

# WHAT IS CBD? WHY IS IT GOOD FOR YOU?

## What is CBD?

CBD (cannabidiol) is a non-intoxicating compound found in the Cannabis Sativa plant that can help modulate, regulate, and maintain several biological systems in the human body. It is often used for its potential therapeutic benefits, such as reducing pain, anxiety, and improving sleep, without producing the "high" associated with THC.

CBD is commonly used to describe all hemp-derived non-psychoactive full and broad-spectrum therapeutic products.

## What is Hemp?

Hemp is a variety of the Cannabis Sativa plant that typically contains between 5 and 20% weight of CBD and less than 0.3% weight of THC. In addition to CBD and THC, hemp also contains a range of other compounds, such as terpenes, flavonoids, and essential fatty acids. Some research, as well as anecdotal evidence, suggest that these compounds can work synergistically to produce a more significant therapeutic effect than each individual compound alone. This phenomenon is commonly known as "the entourage effect."



### ANXIETY

CBD has been found to have **anti-anxiety effects**, potentially reducing symptoms of anxiety.



### SLEEP

CBD has been found to have **sedative effects**, potentially promoting better sleep.



### PAIN

CBD has been found to have **pain-relieving effects**, potentially reducing chronic pain.

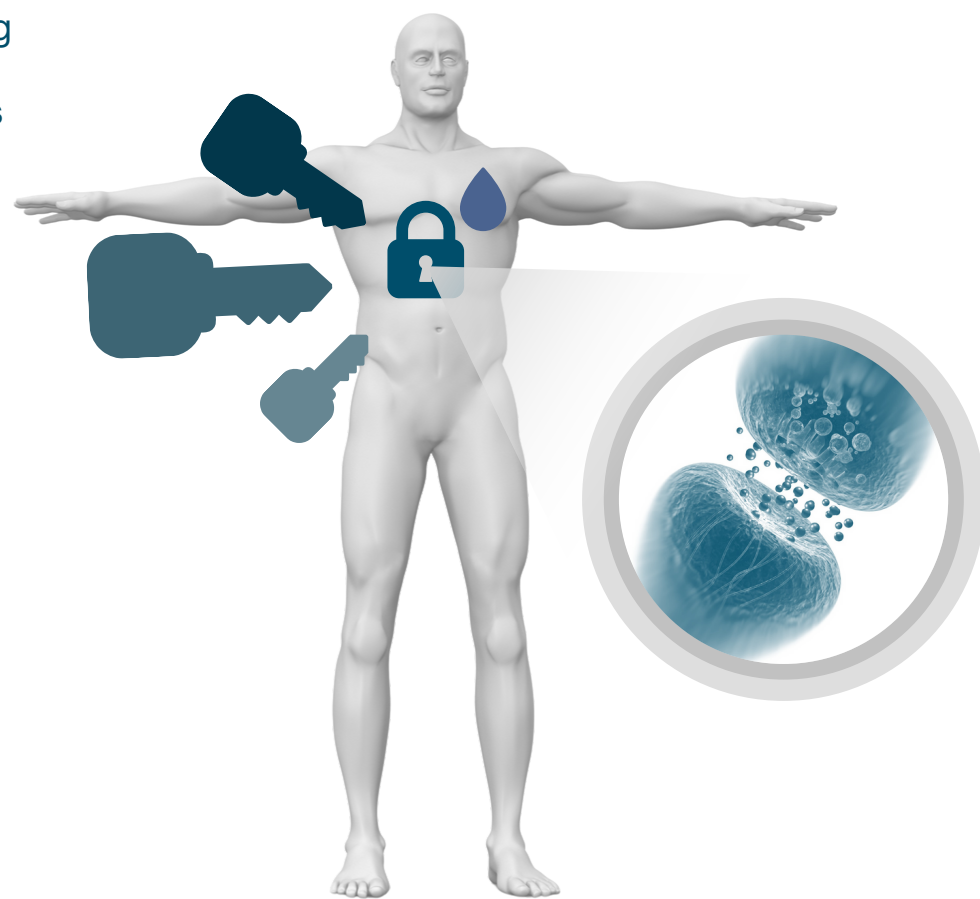
## The Endocannabinoid System

CBD, CBN, THC and others fit like a lock and key into existing receptors. These receptors are part of the endocannabinoid system (ECS), which regulate metabolism, neurotransmitters, hormones, immune function, pain, cardiovascular and other physiological functions. The ECS comprises multiple types of receptors. CB1 and CB2 receptors are the most well-known and well-studied receptors, but other receptors such as TRPVs, GPCRs, PPARs, 5-HT, GABA, and Adenosine receptors are also considered to be part of the larger ECS, and serve distinct functions in animal health and well-being.

CBD and THC offer differentiated, but complimentary qualities that interact with your body's Endocannabinoid System. Each possess non-psychoactive properties that can benefit the body. While THC is often associated with producing psychoactive effects, doses below 3 mg are generally considered to be non-psychoactive for most people. This means that at low doses, THC can still provide some of the potential therapeutic benefits without producing unwanted psychoactive side effects.

**Cannabinoid Receptors** are in various tissues and organs within the following systems, and their distribution and density can vary depending on factors like age, sex, and health status:

- Nervous system
- Immune system
- Endocrine system
- Digestive system
- Reproductive system
- Cardiovascular system
- Respiratory system
- Musculoskeletal system
- Urinary system
- Integumentary system
- Lymphatic system
- Olfactory system
- Auditory system
- Visual system
- Renin-angiotensin system



## KEYS TO HOMEOSTASIS:

### Phytocannabinoids

Non-Psychoactive



Psychoactive (Generally non-psychoactive at low doses)



**Endocannabinoids** (Naturally produced by your body)



## Main Cannabinoid Receptors



Receptors are concentrated in the central nervous system but are also present in the peripheral nervous system. CB1 receptors play a role in modulating neurotransmitter release, pain perception, inflammation, appetite, and mood



Receptors are mostly in peripheral organs, especially cells associated with the immune system. CB2 receptors play a role in modulating inflammation and pain perception

## Other Cannabinoid Receptors



TRPV receptors such as, TRPV1, TRPV2, and TRPV3, as well as TRPM receptors, such as TRPM3 and TRPM8 are involved in various physiological processes, including pain sensation, temperature regulation, immune response, and metabolism



5HT-1A, 5HT-2A receptors play a role in modulating neurotransmitter release, pain perception, and inflammation, resulting in reduced anxiety and depression symptoms, and improved mood



GABA receptors play a role in enhancing inhibition of neuronal activity, resulting in reduced anxiety, and pain relief.



GPR3, GPR6, GPR12, GPR18, GPR55, GPR119 receptors each play a unique role in regulating various physiological processes, such as energy metabolism, immune function, pain perception, cardiovascular health, and mood.



PPAR $\alpha$ , PPAR $\gamma$ , and PPAR $\delta$  receptors affect inflammation, metabolism, and neuroprotection through lipid metabolism, adipose tissue function, insulin sensitivity, energy metabolism, and anti-inflammatory responses, respectively.



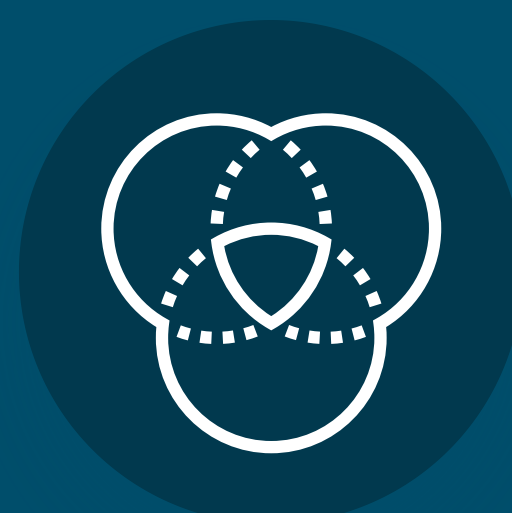
Adenosine receptors play a role in promoting sleep and reducing pain perception.



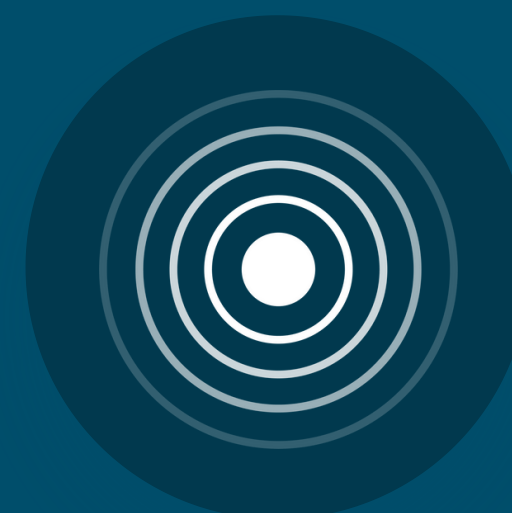
**Metabolic Regulation**  
(Appetite)



**Mood Regulation**  
(Emotions)



**Homeostasis Maintenance**  
(Restores Balance)



**Pain Modulation**  
(Chronic Pain)



**Immune Regulation**  
(Inflammation)

## Terpenes & The Entourage Effect

Terpenes are compounds found in many plants, including cannabis, that provide the plant with its characteristic aroma and flavor. In the endocannabinoid system, terpenes can act as lubricants to facilitate the interaction between cannabinoids and cannabinoid receptors, increasing their bioavailability and overall efficacy. Terpenes can also have their own therapeutic effects, such as reducing inflammation, relieving pain, and promoting relaxation. Some terpenes, like limonene and pinene, are known to have anti-anxiety and anti-depressant effects, while others, like myrcene, have sedative effects. The combination of terpenes, cannabinoids, and other phytochemicals can lead to the entourage effect, which is when these compounds work synergistically to produce a more significant therapeutic effect than each compound alone.

## Common Terpenes Found in Cannabis



Myrcene has analgesic, anti-inflammatory, and sedative effects that may enhance the efficacy of cannabinoids by increasing their absorption through the blood-brain barrier.



Limonene has anti-anxiety, antidepressant, and anti-inflammatory effects that may enhance the efficacy of cannabinoids by increasing their absorption through the gastrointestinal tract and skin.



Caryophyllene acts as a selective agonist of CB2 receptors, has anti-inflammatory and analgesic effects, and may enhance the efficacy of cannabinoids by increasing their binding affinity to CB2 receptors.



Pinene has bronchodilator, anti-inflammatory, and neuroprotective effects that may enhance the efficacy of cannabinoids by increasing their bioavailability and inhibiting the breakdown on cannabinoids by the body