

CBDITS 4 ME



CBD WHAT YOU WANT TO KNOW!

The following is, in short, a brief overview of CBD. You've heard chatter and talk about this wonderful compound, and now you want to know more!

There are hundreds of questions about CBD online and, as you can guess, there are hundreds of different answers.

Don't get me wrong, there are a lot of good posts out there but, it seems there are more bad misinformed posts.

So, in the next few minutes you'll get the basics on why this compound is so awesome, how it works, which conditions is it good for and what's the best approach to consuming it.

What is CBD and what does it do?

CBD (or cannabidiol) is a naturally occurring, organic compound located in the resin of Cannabis Sativa species, both male and female.

It was discovered in 1963 and is present in all types of cannabis in different amounts. It's generally considered one of the most important phytocannabinoids in existence, for its wide range of medical benefits that we'll get to in a minute.

CBD is one of 113 cannabinoids in Cannabis Sativa and is most abundant in male plants (or commonly known as hemp), however it can also be found in female plants in significant amounts.

CBD is not psychoactive and as such is the only cannabinoid that produces no mind altering effects.

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Simply put, CBD doesn't get you high.

As Cannabis Sativa has been used in medicine for several millennia, this substance was naturally one of the main topics of modern cannabis research (starting from the mid 19th century).

Here's what cannabidiol does:

- Reduces neuropathic pain
- Relieves spasms and inflammation
- Reduces seizure frequency in epilepsy patients
- Relieves anxiety and insomnia caused by PTSD
- Slows down the advancement of MS
- Acts as an antipsychotic
- Relieves anxiety
- Aids with sleep
- And so much more, the list is endless

We live in the age of freedom of speech (mostly accessible through online forums) so we also have access to a bunch of real life stories that prove the different positive effects of CBD on human and animal health. But more on that later.

Which conditions is CBD best for?

CBD interacts with the endocannabinoid system and the endocannabinoid system is implicated in pretty much all diseases. So theoretically, if one modulates the endocannabinoid system as CBD does, you could be affecting many different conditions.

I think where CBD has shown great promise thus far is, obviously, certain neurological conditions like epilepsy but, in the future there's a great deal of promise in the area of metabolic disorders — diabetes, obesity and so forth.

Given the great extent to which these conditions are problematic now and there's really an epidemic situation with respect to metabolic disorders and diabetes, that would be a great emphasis on CBD in the future.

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Is CBD legal or not?

CBD, as a compound, is fully legal around the world as it is not psychoactive in nature. THC is the one that's illegal in some countries and states.

CBD products, however, are an entirely different thing.

United States: CBD products with less than 0.3% THC are fully legal
CBD products that contain more than 0.3% THC are illegal in the US and vice versa. Hemp CBD products that contain less than 0.3% THC can be freely sold just like any other plant product.

This was first made possible through Barack Obama's 2014 Agricultural Act, which separates legal and illegal cannabis plants based on their THC levels.

As you can imagine, anything with THC levels of 0.3% and beyond is considered medical marijuana and is subject to state laws regarding medical and recreational cannabis.

How do we know we're getting a high quality CBD product?

That's actually very difficult to know for certain. It's easy to access CBD oils on the Internet, derived from industrial hemp but the quality of these products is questionable sometimes.

There was a recent survey published in the Journal of the American Medical Association (of all places) which indicated that about 70% of the CBD products tested, and they tested about 85 randomly ordered products, have shown to be mislabeled, that the labels did not correspond with what was actually in the product.

Now, the good news is that 30% were well labeled. But even if it's well labeled there's a few things that people should look for:

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1. It's better to go for a CBD product that's derived from the United States — Colorado, Kentucky, Oregon — one of these places that they're growing hemp (they're actually growing marijuana that they're harvesting early) or they're growing a hybrid between hemp and marijuana. But there's enough CBD in the plant to make it worthwhile to extract from, but still under 0,3% THC, which is the limit above which it's no longer considered hemp, below which it is.
 2. Avoid product makers claiming that they derived their product from seed, or stem of the plant. You can't get CBD from the seed or the fiber to any appreciable degree at all.
 3. Avoid products that contain additives. That's propylene glycol, ethylene glycol — these are potentially very harmful. They shouldn't be included in any product that's meant to be healthy.
 4. Avoid the products being imported from Europe, because the hemp plants they're growing in Europe are not grown for CBD, they're grown for fiber and for seed. It's better probably to get products that originated in Colorado or Kentucky...
- ...And I don't say that incidentally, it's just that they're growing better plants. In Europe they're growing plants that are not meant for CBD. They grow them for their initial purpose and then the leftovers, the biomass, the parts of the plant they don't use to get the seed or fiber, then they extract from that. So it's sort of the leftovers they use and it's just not a very good source. It's better to extract CBD from high resin plants, or a plant that has a lot of cannabinoids and a lot of CBD in it, because then you need less plants to extract from.

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5. Try to buy from companies that grow organically or grow in the United States, since the federal government does not apply there.

That being said, it's possible to get good, clean products. The industry is still somewhat in its infancy and, unless people have access to analytical labs where they can test these products, in a lot of ways it's still rolling the dice as you don't quite know.

But look for products coming out of Colorado or Kentucky, with a full spectrum. Avoid isolates, don't get just CBD alone, it should be part of a spectrum of plant extract.

Sooner or later, these products will be better regulated and that'll give consumers a lot more confidence.

How CBD works

Understanding how CBD works in our body is necessary for understanding how it can help with various medical conditions.

Cannabidiol is a pleiotropic, which means it produces healing effects through several molecular passages.

CBD studies found that it has many pharmacological actions, most importantly anxiolytic, antipsychotic, antiemetic and anti-inflammatory properties.

"At lower doses, it has physiological effects that promote and maintain health, including antioxidative, anti-inflammatory, and neuroprotection effects. For instance, CBD is more effective than vitamin C and E as a neuroprotective antioxidant and can ameliorate skin conditions such as acne."

The complete science behind this is extremely complicated for us regular humans so I'll try to simplify everything even more for you.

CBD produces effects firstly by inhibiting an enzyme (called FAAH) that degrades anandamide (a cannabinoid that our body produces, also known as the "bliss" molecule) and in doing so, it increases its healing effects. Anandamide naturally has a very short life span.

Now, anandamide is a neurotransmitter that binds to CB1 and CB2 receptors (part of our endocannabinoid system) and boosting its levels produces a bunch of positive effects on the body — regulates pain perception (by desensitizing TRPV1 receptors), increases appetite, kills Besides being responsible for increasing serotonin levels, 5-HT1A receptors also play a role in the secretion of dopamine (which is why CBD may be helpful to people with schizophrenia and Alzheimer's), endorphin (which also makes you feel awesome) and oxytocin (a hormone that produces anti-aggressive and calming effects and is responsible for the feeling of emotional bonding).

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Cannabidiol also blocks GPR55 receptor signaling, slowing down the growth of certain cancers (CBD has shown to be helpful in treating lung and colon cancer). GPR55 is a receptor that is located in the brain, spleen, adrenals and certain areas of gastrointestinal tract and is involved in creating cancer cells, influencing their migratory behavior, and induces unwanted inflammation (for example, Chron's Disease patients have higher concentrations of this receptor).

Studies have shown that inhibiting GPR55 signaling produces antitumor effects and may help prevent metastasis in certain cancers.

Bottom line, CBD:

- Helps you keep anandamide in your system longer, making you feel less anxious and depressed, and relieving pain.
- Activates 5-HT1A receptors, which help you secrete more "feel good" hormones, like endorphin, serotonin and oxytocin.
- Blocks GPR55 signaling, which slows down the growth and migration of certain cancers.

How long does it take for CBD to take effect?

As everyone is different, time is, of course, subjective, and requires experimentation with different dosages at different times of the day.

In general start low and slow and work your way up, until desired results are achieved. CBD-rich oil is the most widespread CBD product out there and as it's applied under the tongue for fast absorption.

CBD edibles can take effect in anything between 1-2 hours and topicals usually take 5-15 minutes.

Take note that there is no standard here and that almost everything related to cannabis dosing is highly subjective.

Proper CBD dosage

Science says that CBD is well tolerated in humans in doses up to 1500 mg, so anything less than that and you're good to go.

Now, the trick to getting the CBD dosage right is to start with a low (minimum) dose and gradually increase the dosage until you feel better.

Only then should you keep it at that level for up to 90 days or longer.

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A good starting CBD dose for most people would be a total of 12 mg of CBD a day, applied in 3 times.

For people who suffer from medium to high severity of symptoms, this starting dosage can go up to 22-30 mg of CBD a day.

For epilepsy patients, 3 mg/kg a day for 30 days is a good starting dose and the one used in several CBD positive studies.

However, there is a big obstacle in CBD dosing and that is the fact that patients cannot figure out how to calculate their CBD dosage and how many drops to take.

When you buy a CBD product, for example oil, its producer should provide information on how much CBD is in every milliliter (gram). Then you can calculate how much CBD is in every drop (1 ml=20 drops) and figure out your dosing.

Let me illustrate this with an example:

Let's say that you just bought a bottle of CBD oil.

A 45 ml bottle and the product label claims that the CBD content inside it is 26 mg/ml.

You're a first time user who suffers from mild anxiety, so you decide to start your therapy with 12 mg of CBD per day.

But how many drops is that?

Well, since there are 20 drops in 1 ml and each ml contains 26 mg of CBD, then 20 drops of your CBD oil give you 26mg of CBD.

If you divide the CBD content per milliliter with 20, you can find out how much CBD is in a single drop — in this case we have $26/20=1.3$. Our fictional oil provides 1.3 ml of CBD per drop.

Remember, you need 12 mg of CBD per day at first, so 9-10 drops of this particular fictional oil per day will help you meet your daily dose.

In this case, your starting therapy would be 3-4 drops of CBD oil, 3 times a day.

What's the optimal CBD dosage for beginners?

That's tricky because ideally what you want to look for is the combination of CBD that your body needs.

The premise is that the synergy between the different compounds potentiates their effects and that's called the Entourage effect.

In the plant itself there are many components that have medicinal value, scientists have looked at each of them individually, analyzed them and interpreted what their value is, but really when you combine all the components together, it creates an ensemble effect.

This means that the therapeutic impact of the whole plant will be

greater than the sum of its parts.

So, in terms of dosing, it's really a matter of two things:

1. It's the ratio of CBD to THC that you're looking for. The more CBD the less THC, the less "high" it will give you, you won't feel like you're stoned and for some people that's not a problem, for other people it is. If you're living in a place where they have a robust medical marijuana program, you can access different choices, different ratios of CBD and THC.

2. There's a really wide range of dosages that seem to be effective.

We're noticing increasingly that very low doses can have a very profound impact. Anywhere from as little as 2,5mg of CBD (which isn't a lot) up to hundreds of milligrams per dose.

Cannabinoids in general, CBD specifically, have a biphasic effect, actually more like a triphasic effect, meaning that low dose will confer a certain effect, a high dose may confer an opposite effect.

A very, very high dose may also confer the very same effect as the low dose, so it's confusing and there hasn't been a lot of studies on human subjects, so we're really learning this as we go along.

I think it's best to start with a low dose: 2,5-5mg of CBD initially (maybe 10mg at the most), depending on how one consumes the product, whether you're smoking it, inhaling it, eating it, taking it as a tincture, rubbing it on your skin.

It helps, particularly if you're a newcomer to cannabis therapeutics, to start with a small dose and increase incrementally.

Wait for a few hours, see what effect it has — if it has no effect, maybe slightly increase the dose and spread out through the day.

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Safety and the side effects of CBD

CBD has been extensively studied both on humans and other mammals alike.

Studies done on humans focused on using oral administration or inhalation, so they correlate pretty well in their reported results with how the general public would use CBD.

Back in 2011, Bergamaschi created a review of 132 CBD studies, analyzing both effects and side effects of this amazing compound.

Here's what the review concluded:

“Several studies suggest that CBD is non-toxic in non-transformed cells and does not induce changes on food intake, does not induce catalepsy, does not affect physiological parameters (heart rate, blood pressure and body temperature), does not affect gastrointestinal transit and does not alter psychomotor or psychological functions. Also, chronic use and high doses up to 1,500 mg/day of CBD are reportedly well tolerated in humans.”

Now that we know that CBD is proven to be a generally safe compound (much safer than its pharmaceutical equivalents) we can take a look at what he found were the biggest and most prominent side effects of CBD. The side effects of CBD have mostly been found in vitro or in animals studies. Studies done on humans did not show any side effects of CBD. In vitro and animal studies found a few issues with CBD, revolving around

alterations of cell viability, reduced fertilization capacity, and inhibition of hepatic drug metabolism and drug transporters.

Studies say that mixing CBD with pharmaceuticals might produce some side effects, as CBD interacts with drug metabolizing enzymes that belong to the cytochrome P450 family.

For folks out there that are not chemistry majors, this means that CBD is metabolized via an enzyme that various drugs inhibit, leading to an increased CBD dose.

Other pharmaceuticals can induce this same enzyme, leaving us with less available CBD.

In the end, most studies recommend consulting your physician before mixing CBD with pharmaceutical drugs.

How safe is CBD and does it interact with pharmaceuticals?

The good news is that CBD really has no negative side effects, it's very safe so one can experiment carefully. One should be communicating to their doctor about what's happening.

CBD does interact with a lot of different pharmaceuticals and if one is taking particularly high doses of CBD as an isolate (single molecule CBD which is sold on the Internet under the false assumption that CBD alone is better than CBD with the other components of the plant) you run into a problem with drug interactions.

The problem with this is that if you're using a CBD isolate, you usually need much higher doses for it to be effective.

We don't see a problem with drug interactions once CBD in low doses is a part of the whole plant remedy.

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CBD products

The realm of CBD is pretty big. There are many companies and a wide variety of different products.

As referred to above choosing a quality company along with quality products is a key essential to achieving maximum benefits,

The compound became a hot topic in 2013, after CNN released a documentary called "Weed", which delved into many benefits of CBD and one of its most prominent strains — Charlotte's Web.

Cannabidiol has been growing in popularity ever since, largely thanks to a plethora of public medical research regarding CBD oil, which only proved its massive benefits for many medical conditions.

In 2016 alone, CBD market in US reached \$688 million, with a predicted 55% annual compound growth rate over the next 5 years. In 2017, CBD sales in Canada went up by over 300% and can only get higher in 2018 with the expected legalization.

CBD is usually administered either orally or through inhalation.

Here's a list popular CBD products right now:

- CBD hemp oils

- CBD hemp powders
- CBD-rich medical marijuana flowers
- CBD capsules
- CBD skin care products
- CBD isolates
- CBD-infused beauty products
- CBD edibles
- CBD tinctures
- CBD transdermal patches
- CBD body washes

With every passing day, there are more new CBD products on the market, so it's always good to stay on top of industry trends, as you never know which product will be the most convenient for you.

CBD in clinical trials

If you're interested in finding out what medical research has to say on the role of CBD in human health, here's a list of most prominent research findings from full studies.

CBD and THC are neuroprotective antioxidants. (study)

CBD induces anti-inflammatory effects, a possible explanation for this property being its capability of modulating the release of anti-inflammatory or pro-inflammatory mediators. (study)

CBD is an anticonvulsant, 4 of the 8 CBD subjects remained almost free of convulsive crises throughout the experiment and 3 other patients demonstrated partial improvement in their clinical condition. (study)

CBD's anxiolytic properties help relieve schizophrenia symptoms. (study)

CBD, through its combined immunosuppressive and anti-inflammatory actions, has a potent anti-arthritis effect. (study)

CBD causes a selective anxiolytic effect within a limited range of doses.

Cannabidiol alleviates psychotic symptoms of schizophrenia. (study)

The plethora of positive pharmacological effects observed with CBD make this compound a highly attractive therapeutic entity. (study)

Cannabidiol is the most potent inhibitor of cancer cell growth, among

five natural compounds that were tested. (study)

Seven out of the eight epileptics receiving cannabidiol had improvement of their disease state. (study)

CBD may be effective, safe and well tolerated for the treatment of the psychosis in Parkinson's disease. (study)

CBD is the real deal

Cannabidiol is just one of those things that sound too good to be true at first, but once you realize that its benefits are backed up by real medical research you'll see a whole new universe opening up to you and your beloved ones.



