

- ▶ CBD has been well documented to offer benefit in managing symptoms with many different conditions.
  - Anxiety, mood disorder, Sleep issues
  - Pain and inflammation
  - Muscle stiffness
- ▶ CBD, CBG, CBN and Delta 8 THC may offer complete relief of symptoms without the need for Delta 9 THC.
- ▶ CBD is much better tolerated than Delta 9 THC, especially absence of psychoactive effects.
- ▶ Hemp derived CBD is the same as marijuana (non hemp) derived CBD and will be much less costly. It may also help reduce the overall need for THC products, when needed.



# CBD: Where to buy?



[www.mybotanicawellness.com](http://www.mybotanicawellness.com)

- ▶ Tinctures
- ▶ Gummies
- ▶ Topicals Nano Emulsified
- ▶ Nano Beverage Enhancers
- ▶ CBG, CBN and Delta 8 products

All Products are made with Organic CBD & Organic ingredients, All natural, Vegan, Non-GMO, Gluten Free and Kosher

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