



CBD - What's it all about then? A Guide.

What is CBD?

Cannabidiol (CBD) is one of many chemical compounds found in cannabis.

Although cannabis is more widely known for its psychoactive uses, unlike its counterpart THC, CBD has no psychoactive properties - you could say it offers healing and helping without the high.

Cannabidiol (CBD) works within our endocannabinoid system. We all have an endocannabinoid system, and there are cannabinoid receptors within the brain. The endocannabinoid system is involved in regulating a variety of physiological and cognitive processes including appetite, pain-sensation, mood, and memory.

Studies have shown that increased endocannabinoid signalling within the central nervous system (ie through ingesting it) could have the effect of promoting sleep, decreasing anxiety and managing pain.

Studies are ongoing but it is now generally accepted that CBD is a safe and effective way of dealing with a wide variety of ailments.

What is THC?

Tetrahydrocannabinol (THC) is one of many chemical compounds found in cannabis.

Like Cannabidiol (CBD), THC acts upon the cannabinoid receptors within the brain. Cannabis (and the THC within it) has been used for centuries by many different cultures for many different reasons, whether for its healing properties or just for the psychoactive experience that THC provides.

The first recorded use of cannabis as a medicine was in 2,737 BC by Emperor Shen Neng of China, so the plants abilities to improve health and wellbeing have been known for some time.

What is the endocannabinoid system?

The endocannabinoid system (ECS) is a biological system composed of endocannabinoids, which are endogenous lipid-based retrograde neurotransmitters that bind to cannabinoid receptors, and cannabinoid receptor proteins that are expressed throughout the mammalian central nervous system (including the brain) and peripheral nervous system. The endocannabinoid system is involved in regulating a variety of physiological and cognitive processes including fertility, pregnancy, during pre- and postnatal development, appetite, pain-sensation, mood, and memory, and in mediating the pharmacological effects of cannabis.

The endocannabinoid is concerned with:

- Appetite
- Autonomic nervous system
- Female reproduction
- Immune system
- Memory
- Metabolism
- Sleep
- Stress response
- Thermoregulation



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A brief history of CBD:

CBD was first isolated from the cannabis plant in 1940, but the pioneers who discovered it had no idea what they had stumbled upon. The compound was classified as Toxic at the time as there simply wasn't enough evidence around to prove otherwise. It would be some 20 years later, in 1963, that work was begun to find out more about what cannabidiol really is and how it impacts the body.

Chemist Raphael Mechoulam of Hebrew University, Jerusalem was the first person to do more research and identify the chemical structure of the cannabidiol chemical compound in cannabis. Mechoulam's study sparked further interest amongst researchers, and in 1973 a study team of scientists in Brazil began to see witness potential benefits of cannabidiol for epilepsy patients. This team were able to prove that CBD had the ability to assist with the treatment of convulsions that are caused by epilepsy.

The following year, the work was certified when it was established that cannabidiol showed some of the properties exhibited by already established anxiolytics - medications that inhibit anxiety and are used in the treatment of epilepsy.

Further studies continued, and by the turn of the 20th century, researchers had shown that cannabidiol had the ability to work as a cellular antioxidant and that it also displayed neuroprotective functions beneficial for brain health.

By this stage the benefits of cannabidiol were largely established, but the next big breakthrough came when it was discovered that cannabidiol is a powerful substance for treating many kinds of autoimmune disease (conditions arising from an abnormal immune response to a normal body part). Since then it has also been noted that cannabidiol is not just effective in treating autoimmune diseases, but also other diseases that are not classed as autoimmune, such as cancer and cardiovascular disease.

The body of research into CBD is continually growing, and new studies into the effectiveness of cannabidiols are ongoing. There is a wealth of information on the web and in science journals, so we do recommend that you do your own research to form your own opinion as to whether CBD is right for you.

Where does CBD come from?

Cannabidiol (CBD) comes from the cannabis plant, and is extracted from specific types of plants. There are over 100 known chemical compounds that make up cannabis plants, with CBD and THC being just two of them. CBD is the second most abundant of these compounds (after THC), usually making up around 40% of them.

The resin of the cannabis plant contains the highest concentration of desirable cannabinoids. These are then extracted and used to make oils, usually with a base of some form of oil. The purest of these will usually be hemp oils, however coconut oil is a popular alternative.

How do you get CBD from a cannabis plant?

The goal of extracting CBD from a cannabis or hemp plant is to provide a form that can easily be ingested to administer the highest concentration of CBD to the human body.

There are 4 widely used methods to extract CBD from the cannabis plant, these are CO2 extraction, olive oil extraction, dry ice extraction and solvent extraction.

1. Extracting CBD using CO2

The CO2 extraction method is arguably the most complex and most expensive, but also the most effective and efficient. There are two ways to do this, known as 'Subcritical' and 'Supercritical'. A combination of the two is known as 'CO2 Total Extraction'. These methods are explained below.

Supercritical CO2 extraction

Put simply, CO2 extraction uses pressurised carbon dioxide to pull CBD from the plant. At certain temperatures, CO2 acts like a solvent but without any of the dangers. This is done using sophisticated machinery to freeze the CO2 gas and compress it into a 'supercritical' cold liquid state.

At standard pressures and temperatures, CO2 behaves like a gas. As a solid it is known as dry ice. By dropping the temperature below -69 Fahrenheit and increasing the pressure to over 75 lb psi, CO2 can be turned into a liquid. This is the starting point for CO2 extraction.



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With your liquid CO₂, the next step is to increase the temperature and pressure to the point where the liquid becomes 'supercritical' - this means it will show properties of both gas and liquid simultaneously. This supercritical CO₂ is then passed through high-quality cannabis inside an extractor. At this point the CO₂ will pull the essential trichomes and terpene oils out of the plant.

The end product is passed via a separator and broken down to its component parts. The desirable elements including trichomes and terpenes are sent to a collection chamber, while the CO₂ goes through a condenser and returns back to a liquid. Once this is complete the CO₂ can be used all over again and you have the basis of your CBD.

Subcritical CO₂ extraction

The principles of subcritical CO₂ extraction are the same, but they use lower temperatures, lower pressures and take longer. They also offer a smaller yield at the end of the process.

Total CO₂ Extraction

Some companies will use a subcritical extraction method on the already extracted product after a supercritical extraction, combining these two oils into one product. This method is known as CO₂ Total Extraction.

CO₂ extraction - summary:

Extracting CBD using CO₂ is a safe and free from contaminants. It is an effective way of removing components (this is how caffeine is extracted from coffee to create decaf...!). It is also the purest method of extraction.

On the negative side, CO₂ extraction is expensive and technically complex - not something you can do at home without spending north of £30,000!

2. Extracting CBD using Olive Oil

This is a very common method of extracting CBD, as it is easier and more affordable than using CO₂, although the results are not as comprehensive or as pure.

To extract CBD using olive oil, the plant must be heated to 248

degrees Fahrenheit for 60 minutes or 248 degrees Fahrenheit for 30 minutes. Once this is done, the olive oil is added and both are heated to 212 degrees Fahrenheit for at least an hour. The end result will be an olive oil CBD composite.

Olive Oil extraction - summary:

Compared to CO₂ extraction, this method is safe and relatively easy and can be done at home.

On the negative side, CO₂ extraction will give you a much more perishable product than CO₂ extraction, so it must be stored effectively straight away. It also gives a lower yield, so is not used to produce commercial CBD as it is not financially viable for large scale production of high yield CBD.

3. Extracting CBD using Dry Ice

This method is probably the most rudimentary for extracting CBD. It relies on the dry ice freezing the trichome resins so they can quite simply be shaken from the plant and filtered through mesh bags. It can be done at home, but results will vary depending on the user!

It's a simple, clean and easy way of extracting your CBD, that offers a good yield.

On the negative side, the quality of your CBD will vary depending on your technique, and it means getting hold of dry ice. Not always easy.

4. Extracting CBD using solvents

Another simple way of extracting CBD from cannabis, this is simply adding the liquid (usually butane, alcohol or ethanol) to the plant material to let it strip away the cannabinoids. It'll also take away the flavour and some of the colourings. By using high grade alcohol you may produce good quality oil for vaping cartridges, but...

On the negative side this means working with highly flammable materials, and stripping the plant using solvents this way will lead to the extraction of chlorophyll and other potentially harmful contaminants from the plant. The end result is comprehensive but less pure than the other methods discussed.



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EXTRACTING CBD - CONCLUSION:

We've tried to give you a good breakdown of the methods for CBD extraction. As you can see from the roundup, the safest and most effective way of extracting pure CBD is using CO₂, however this is an expensive and complex method not necessarily for the home user.

The olive oil and dry ice methods are both suitable for home users, but both have their drawbacks - mostly inconsistency of the end result.

Solvent extraction may work for some products, but the likely side effects and negative impact of the solvents and contaminants on your health mean it's not recommended as a long term solution for sourcing your CBD.

Do you know of a better way to extract CBD? We'd love to hear your thoughts.

What is a full spectrum extract and what is 'entourage effect'?

A full spectrum extract is an extract taken from the whole plant, making a natural extract as close to nature as possible.

This is the opposite to an Isolate - isolates usually involve the use of chemicals to isolate the CBD, often resulting in a single molecule compound. In its purest form, a CBD isolate is likely to be a fine crystalline white powder comprised of 99% pure cannabidiol, stripped of all other cannabis compounds found in the plant.

Conversely, a full spectrum extract contains flavonoids, terpenes and essential oils, a combination that doesn't and can't exist in a chemically produced isolate. These 'bonus' compounds that exist alongside the CBD contribute to what's known as the entourage effect. This simply means that as well as the core CBD you also get a helping of CbG and CBDa as well as flavonoids, terpenes and essential oils. These are known to assist the effectiveness of the CBD in doing its job.

How much CBD is in my CBD?

Looking at the current market for CBD as food supplements, there is a dizzying array of products on offer. Not only is there a worrying scope of claims made for the abilities of CBD, but there is great confusion thanks to the different ways that CBD strength is calculated and displayed on packaging.

We have always advocated doing your own research as to the medicinal properties of CBD, but we believe it is the duty of the supplier to give clear and concise information regarding the strength of the CBD within.

30mg in a 30ml bottle?!

What is the difference between a milligram and a milliliter?

1 millilitre (ml) is 1/1000th of a litre and is a unit of volume.
1 milligram (mg) is 1/1000th of a gram and is a unit of mass/weight.

In order to fully understand the strength as a liquid, we need to convert the measurement across. The missing piece of information is the density, or concentration of the substance - in this case CBD.

As the density of every substance is different, it isn't always straight forward to translate a milligram per millilitre figure to a concentration as a percentage, however here at MyPureCBD we always present this information on our packaging.



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How does CBD work?

Cannabidiol (CBD) works with the two known cannabinoid receptors in our bodies, known as CB1 and CB2.

CB1 receptors

Both CB1 and CB2 receptors are found within the central nervous system, largely within the brain, however CB2 receptors are not as abundant as CB1. These receptors inhabit nerve cells in the spinal cord and brain, as well as some of the body's peripheral organs and tissues. It is now known that CB1 receptors also exist in the urinary tract and gastrointestinal tract.

CB2 receptors

These live within white blood cells, as well as the spleen and tonsils. Although CB1 receptors also inhabit white blood cells, there is a large proportion of CB2 receptors here.

These receptors make up the endocannabinoid system, which as we have covered, is involved in Appetite, Autonomic nervous system, Female reproduction, Immune system, Memory, Metabolism, Sleep, Stress response, and Thermoregulation.

What do people use CBD for?

Pain Management:

Studied more than any other area CBD and cannabinoids in general, the endocannabinoid Palmitoylethanolamide has been evaluated for its pain management actions in a great variety of pain indications, and found to be safe and effective. These studies have shown that cannabinoids are a safe and effective source of pain management and an effective therapeutic analgesic.

(https://en.wikipedia.org/wiki/Endocannabinoid_system#cite_note-63)

Anxiety:

Early studies within mice have shown that endocannabinoids can function both as neuromodulators and immunomodulators in the immune system. This means that the endocannabinoid system plays a vital role in regulating anxiety-dependent behaviour, helping to regulate an anxiogenic-like function by limiting inhibitory transmitter release.

Errr, what does that mean?

That our endocannabinoid system has an influence on the way we react in stressful or high pressure situations, or 'arousals'.

This means that stimulating our endocannabinoid system in the right way can have a calming and clarifying effect by removing some of the fog created by 'excessive arousal', ie excitement or panic.

(https://en.wikipedia.org/wiki/Endocannabinoid_system#cite_note-54)

Immune System:

Evidence from various studies have shown that endocannabinoids may function as both neuromodulators and immunomodulators in the immune system. Here, they seem to serve an autoprotective role to ameliorate muscle spasms, inflammation, and other symptoms of multiple sclerosis and skeletal muscle spasms. Some disorders seem to trigger an upregulation of cannabinoid receptors selectively in cells or tissues related to symptom relief and inhibition of disease progression.

Errr, what does that mean?

That our endocannabinoid system contributes to the management and fightback from our bodies when confronted by certain types of diseases.

This means that stimulating our endocannabinoid system in the right way can have a positive effect on our immune system and our ability to fight diseases.

(https://en.wikipedia.org/wiki/Endocannabinoid_system#cite_note-Pertwee2006-13)



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What dosages are people using to treat various ailments with CBD?

CBD comes in a variety of concentrations and forms, including liquid hemp oil, which paste, oil in capsules, tincture drops, sprays, gummy sweets and even more. Although there is a myriad of products to choose from when it comes to CBD, information on dosage and usage is scant - in the UK CBD is classed as a food supplement, so we must point out that the information outlined below is merely anecdotally collected from a variety of sources, originating in multiple countries, based on real user experience.

It should be viewed as guidance only and we highly recommend performing your own detailed research on what is right for you.

Standard Serving - 25mg CBD twice daily

If you see no improvement, try upping the dosage every 3 or 4 weeks by 25mg.

Common Dosages in America according to anecdotally collected evidence:

Increasing Appetite:
2.5mg of THC with or without 1mg of CBD for 6 weeks

Chronic Pain :
2.5mg to 20.0mg of CBD daily for an ave of 25 days

Epilepsy:
200 to 300mg of CBD daily

Huntington's disease:
10mg of CBD per kg of patients weight for 6 weeks

Sleep Disorders:
40-160 mg of CBD

Multiple Sclerosis Symptoms:
2.5-120mg of CBD

Schizophrenia:
40-1280mg CBD daily

Glaucoma:
Single dose of 20-40mg of CBD

According to CannLabs, the U.S.A's top full-service testing lab for cannabis products, there is no established lethal CBD dose. Consumers should read product inserts carefully and undertake their own research to establish what is right for their individual cases.

Autonomic nervous system:

Some studies have shown that Cannabinoid-mediated inhibition of electric potentials results in a reduction in noradrenaline release from sympathetic nervous system nerves. Other studies have found similar effects in endocannabinoid regulation of intestinal motility, including the innervation of smooth muscles associated with the digestive, urinary, and reproductive systems.

Errr, what does that mean?

That our endocannabinoid system could contribute to the optimal operation of our digestive and reproductive systems by assisting in the operation of our unconscious activities.

This means that stimulating our endocannabinoid system in the right way could have a positive effect on our autonomic nervous system, optimal for good health.

(https://en.wikipedia.org/wiki/Endocannabinoid_system#cite_note-Elphick2001-25)

Sleep Regulation and Management:

There have been studies in rats that have linked an increase in endocannabinoid signaling within the central nervous system to sleep-inducing effects. In the study, subjects were shown to decrease wakefulness and increase slow-wave sleep and REM sleep.

Errr, what does that mean?

This means our endocannabinoid receptor system contributes to our ability to get a good nights sleep, to slow down and to relax.

(https://en.wikipedia.org/wiki/Endocannabinoid_system#cite_note-70)

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Frequently Asked Questions:

Is CBD Legal?

Yes, CBD is legal in the UK. It is legal to use and legal to sell, however companies cannot make claims about the medicinal benefits of CBD.

So long as the CBD is sold as a nutritional food supplement, and no medical claims are made about it, then it is perfectly legal to buy, possess and trade in the UK.

Food supplements in the UK have to abide by certain rules and regulations. Products must be clearly labeled and cannot be presented or advertised as 'preventing, treating or curing a human disease' [The Food Supplements (England) Regulations Act 2003].

That is why you will never read a web page, blog or social media post from MyPureCBD telling you about any of the incredible health benefits of CBD – we are bound by law. We simply supply the product. We cannot advise you on doses for different ailments.

We simply supply the product, it is down to the customer (you) to decide what is the best solution for your own body.

We highly recommend that anyone using CBD does their own research. There are many studies and papers freely available online to read, all of which present the case for CBD. New studies are continually being published from around the globe.

The second big reason we do not make any claims about our product is that everyone is different.

What works for one person may show no difference in someone else.

As with any new food supplement that you may wish to try, if you are using a supplement for the first time, start with a low dosage, monitor and increase as you feel is right for you.

Does CBD make you high?

No.

CBD is just one of the compounds found in both cannabis and hemp plants. THC is another, and THC is the psychoactive substance that can give you the feeling of being high. Although THC is present in the hemp that we use, it is present in very, very small quantities – not enough to give you a high.

Our products are made from EU certified hemp, which has a maximum THC content of 0.02%.

What is CBD used for?

Users around the globe are using CBD for a wide variety of ailments. We recommend doing your own research to find out what might suit your needs.

How much should I take?

In line with the information listed above, we cannot advise how much CBD you should or should not take.

As with any new food supplement that you may wish to try, if you are using a supplement for the first time, start with a low dosage, monitor and increase as you feel is right for you.

If you feel it is necessary, consult your doctor.



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