
CBD: THE GUIDE

For a better life, in better spirit, in a better world.



Let's start from the beginning.

There is a plant that has been harvested and used by man for at least 10,000 years. This plant has been selectively bred by humans to encourage certain characteristics, just like other crops in our farming 'toolkit'. Modern science has isolated one of the many compounds in this plant and is investigating it for medicinal use.

The plant we're talking about is known to botanists as Cannabis Sativa. The compound is called Cannabidiol (CBD), a non-intoxicating molecule that works in the human body to effect certain changes. Now CBD is about to change the world.

This publication has been produced by Raised Spirit Products to present the current research into CBD. This publication should not be viewed as medical advice.

What is CBD?

There are over 85 different compounds in the Cannabis Sativa variety known to us as 'Hemp'. These compounds are collectively known as Cannabinoids, of which CBD is just one.

Research in the 20th century discovered that the human body contains what is known as the endocannabinoid system: these involve 'receptors' in the nervous system, which can be influenced by cannabinoids. We have many other receptors in our bodies, too, which are all influenced by different molecules in our body, such as the hormone dopamine.

The endocannabinoid system helps to maintain optimal balance by modulating our physiological and cognitive processes, pain, mood and memory. The link between the plant and our biological systems has been well studied:

"Cannabis sativa L. is among the oldest known cultivated plants, with a long history of medical use. Cannabis produces a unique class of terpenophenolic compounds called cannabinoids, 104 of which have been isolated, the major biologically active one being tetrahydrocannabinol. Cannabidiol, an antiepileptic, is also important."¹ *The Analytical Chemistry of Cannabis*



The study of the nervous system has revealed the importance of cannabinoids

Where is CBD from?

Today, many cannabinoids are being tested and trialled for therapeutic uses. Some extracts from the plant are already prescribed medicinally in many countries for pain, muscle spasms and the nausea caused by chemotherapy.

The extract that we are interested in here, CBD, is being researched with a view to treating conditions such as epilepsy, diabetes, appetite loss, inflammation, arthritis, even psychosis and schizophrenia. Some reports have even discovered antioxidant properties and the ability to inhibit cancer cell growth in some rare cancers.

So why does CBD have this effect on the human body? How did it come to have such a power to influence our biological processes?



Hemp is the natural source of CBD, which has evolved to help protect the plant

“British Sugar will be swapping tomato plants for cannabis seedlings after signing a long-term contract to supply the crop to drugs company GW Pharmaceuticals,” they wrote. “The marijuana plants, which are of a non-psychoactive variety, will be grown in British Sugar’s 18-hectare glasshouse in Wisington, Norfolk, where the company, a subsidiary of Associated British Foods, is currently cultivating tomatoes. The space is the equivalent of 23 football pitches.”³

The product that they are making, using their vast greenhouses and waste heat from their sugar refinery plant, is CBD. It’s the active ingredient in a new drug, Epidiolex, which treats children’s epilepsy.⁴

What does this tell us? That something important is changing in the way we view hemp. Stripped of its psychoactive content, hemp is now viewed by the scientific mainstream as a useful source of medicines. And the distinctive cannabinoid that scientists are researching most frequently? CBD.

The truth about CBD

We know that CBD is a naturally occurring compound that’s being investigated for some powerful effects on the human body. The only problem is, until fairly recently it’s been found in plants that also contain THC - the psychoactive cannabinoid that’s responsible for the ‘high’ in marijuana. CBD couldn’t be more different to THC, and we’re about to explain why.

Not many people know that one of the largest producers of hemp in the UK is a company called British Sugar. It sounds absurd: an old, established company devoted to traditional sugar production, growing acre after acre of hemp? Yet it’s true. Here’s what the Daily Telegraph had to say just last year:

“Cannabinoids are thought to be a defensive mechanism to protect the plant”

-THE GUARDIAN

The difference between CBD and THC

We've already explained that there's a big difference between CBD and THC. To understand this, we'll need to look at these two cannabinoids in more detail. At the risk of oversimplification, CBD and THC are opposing forces, pulling our biological systems in two different directions.

Rising levels of THC in psychoactive marijuana have been linked to serious health risks. Over decades, the levels of THC present have been raised to create a more potent 'high' in users. At the same time, alarming



The Guardian newspaper reported that British Sugar are growing hemp for medicinal use²

reports of mental health problems have been on the rise.

Some scientists link the rise in THC with a lowering of CBD in recreational marijuana. As the THC levels are selected for genetically, the CBD levels in the plant go down. It is now theorised that CBD has a counter-effect that balances the negative influence of THC in the human body and brain. This has been published in several scientific papers, such as this Journal of Forensic Science article, *Potency of delta 9-THC and other cannabinoids in cannabis in England in 2005: implications for psychoactivity and pharmacology*:

“The increases in average THC content and relative popularity of sinsemilla cannabis, combined with the absence of the anti-psychotic cannabinoid CBD, suggest that the current trends in cannabis use pose an increasing risk to those users susceptible to the harmful psychological effects associated with high doses of THC.”⁵

CBD & THC: opposing forces

We can already see that scientific opinion differentiates between CBD, which has a positive effect on many functions of the body, and THC, which on its own has a generally negative effect. This was summed up neatly this year in

CBD has been found to reduce the negative effects of cannabis use



The Lancet, one of the oldest and most venerable of scientific journals:

“Cannabis use and related problems are on the rise globally alongside an increase in the potency of cannabis sold on both black and legal markets. Additionally, there has been a shift towards abandoning prohibition for a less punitive and more permissive legal stance on cannabis, such as decriminalisation and legalisation. It is therefore crucial that we explore new and innovative ways to reduce harm.”

“Research has found cannabis with high concentrations of its main active ingredient, THC, to be more harmful (in terms of causing the main risks associated with cannabis use, such as addiction, psychosis, and cognitive impairment) than cannabis with lower concentrations of THC. By contrast, cannabidiol, which is a non-intoxicating and potentially therapeutic component of cannabis, has been found to reduce the negative effects of cannabis use.”⁶

CBD is now mainstream science, and its benefits are being verified by trials and research. Yet because of traditional, and justified, alarm over the damaging levels of THC present in recreational marijuana, there is a cultural lag in adopting CBD as a popular, everyday aid. This lag will not last long, as we'll see.

CBD and legislation

CBD is currently being used in one licensed medicine in the UK, Sativex. This is a prescription-only treatment for MS, and it harnesses the power of CBD to ease the symptoms of muscle spasms.⁷ This is only one of many conditions that researchers are investigating with a view to developing new CBD-based medicines. Even Oxford University has announced a new £10m research programme into the medical uses of cannabinoids, investigating treatments for pain, cancer and inflammatory diseases.⁸

Licences for all drugs prescribed in the UK come from the Medicines and Healthcare Products Regulatory Agency (MHRA). They have issued advice to all CBD makers that CBD is a medicinal product. In their own words, “We have come to the opinion that products containing cannabidiol used for medical purposes are a medicine.”⁹ for CBD manufacturers, this means that CBD products making health claims must be assessed and registered through the MHRA before they can be sold as medicines.

“Products containing Cannabidiol used for medical purposes are a medicine.”

- MHRA

This is one reason why many CBD products must not make health claims to the public: if they are not registered as a medicine, they cannot make medicinal claims. But as we can see, CBD is already licensed in some medicines, and is being developed to create more.

How does CBD work?

We’ve already seen that THC and CBD are two compounds with apparently opposing characteristics,¹⁰ and that CBD is being developed for many new medicines. But how, and where, does CBD work in the human body?

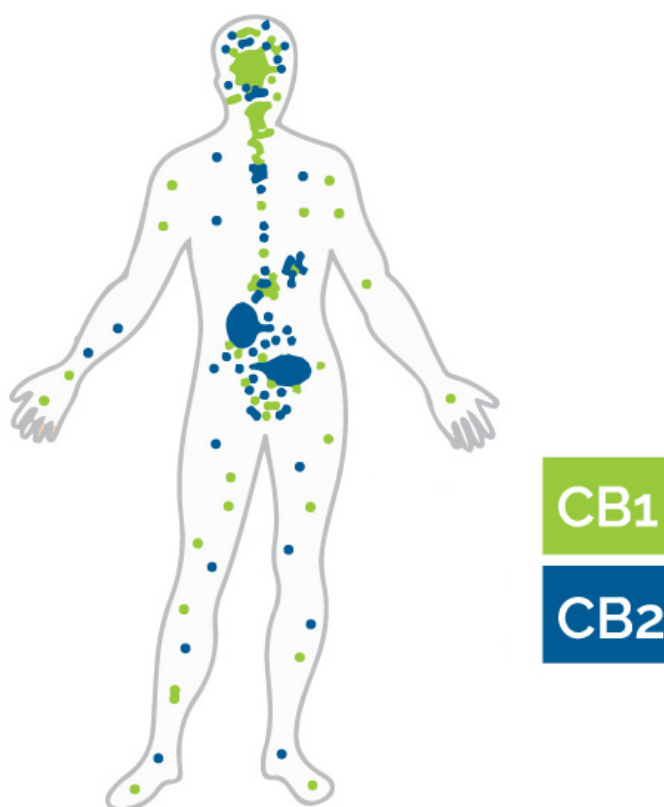
CBD is the second most abundant cannabinoid in the hemp plant, and as The Lancet confirms, it has no psychoactive effects.¹¹ It is what is known as an ‘antagonist’; a compound that has pharmacological effects in the body.

The place where CBD has an effect is called the endocannabinoid system. It’s one of many such systems in the human body, where receptors interact with certain molecules as part of a wider reaction. The entire endocannabinoid system seems to be a modulator of the nervous system, operating in the synapses of nerves and regulating nervous activity, such as pain sensation, mood, memory and appetite.

This operation gives CBD a wider variety of effects, and this is what makes it such a fertile source for clinically important medicines. As The Lancet explains: “Apart from controlling seizures, potential and actual medical uses include treating Crohn's disease and other inflammatory conditions of the gut because of its anti-inflammatory properties, alleviating chronic pain in palliative care, preventing graft-versus-host disease in transplant patients, and even treating psychosis.”

What happens to CBD in the body?

CBD can achieve these effects because it resembles a natural compound produced in our own bodies. This is why humans have an endocannabinoid system: we create small amounts of cannabinoid-like compounds ourselves. CBD has the ability to enter this natural signalling system, a system that plays a role in many medical conditions including pain, epilepsy, multiple sclerosis, Parkinson's disease, depression and schizophrenia.¹²



CBD works by connecting to cannabinoid receptors in the nervous system

Who needs to use CBD?

We've mentioned already that CBD is now registered as a medicinal product in the UK. In the USA, it has been used for some time already, and there are promising signs from patient feedback. A news article from Forbes magazine reviewed one recent survey of 2,400 CBD users who had been polled by Brightfield Group and HelloMD. The patients most commonly used CBD to treat insomnia, depression, anxiety and joint pain, according to Dr. Perry Solomon, the Chief Medical Officer of HelloMD. Forty-two percent of the CBD users said they had stopped using traditional medications like Tylenol pain relievers or prescription drugs like Vicodin and had switched to using cannabis instead. Eighty percent said that they found the products to be 'very or extremely effective.' Only 3% or less found the product to be either ineffectual or only slightly effective." ¹⁵

A priority for anyone interested in using CBD should be to find a reliable source. It's crucial that the product contains an accurate amount of CBD. This is not because of products containing too much; rather, evidence suggests that many brands do not contain the amount claimed on the labelling. In 2016, the US Federal Drug Agency issued 22 warning letters to companies whose products did not contain the stated amount of CBD. Clearly, finding a brand you trust, and whose values are reflected in their products, is of paramount importance.

As CBD moves yet further into the mainstream, and more uses are found for this natural and powerful compound, we will see this incredible product benefit us in new and surprising ways.

"Researchers from the Kennedy Institute of Rheumatology in London and the Hebrew University in Jerusalem discovered that cannabidiol suppresses part of the immune response of mice with collagen-induced arthritis. This greatly reduces the inflammation and joint damage normally caused by arthritis, they say in an upcoming issue of Proceedings of the National Academy of Sciences."

New Scientist ¹³

"Lola Weiss at Hadassah University Hospital in Israel and colleagues say that the drug could be used to treat heart disease. In studies on rats, cannabidiol was found to improve the profile of lipids in the blood, reduce the hardening of arteries and prevent scarring of the heart following a heart attack."

New Scientist ¹⁴

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