

# CBD oil for Seizures and Epilepsy

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\* Please advise your physician prior to each use of CBD.

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### CBD and CBD Oil

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Does CBD offer help in the treatment of epilepsy? Yes, in some individuals CBD appears to demonstrate positive activity treating specific symptoms such as seizures. Before beginning our investigation into Cannabidiol (CBD) and its effects on seizures in epilepsy, it is essential to know what CBD is. CBD is an element of [medical marijuana](#) and a cannabinoid obtained from the hemp plant, a relative of the marijuana plant. A hemp plant contains less than 0.3 percent THC, and therefore it is devoid of most of its mind-altering compounds.

Medical marijuana consists of the whole marijuana plant or certain chemicals in the plant used for medicinal purposes. Medical marijuana has been a critical treatment for individuals dealing with life-altering diseases and pain.

Patients that suffer from spasticity, insomnia, and epilepsy have found relief with CBD without the high associated with THC. It even has positive effects on Dravet syndrome, a childhood disease.

According to the Harvard medical website and author Doctor Peter Grinspoon via a report from the World Health Organization, “In humans, CBD exhibits no effects indicative of any abuse or dependence potential.... To date, there is no evidence of public health-related problems associated with the use of pure CBD.”

Most CBD oil comes from industrial hemp, which has more CBD than THC. The compound is extracted from the plant and then added to the oil, which is then labeled CBD oil. There are various strengths available. Before use, always check with your healthcare provider.

## **CBD and THC**

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Cannabis contains more than 120 compounds called cannabinoids. There are two primary ingredients made by plants in the Cannabis genus. These ingredients are THC and CBD. THC is a psychoactive drug that gives a user a “high” or sensation of euphoria. CBD does not have these psychoactive effects.

THC may be consumed by smoking marijuana or ingesting oils, tinctures, edibles (brownies), capsules, and many more items. CBD comes in many types of gels, extracts, supplements, and gummies. Similarly, CBD and THC can be consumed by smoking, vaping, eating, swallowing, applying lotion, or sublingually.

Looking at the chemical structure of both CBD and THC, there are the same number of hydrogen atoms (30), Oxygen atoms (2), and carbon atoms (21) in both structures. Any time a rearrangement of the atoms occurs, the new compound will affect the human body differently.

Both THC and CBD will interact with the endocannabinoid system (ECS) in the human body. This is a built-in system that manages stress for us. The ECS is essential in helping our bodies maintain the neurotransmitter balance or homeostasis used in multiple neurofunctions. These may include mood, sleep regulation, appetite, and nerve transmission.

The endocannabinoids are endogenous neurotransmitters, meaning our body makes them internally. This process operates like a lock and key, where CBD links to the cannabinoid receptors in the peripheral nervous system and the central nervous system to exert an effect. By changing cannabinoid levels, we may be able to successfully treat specific

conditions and improve a person's quality of life.

## **CB1 and the Psychoactive Components of CBD and THC**

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Chemically similar to endogenous endocannabinoids, the CBD and THC will interact with the cannabinoid receptors in the human body. Once the interaction happens, the release of neurotransmitters takes place in the brain. The neurotransmitters relay messages that reduce stress, pain, improve sleep, and much more.

Cannabinoid 1 (CB1) receptors in the brain play a determining role in the addiction process. It does this by reinforcing a dependence on drugs and alcohol. Since THC binds with the CB1 receptors in the brain, it will produce a euphoric feeling.

CBD can affect the central nervous system and the cardiovascular system by the activation of receptors. "These receptors comprise a group of G protein-coupled receptors, which mediate the physiological actions of adenosine." (Sheth, Brito, Mukherjea, Rybak, Ramkumar). These adenosine receptors release glutamate and dopamine, two neurotransmitters that play vital roles in balancing the body.

By discharging glutamate and dopamine, it is possible to relieve anxiety, nausea, and pain. It also can benefit the bones and immune system. CBD works across the body as an antioxidant and anti-inflammatory, which helps mitigate the damage caused by neurodegenerative diseases.

## **Legalities**

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Over the last several years, cannabis laws have continuously evolved. Marijuana and THC are considered controlled substances and therefore, possession is against federal law. The situation has changed in various states across America. At this point, 33 states have either legalized marijuana that is used for recreational purposes or for medical use or, in some states, just medical use alone.

Any CBD products that contain less than 0.3 percent THC are legal at the federal level but can be illegal in some states. What about CBD oil?

Even though over half of the states have some form of legal marijuana, at the federal level the U.S. Drug Enforcement Administration (DEA) groups these substances as Schedule I drugs. As defined by the DEA, all Schedule I drugs are "drugs with no currently accepted medical use and a high potential for abuse." The definition does not include CBD, but the entire cannabis plant is covered under Schedule I drugs. The marijuana industry is changing the rules and causing exceptions.

In June of 2018, the U.S. Food and Drug Administration (FDA) approved the drug

Epidiolex assigning it the classification of a Schedule 5 drug. Schedule 5 translates into the lowest category of being addictive or subject to abuse. Epidiolex is used to treat pediatric epilepsy.

According to the [FDA](#), “Epidiolex’s effectiveness was studied in three randomized, double-blind, placebo-controlled clinical trials involving 516 patients with either Lennox-Gastaut syndrome or Dravet syndrome. Epidiolex, taken along with other medications, was shown to be effective in reducing the frequency of seizures when compared with placebo.”

CBD oil within individual states is a different matter. Due to the push to alter cannabis legalization, there are only three states where marijuana is illegal. These states include Nebraska, South Dakota, and Idaho.

Fourteen states have medically legal CBD, following the requirements of the [National Organization for the Reform of Marijuana Laws \(NORML\)](#). Many of these states have strict rules for approval to use CBD based on the individual’s medical condition and severity.

## CBD Oil Benefits

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CBD oil may be beneficial for several different health-related situations. However, there is not a great deal of research on the oil’s potential health benefits. Generally, some research shows relief of specific conditions such as seizures, headaches, anxiety, pain, insomnia, joint dysfunction and nausea.

Even with restrictions, a lot of testimonials and anecdotal in support of CBD and the oil for the treatment of epilepsy have accumulated.

In a study headed by [Fabricio A. Pamplona](#), he found that CBD based products significantly reduced the frequency of seizures. “Almost 2/3 of the patients had an observed reduction in seizure frequency (399/622, 64%), with individual studies rate of reduction ranging between 37 and 89%.”

Out of [11 studies, six of them showed](#) “80% of the patients reporting improvement. There was a higher number of patients reporting improvement after using CBD-rich *Cannabis* extracts (318/447, 71%) than those treated with purified CBD (81/175, 46%), with valid statistical significance ( $p < 0.0001$ ).”

## CBD Dosage

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A person who uses CBD and CBD oil legally must understand that every individual is different. These body differences need to be taken into account when self-titrating a dose. Dosing is a very individualized process.

The best situation is to start slowly. Try a single drop or maybe two at most. If you use a

vaporizer, inhale a tiny puff. Always try the lowest amount recommended as a serving size. Over time if there has been no positive effect, try a slightly higher dose. However, let the appropriate amount of time pass, so CBD has peaked and left the body. Those using vaporizers should wait an hour, and any oral product users should wait 6+ hours.

With this information, everybody willing to try CBD, and its oil should always consult a doctor or trusted medical professional due to the potential for adverse effects and drug interactions.

In the same study done by [Pamplona](#), he found that CBD is capable of producing adverse effects. The study demonstrated that a large portion of those experimenting with CBD had some side effects. In fact, of the 422 individuals studied, 217 or 51% have felt an adverse impact. A majority of them considered it a “mild” event. Severe events were experienced by only 64 people or just 15% of the population.

## CBD Limitations, and Effects

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Even though CBD is popular, it also has its limitations. [Clinical trials](#) are exploring the effects of CBD on anxiety, Parkinson’s disease tremors, post-traumatic stress, and chronic pain. While CBD could be an alternative treatment for these conditions, there is not enough information yet to prove CBD is safe and effective.

Are there side effects associated with taking CBD? For the most part, CBD is safe but there is a risk of adverse effects. They include:

- Dry mouth
- A reduction in appetite
- Diarrhea
- Drowsiness, or fatigue

Also, keep in mind that CBD can **interact with medications** such as blood thinners.

CBD can be sold in many states legally. Unfortunately, some companies do not invest in people’s safety. A recent study found that 84 CBD products offered online were either mislabeled and contained less CBD than stated while 18 of those 84 products contain excess THC.

## CBD and intractable childhood and adolescent epilepsy

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Intractable epilepsy is a type of epilepsy that is resistant to traditional anti-epileptic medications used in controlling seizures. Most people can gain relief and some control with the array of medicines available, but about 30% of people might not respond to those typical treatments. When children do not respond, brain development is impacted, and uncontrollable seizures continue to cause cognitive impairments down the road.

Published in the Journal of Epilepsy Research, a Korean research team completed a review of the literature. They found that research on intractable childhood epilepsy and CBD demonstrated favorable results, specifically in Lennox-Gastaut Syndrome and Dravet Syndrome. They also looked at the chemical interaction between CBD and the more standard anti-epileptic medications carbamazepine, phenytoin, and clobazam.

## **Lennox-Gastaut Syndrome and CBD**

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Lennox-Gastaut Syndrome is a severe developmental encephalopathy often occurring before age eight. It manifests in part as intense drop seizures, which are disabling and lead to poor quality of life. In the New England Journal of Medicine, Devinsky et al., examined this disorder using CBD in a double-blind study of patients ages 2-55 with an average of 1-2 drop seizures per week. Drop seizures can be atonic, tonic, or tonic-clonic epileptic convulsions involving the whole body that could lead to a fall or slumping in a chair.

The study included 225 patients segregated into either a CBD 10 mg dose group, a CBD 20 mg dose group, or a placebo group. Patients in the CBD groups received either 10 mg or 20 mg doses of CBD in addition to their concomitant regimen of antiepileptic medications.

The outcomes were favorable in patients who received either dosage of CBD. In addition, patients treated with CBD demonstrated a significant decrease in the frequency of drop seizures and a 50% overall reduction in all types of seizures. Side effects included diarrhea, sleepiness, and a decrease in appetite.

Devinsky et al built on his previous work using CBD on patients diagnosed with Dravet Syndrome before attempting to treat patients afflicted by Lennox-Gastaut Syndrome with CBD.

## **Dravet Syndrome and CBD**

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Dravet Syndrome is a childhood disorder characterized by medication resistant high mortality epilepsy. The chance a seizure could kill the child is very high, and so the need to control seizures is urgent. The study was a randomized, controlled trial with a sample size of 120 children from the United States and Europe. The team found encouraging results, in that there was a reduction in seizures as reported by caregivers.

What the research demonstrates is that CBD is effective in reducing the frequency of seizures in Lennox-Gastaut Syndrome as well as improving seizure control in patients diagnosed with Dravet Syndrome. Both of these intractable forms of epilepsy can lead to severe injury and, in the case of Dravet Syndrome, death. The fact that both of these were open trials led researchers to caution that caregivers and participants knew that they were participating in CBD research. In addition, some caregivers may have harbored some

preconceived notions about the treatment that could have affected their self-reports. There were also adverse effects associated with the use of CBD, including gastrointestinal discomfort and tiredness, although these were considered mild effects.

## Choosing a CBD Product

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CBD products are all the rage right now and trending everywhere on the internet. Even, corner drug stores are getting involved. It can be an overwhelming challenge to rise above the noise and understand the market. Choosing CBD products is individual, as each body is different and needs vary. The efficacy of CBD products depends on their use, whether for sleep, anxiety, pain, headaches, or depression. Always ask your health care professional before beginning any new regimen.

As an example, people suffering from anxiety have several administration options open to them to mitigate their symptoms. Inhaling CBD through smoking or vaping might be better for acute panic requiring immediate action as that is the fastest method of getting CBD into the blood. Oils may be taken under the tongue and be effective in a couple of hours. Alternately, ingesting an edible version of CBD can take four hours to be fully effective. Rubbing a topical CBD product into the skin has the lowest concentration of CBD and is slow acting. Both of these choices may be better for long term anxiety control, which is dependent on symptom intensity and CBD integration into the body. Choosing the best CBD product for you is about understanding what you want from the product and how you want to consume it.

Most importantly, users need to know that CBD is not covered by regulations enforced by the Food and Drug Administration (FDA). Without federal oversight or enforcement, quality control can be shoddy. Some brands have received warning letters from the FDA due to over representing how much CBD is in their products. These products may be full of inactive or poor quality substances instead of CBD. Some tips designed to guide users toward quality products include overall product cleanliness, purity, strength, the reputation of the manufacturer, and any third party testing.

Products are clean when brands do not utilize Genetically Modified Organism (GMO)'s hemp plants. GMO's are a laboratory creation, and higher quality products come from an organically grown cannabis plant. The CBD extraction method may degrade product potency. Using food-grade ethanol or carbon dioxide is a proven method of extraction that delivers a stronger purer product.

Users can also check to see if the brand has invested in any testing by a third-party vendor. It is hard to believe a company's endorsement when they are ultimately selling a product and seeking to profit. When they provide data and lab results to consumers describing the product and demonstrating efficacy, it shows a level of responsibility to the user. Companies that feel confident about their products will share product testing results freely.

Overall, users must research brands exhaustively. They should seek a consultation with their doctor before initiating CBD use. These products are being researched, consistently, but are not a preferred treatment recommended by the FDA or many members of the medical profession. Users must be careful and seek medical advice from their physician throughout their use of any CBD product.

CBD may have excellent healing qualities without the euphoria or “high” feeling from THC. CBD appears to demonstrate positive effects in those dealing with specific disabilities such as seizures, headaches, anxiety, and nausea. As our culture and society move forward, there is a lot more to learn about the CBD and related compounds. In time legislation and regulations will catch up to the use and demand.

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