

# **CBD OIL**

## **PRODUCTION**

**EXTRACTION AND MEDICATION;  
EXPLORE THE HEALING  
POWER OF CANNABIDOL**



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## INTRODUCTION

CBD (Cannabidiol) is a compound found in the Cannabis plant. It can be used in several different ways including vaping, tinctures, capsules, and edibles.

Unlike its close relative, THC (Tetrahydrocannabinol), CBD is completely non-psychoactive. This allows us to benefit from the many health properties of the Cannabis plant without the negative side effects of “getting high.”

Because of this, CBD became a very popular option for those seeking a natural alternative to treat conditions such as chronic pain, multiple sclerosis, PTSD, epilepsy and other mental disorders.

At first, many were skeptical, thinking that a natural compound, let alone a Cannabis-compound, could effectively treat such a wide range of conditions. But as medical researchers learned more, and the stories from tens of thousands of people began to stack up, the truth was undeniable. CBD works.

For starters, CBD inherits many of the medicinal properties of Cannabis such as being anti-inflammatory and anti-anxiolytic. This allows it to provide natural stress, anxiety and pain relief.

But this alone is not what allows CBD to benefit so many conditions.

What allows it to effectively treat so many conditions, and maintain health and wellness in the body, is how the cannabinoids found in CBD interact with receptors throughout our body.

In 1988, the first cannabinoid receptor was discovered in the brain of a rat. Researchers found that these receptors reacted specifically to THC, and were found primarily found in regions of the brain responsible for mental and physiological processes such as memory, high cognition, emotion, and motor coordination.

Few years later, in 1993, the second cannabinoid receptor was found as part of the immune and central nervous systems. It was then that researchers started to realize

that they may have been onto something, but these receptors were only found in rodents, so what is the big deal right?

Fast forward to 1995, researchers discovered that these receptors, now officially referred to as the CB1 receptor and CB2 receptor, were found not only in rats, but within thousands of other species, including humans.

Thanks to advancements in technology and knowledge and tons of clinical trials, researchers were able to reverse engineer what they'd discovered, trace back through the metabolic pathways of various cannabinoids, and uncover an entirely unknown signaling system between the CB1 and CB2 receptors in our bodies and receptors found in Cannabis compounds, which they called "endocannabinoids."

Due to the role of endocannabinoids in this system, the system was officially named the Endocannabinoid System (ECS).

As researchers learned more about the ECS, they discovered that it was a vital component in maintaining the body's homeostasis, which is the ideal balance between interdependent elements in the body.

To give you an idea on how the ECS helps maintain homeostasis, Let me give you an example. When we become stressed, our mind releases cortisol, which is the compound responsible for how we feel when we are stressed. Cortisol can be helpful when we need to react quickly to a dangerous situation; however too much disrupts the natural balance of our body and mind can result in serious health problems.

When certain endocannabinoids are introduced into the body, it not only helps provide stress relief, it helps manage our perception of stress so that we can look at the situation with a clear mind, and make the best decision.

With all the scientific jargon, this last section may have been a little confusing. So just to clarify... Scientists discovered that there are systems in our bodies that are

solely dependent on their interaction with cannabinoids, and these systems are part of vital functions in our bodies.

Basically, our bodies were designed to work with cannabinoids, and they can even be considered as essential to our overall health and wellness.

With such a discovery, you'd think we would not have to cover this next section... but here we go.

## **CBD OIL**

Cannabidiol is a famous natural remedy used for many prevalent ailments. Better known as CBD, it is one of the 104 chemical compounds known as cannabinoids found in the cannabis or marijuana plant, Cannabis.

Tetrahydrocannabinol (THC) is the essential psychoactive cannabinoid found in cannabis and causes the sensation of getting "high" that is often associated with marijuana. However, unlike THC, CBD is not psychoactive. This quality makes CBD a tempting option for those who are looking for comfort from pain and other symptoms without the mind-altering effects of marijuana or certain pharmaceutical drugs.

CBD oil is made by obtaining CBD from the cannabis plant, then mix it with a carrier oil like coconut or hemp seed oil. It is gaining acceptance in the health and wellness world, with some scientific studies proving it may help treat a variety of ailments like severe pain and anxiety.

Cannabidiol (more commonly known as CBD) has experienced an increase in popularity in recent months, in

part due to its availability in high-street health shops. Previously seen as an option only for the seriously ill, CBD oil is gaining momentum among wellness fans, with its promise of being able to provide comfort from everything from pain to depression and anxiety. But what exactly is it and are there any associated side effects?

Is CBD the same as cannabis?

CBD is one of 104 chemical compounds, known as cannabinoids, that can be found in the cannabis plant. It is a naturally occurring substance, which can be extracted and diluted with a carrier oil – often hemp seed or coconut – to generate CBD oil.

## **Benefits and Uses of CBD Oil**

A finding is revealing that CBD has a huge potential in the medical market. It eases symptoms of anxiety, diminishes pain and inflammation, helps prevent seizures, and many more. Because it's a natural extract, there are few, if any, side effects at all. The extract works with the body's

endocannabinoid system, which is the system's means of regulating processes, like pain, mood, appetite, and memory. CBD works with the natural system rather than being an unnatural element, so the body doesn't try to reject it. This is why it has dominant medical benefits.

While many types of research done into the effects of CBD oil has been based on animal studies and anecdotal evidence, some much clear benefits have been highlighted.

Here are seven health benefits of CBD oil that are backed by scientific evidence.

### **1. Can Relieve Pain**

Recently, scientists have discovered that certain parts of marijuana, including CBD, are responsible for its pain-relieving effects. The human body contains a specific system called the endocannabinoid system (ECS), which is involved in regulating a variety of functions including sleep, appetite, pain and immune system response.

The body produces endocannabinoids, which are neurotransmitters that bind to cannabinoid receptors in your nervous system.

Studies have shown that CBD may help reduce severe pain by impacting endocannabinoid receptor activity, subdue inflammation and interacting with neurotransmitters.

For instance, one study in rats found that CBD injections subdue pain response to surgical incision, while another rat study found that oral CBD treatment undoubtedly reduced sciatic nerve pain and inflammation.

Many human studies have found that a combination of CBD and THC is effective in treating pain related to multiple sclerosis and arthritis. An oral spray known as Sativex, which is a combination of THC and CBD, is approved in several countries to treat pain related to multiple sclerosis.

In a study of 47 individuals with multiple sclerosis, those treated with Sativex for one month accomplished an

impressive improvement in pain, walking and muscle spasms, compared to the placebo group.

Another study found that Sativex undoubtedly improved pain during movement, pain at rest and sleep quality in 58 people with rheumatoid arthritis.

## **2. Could Reduce Anxiety and Depression**

Anxiety and depression are prevailing mental health disorders that can have devastating impacts on health and well-being. According to the World Health Organization, depression is the single most contributors to disability worldwide, while anxiety disorders are placed sixth in position.

Anxiety and depression are often treated with pharmaceutical drugs, which can cause a number of side effects including drowsiness, agitation, insomnia, sexual dysfunction, and headache. Also, medications like benzodiazepines can be addictive and may lead to substance abuse. CBD oil has shown promise as healing for

both depression and anxiety, leading many who live with these disorders to become interested in this natural approach.

In one study, 24 people with a social anxiety disorder were given either 600 mg of CBD or a placebo before a public speaking test. The group that received the CBD had automatically less anxiety, cognitive impairment, and discomfort in their speech performance, as opposed to the placebo group.

CBD oil has even been used to safely treat insomnia and anxiety in children with post-traumatic stress disorder. CBD has also shown antidepressant-like effects in many animal studies.

These qualities are associated with CBD's ability to act on the brain's receptors for serotonin, a neurotransmitter that regulates mood and social behavior.

### 3. Can Alleviate Cancer-Related Symptoms

CBD may help subdue symptoms related to cancer and side effects related to cancer treatment, like nausea, vomiting, and pain. One study looked at the impact of CBD and THC in 177 people with cancer-related pain who did not experience relief from pain medication.

Those treated with an extract containing both compounds experienced a rapid reduction in pain compared to those who received only THC extract.

CBD may also help subdue chemotherapy-induced nausea and vomiting, which are among the most common chemotherapy-related side effects for those with cancer. Though there are drugs that help with these distressing symptoms, they are most time ineffective, leading some people to look for alternatives.

A study of 16 people undergoing chemotherapy found that a one-to-one combination of CBD and THC administered via mouth spray reduced chemotherapy-related nausea and vomiting better than standard treatment alone. Some test-tube and animal studies have even shown that CBD

may have anticancer properties. For instance, one test-tube study found that concentrated CBD induced cell death in human breast cancer cells.

Another finding showed that CBD inhibited the progress of aggressive breast cancer cells in mice. However, these are test-tube and animal studies, so they can only predict what might work in people. More studies in humans are necessary before conclusions can be made.

#### **4. May Reduce Acne**

Acne is a rampant skin condition that affects more than 9% of the population. It is thought to be caused by a number of factors, including genetics, bacteria, underlying inflammation and the overproduction of sebum, an oily secretion made by sebaceous glands in the skin. Findings from recent scientific studies showed CBD oil may help treat acne due to its anti-inflammatory properties and ability to reduce sebum production.

One test-tube study showed that CBD oil prevented sebaceous gland cells from secreting excessive sebum,

exerted anti-inflammatory actions and stopped the activation of "pro-acne" agents like inflammatory cytokines.

Another finding concluded that CBD may be an efficient and safe way to treat acne; thanks in part to its remarkable anti-inflammatory properties. Though these results are encouraging, human studies exploring the effects of CBD on acne are needed.

## **5. Might Have Neuroprotective Properties**

Researchers believe that CBD's ability to act on the endocannabinoid system and other brain indicating systems may provide benefits for those with neurological disorders.

One of the studies uses for CBD is in treating neurological disorders like epilepsy and multiple sclerosis. Though research in this area is still new, many studies have shown promising results. Sativex, an oral spray consisting of CBD and THC, has been proven to be a safe and effective way

to subdue muscle spasticity in people with multiple sclerosis.

One study showed that Sativex reduced spasms in 75% of 276 people with multiple sclerosis who were experiencing muscle spasticity that was resistant to medications. Another study administered 214 people with severe epilepsy 0.9–2.3 grams of CBD oil per pound (2–5 g/kg) of body weight. Their seizures subdued by a median of 36.5% (27).

However, it is worthy to note that some people in both these studies experienced detrimental reactions associated with CBD treatment, such as convulsions, fever, and diarrhea. CBD has also been researched for its potential effectiveness in treating many other neurological diseases.

For example, many studies have shown that treatment with CBD improved quality of life and sleep quality for people with Parkinson's disease.

More also, animal and test-tube studies have shown that CBD may decrease inflammation and help prevent the neurodegeneration connected with Alzheimer's disease. In one long-term study, researchers administered CBD to mice genetically predisposed to Alzheimer's disease, finding that it helped prevent cognitive decline.

## **6. Could Benefit Heart Health**

Recent research has associated CBD with several benefits for the heart and circulatory system, including the ability to lower high blood pressure. High blood pressure is related to higher risks of a number of health conditions, including stroke, heart attack, and metabolic syndrome. Studies show that CBD may be a natural and effective remedy for high blood pressure.

One recent study treated 10 healthy men with one dose of 600 mg of CBD oil and found it reduced resting blood pressure, compared to a placebo. The same study also gave the men stress tests that ordinarily increase blood pressure. Interestingly, the single dose of CBD led the men

to experience a smaller blood pressure progress than normal in response to these tests. Researchers have suggested that the stress- and anxiety-reducing properties of CBD are important for its ability to help lower blood pressure.

Additionally, several animal studies have shown that CBD may help reduce the inflammation and cell death related to heart disease due to its dominant antioxidant and stress-reducing properties. For example, one study found that treatment with CBD reduced oxidative stress and stopped heart damage in diabetic mice with heart disease.

### **7. Several Other Potential Benefits**

CBD has been observed for its role in treating a number of health issues other than those mentioned above. Though more studies are needed, CBD is believed to provide the following health benefits:

Antipsychotic effects: Research shows that CBD may help people with schizophrenia and other mental disorders by reducing psychotic symptoms.

Substance abuse treatment: CBD has been shown to alter circuits in the brain related to drug addiction. In rats, CBD has been shown to reduce morphine reliance and heroin-seeking behavior.

Anti-tumor effects: In test-tube and animal studies, CBD has shown anti-tumor effects. In animals, it has been demonstrated to prevent the spread of breast, prostate, brain, colon and lung cancer.

Diabetes prevention: In diabetic mice, treatment with CBD subdued the incidence of diabetes by 56% and greatly reduced inflammation.

## **EXTRACTING CBD OIL**

Cannabidiol (CBD) is a normally occurring cannabinoid found in the cannabis plant. Because CBD has so many health benefits, the average user needs a regulated form of the product which can be tested, measured, and taken without the 'high' effects connected with THC use. This is where extraction comes in.

The first level to creating any of the CBD products available on the market today is to create an oil extract. This CBD oil consist CBD and other cannabinoids from the cannabis plant. This oil can be derived from cannabis plants including marijuana and hemp.

In this book, I ex-rayed the various methods of extraction used to make CBD oil. Knowing these methods is essential because the resulting oils are not all the same. As a user, you should be enlightened on the best CBD extraction methods available when shopping for any CBD product.

Today, hemp is the primary source of CBD oil distillation. Many CBD companies source their hemp from Europe and the United States. In the USA, the 2014 Farm Bill avail the

power to make CBD grow laws in the custody of the states. A number of states dived at the chance and have allowed hemp farming within their territories. This 'industrial hemp' is a form of cannabis which consist no more than 0.3% THC by dry weight.

When extracting CBD oil, the quality of a hemp source is extremely essential. At present, hemp is not a USDA certified organic product. That being said, there are growers out there complying with the same standards. When sourcing a CBD product, you should be looking for high-grade oil made from non-GMO, pesticide-free, industrial hemp that is evaluated for contamination.

You will also want to be certain that your oil is being extracted from the whole hemp plant, not just the seeds and stalks. The seeds and stalks of the plant contain minimal quantity of cannabinoids and are not sufficient for use when creating CBD oil.

Knowing the hemp source for your CBD products is just the first step in choosing the right CBD product. Next, we are

going to discuss the various processes used to extract oil from the plant material.

The following methods are all commonly used to create the CBD oil extracts found on the market and in various products today:

### **Supercritical CO2 Extraction**

CO2 extraction is the best method used to create CBD oil. The 'supercritical' or 'subcritical' extraction method puts carbon dioxide under high pressure while maintaining a low temperature. The gas is transformed into a liquid due to the pressure and then passed through the plant material with up to a 90% extraction efficiency. The resulting extract is a highly concentrated, totally pure oil extract.

This process requires expensive equipment and experienced operators. Because of this, the resulting oil is often higher priced for the end consumer, but of a higher quality. A supercritical extracted oil will be an amber color

similar to honey in appearance. If you're searching for a CBD product, we always recommend something that began as a CO2 extracted oil.

## **Ethanol Extraction**

Before the rise of popularity of CBD oil use, a Canadian man named Rick Simpson extracted an oil from marijuana to heal his own skin cancer. After proving to himself the benefits of 'Rick Simpson Oil' or RSO, he set out to help others. This extraction method uses an alcohol solvent - most commonly ethanol.

Ethanol is 'Generally Regarded as Safe (GRAS)' by the FDA. It is commonly used as a food preservative and additive found in many products at the grocery store. Using ethanol as a solvent is more efficient than CO2 extraction, but comes with some downsides.

Ethanol is a polar solvent which means it will mix with water and dissolve water-soluble molecules. Chlorophyll is one of the compounds that ethanol will co-extract along

with the cannabinoid filled oil. The result is a dark colored oil with a bitter and grassy flavor. The chlorophyll can be removed from the oil using a filtering method, but the process also removes some of the cannabinoids resulting in a lower quality CBD oil product.

The result is safe to use oil that is a lower quality than a CO2 extracted oil.

## **Hydrocarbon Extraction**

This early extraction method was created using a light hydrocarbon solvent like to extract cannabis oil. Commonly butane, pentane, propane, hexane, isopropyl alcohol or acetone are used as solvents. These hydrocarbons have a low boiling point and can be easily used to extract CBD oil.

This cheap and easy method of extraction comes with a variety of issues that make it non-ideal. The resulting oil usually contains a lower concentration of terpenes and cannabinoids like CBD and a higher concentration of THC.

There is also unsafe residue that can remain that may interfere with immune function.

This extraction method proved to be both dangerous and inefficient. This method of extraction is rarely used by commercial CBD companies today.

## **Lipid Extraction**

One of the lesser used extraction methods is called lipid extraction. This method uses the fats, or “lipids”, to absorb and encapsulate the hemp-produced compounds. Often organic coconut oil is used in this extraction process. Lipid extraction does not require the use of any harsh solvents or CO<sub>2</sub>.

## **Additional CBD Extract Processing**

After a CBD extract is created, there are some additional steps that are performed to get the product ready for consumption.

## Activating via Decarboxylation

The naturally occurring cannabinoids found on the cannabis plant come in an acid form. For example, the following common acid forms of cannabinoids found in CBD products are:

- CBDA (Cannabidiolic acid)
- THCA (Tetrahydrocannabinolic acid)
- CBGA (Cannabigerolic acid)

When a low temperature method like supercritical CO<sub>2</sub> extraction is used, the original acid forms of the cannabinoids is preserved. In order to activate these cannabinoids and removed the acid molecule, the CBD extract undergoes a process called decarboxylation.

Though this process sounds fancy, it is simply the heating of an extract. Through this heating process, the acid molecule is removed and CBDA change to CBD, THCA changes to THC and so on. The result is the extract becomes what the industry refers to as 'activated'.

These molecules interact with the body differently than the 'activated' or non-acid forms of these same substances. For example, THCA is non-psychoactive, while THC is psychoactive. Limited research and anecdotal user experiences point to these raw cannabinoid forms providing some unique health benefits. This is driving some companies to include the acid forms of these cannabinoids in addition to the activated non-acid forms.

### **Purifying via Winterization**

When an extract is created from cannabis, there are a wide range of fatty acids, plant materials, chlorophyll, cannabinoids, and terpenoids contained in the extract. There is an optional process called winterization which works to further purify the extract.

The process of winterizing consists of soaking the CBD extract in alcohol and freezing it in order to separate the waxes, lipids, and residual solvents. The end result is a more concentrated extract in terms of cannabinoids.

This process is not always desired because through this process some of the terpenes are also removed from the extract. This can have a negative outcome on the entourage effect.

## **GENERAL DOSAGE FOR CBD OIL**

When determining CBD dosage it is important to understand the dosage depends on what you want to achieve and your personal preferences. Each person will experience different effects. CBD is similar to a multivitamin. It takes time to build up within the body and produce benefits.

While you might not notice an immediate effect while taking CBD, over time you should begin to detect more balance, calm, and peace of mind in your life.

Some people may notice a more extreme difference than others. Imagine someone who is deficient in vitamin C. Taking a vitamin C supplement would result in a radical change in their health.

CBD is similar to a vitamin in that it helps to support and maintain overall health. If your endocannabinoid system is depleted or imbalanced, taking CBD could produce tremendous changes more quickly than someone who has a healthy endocannabinoid tone.

If you are already healthy, you may not notice an immediate effect. While your friends or family may start taking high doses of CBD and notice instant changes, you may not need the same amount.

## **CBD Oil Dosage Guidelines**

The proper dosage all depends on your health and your body. Experiment to find out what works best for you.

Some patients effectively use tiny amounts of cannabis while others use incredibly high doses. I have seen adult patients achieve therapeutic effects at 1 mg of total cannabinoids daily, while others consume over 2000 mg daily without adverse effects.

### **Different Schedules of CBD Consumptions**

There are three main CBD oil dosage schedules that people use to take CBD:

1. Once or Twice Per Day
2. Every 2-3 Hours

### 3. Hourly Microdosing

If you are dosing CBD oil, we recommend starting with one-quarter drop daily during the first week, moving up to one half a dropper during the second week, three-quarters of a dropper during the third week, and a full dropper on the fourth week.

### **CBD Dosage Week One Guide**

If you are using a balm, it is suggested to apply a healthy amount to the area where you are experiencing soreness, dryness, or stiffness every six hours. You should experiment with different strengths of CBD balm. Start low and add more until you feel you've hit a sweet spot.

If you are vaping, you can keep some in your vaporizer and use it throughout the day. When starting off, try taking 3 inhales, then waiting 30 minutes to see if you notice an effect.

Gummies and capsules produce the longest effect. You can start by taking one gummy every 12 hours and then

increase if you would like a more pronounced result. Like all Hempure CBD products, our gummies do not contain THC, so you do not need to worry about feeling any psychoactive effects. Capsules can be used on a similar schedule.

### **Key Points To Remember When Dosing CBD**

There are a few key points to remember when determining the proper amount of CBD to take:

1. Experiment when you first try CBD. Start slow and work your way up.
2. There is not one “right amount” to take. Each person will react differently to different dosages.
3. Use our chart as a starting guide until you figure out which amount works best for you.

## **General Side Effects of CBD Oil**

Though CBD is typically well endured and considered safe, it may cause negative reactions in some people. Side effects noted in studies, including:

- Changes in appetite
- Changes in mood
- Diarrhea
- Dizziness
- Drowsiness
- Dry mouth
- Nausea
- Vomiting

## **Safety Concerns**

CBD oil may interact with several drugs, including some types of anti-epileptic medications. In a study reviewed for this book, short-term exposure to CBD was seen to

increase the permeability of the placental barrier, conceivably placing the fetus at risk from certain substances.

If you are contemplating trying CBD oil, it is imperative to discuss potential side effects and negative reactions with your physician. In one study, for example, children with refractory epilepsy treated with CBD experienced a bothersome of seizures, sleepiness, digestive discomfort, and irritability.

### **Is CBD Legal to Use?**

So this is obviously a very important question for new users, but there is not exactly a one-size-fits-all answer.

In one state CBD may be completely legal, while being illegal in another. Some US States even have different laws if the CBD is derived from hemp oil or medical marijuana.

With that being said, there is not a general answer to this question “Is it Legal to Use CBD?”.

At the federal level, and in most states, hemp-derived CBD is 100% legal, which is great news, as most CBD products

are hemp-derived. Laws around marijuana-derived CBD are becoming less strict, but whether it is hemp-derived or marijuana-derived strongly advise doing some research on your state's CBD laws.

Over the last 50 years, governments of the world prosecuted Cannabis for its psychoactive effects and deemed it as a "gateway drug." Because of this, the world formed a negative perspective about Cannabis and anything related to it.

Now, thankfully, the general opinion is starting to shift in a positive direction, but there has still been a lasting impact on society, including our governing laws.

Every country has its own laws governing Cannabis and its compounds. In America, the Food and Drug Administration (FDA) has deemed CBD as federally illegal; while, at the state level, each state has its own laws on the matter, which is pretty confusing.

## **THE BOTTOM LINE**

CBD oil has been studied for its potential role in treating many common health issues, including Anxiety, Depression, Erectile Dysfunction as well as Premature Ejaculation. For those with cancers, it may even provide a natural remedy for pain and symptom relief. Studies on the potential health importance of CBD oil is ongoing, so new therapeutic uses for this natural remedy are sure to be discovered. Though there is much to be learned about the effectiveness and safety of CBD, results from recent studies shows that CBD may provide a safe, powerful natural remedy for many health issues.

As you can see from the list of available studies involving CBD oil for common ailments, what we are lacking as at now are multi-phase clinical experiments. While studies thus far have been amazingly promising, no real advancement will be made until a cannabis-based medication is approved by the Regulatory Authorities. While positive research on cultured rat cells is an amazing indication of the probe of CBD as a therapy, it will not

make much disparity in terms of the increasing availability of the therapy.

However, the great news for Anxiety, Depression, Alzheimer's and Premature Ejaculation patients all over the world (as well as patients experiencing other cannabis-treatable ailments), is the fact that hemp (which is a species of Cannabis that contains minor amounts of the psychoactive substance THC), is legal on a federal level in the US and Canada. As such, over the last several years many cannabis industry producers have been extracting legal CBD oils that are available to U.S. residents in all 50 states. While these oils do not get you high at all, they consist many of the medically-beneficial elements (including CBD) that have been found in the studies to aid in relief of not only Alzheimer's disease, but many other ailments as well (including chronic pain, depression, anxiety, arthritis, and insomnia).

Many of these oils are available for sale online and can be shipped directly to your home, but be careful – given the present lack of regulation in the cannabis industry, there

are many producers out there who are selling completely fake tinctures and passing them off as "CBD oils." While I do not like to out-and-out recommend any one particular product or brand in this book, you may want to check the review for a list of some of the best-reviewed oils currently on the market.

While we may have to wait for some time until CBD oil for common ailments becomes a widespread treatment, there are many viable options available right now that are easy, affordable, and 100% legal.