

# WHAT IS CANNABIDIOL?\*

\* Cannabidiol (CBD) is one of the primary cannabinoids found in cannabis. Humans have been consuming cannabis and its CBD for thousands of years. It wasn't until 1940 that CBD was isolated by Dr Roger Adams and his team from the University of Illinois. Further CBD research findings were released in 1963, as Dr. Raphael Mechoulam, known as the 'godfather of cannabis research', described the chemical structure of CBD.

CBD can be found in a wide range of products, including oils, topicals, supplements and novel foods and is available with fewer restrictions globally—primarily because CBD is not psychoactive and has a range of medicinal properties (however that's not to say that THC doesn't).

CBD has the same molecular structure as THC: 21 carbon atoms, two oxygen atoms and 30 hydrogen atoms. Subtle differences in the arrangement of its atoms makes CBD non-psychoactive despite its similar molecular structure to THC.

The cannabinoid is also found in hemp plants and can be extracted from both hemp and cannabis. Hemp is a strain of the cannabis plant; it contains between <0.35% THC and <1% THC depending on which Australian state it is grown. Traditional cannabis plants contain higher concentrations of THC. With an industrial hemp license, hemp can be legally grown and processed for food and fibre in Australia.

In this e-book, we cover how CBD works and what current research says about CBD's medicinal effects and safety.





Only a few years ago, few people knew what CBD was. But with the rapid advancement of medicinal cannabis legislation, 'CBD' is suddenly on everyone's lips. And for good reason.

## HOW DOES CBD WORK?

THC binds to cannabinoid 1 (CB1) receptors in the body, causing a range of physiological effects that result in the user experiencing a 'high'. CBD doesn't produce a high; in fact, research shows that CBD may reduce the psychoactive effects of THC. In scientific terms this means that CBD functions as a 'negative allosteric modulator'.

Rather than directly targeting receptors like CB1 as THC does, CBD modifies the ability of receptors to bind to cannabinoids. CBD also plays a more significant role in the endocannabinoid system (ECS), modulating other types of receptors and increasing levels of endocannabinoids through its effects on enzyme activity.

# THE MEDICAL BENEFITS OF CBD

CBD is often marketed as an alleviator of anxiety, depression, insomnia, pain, and a range of other symptoms and conditions. With so many therapeutic claims and its non-psychoactive effects, it is no surprise that CBD's popularity is growing.

So, is CBD as effective as claimed, or are its benefits exaggerated by marketers?

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## CBD for mood disorders

One of CBD's claimed benefits is its ability to reduce the symptoms of mood disorders such as anxiety, post-traumatic stress disorder (PTSD), and depression.

One study published in the journal *Neuropsychopharmacology* investigated whether CBD was able to decrease nervousness in patients who have social anxiety. A public speaking task was simulated, and CBD was administered to some participants prior to see whether it made a noticeable difference in their levels of nervousness. The results showed that participants given CBD exhibited less signs of nervousness and social anxiety.

An animal study from 2010 published in the *British Journal of Pharmacology* found that CBD induced antidepressant-like effects in mice that were comparable to the effects of the antidepressant Imipramine. According to researchers, the possible mood-improving effects of CBD may be caused by CBD's activation of the 5-HT1A serotonin receptor. Serotonin is a neurotransmitter associated with improving mood and treating depression. When activated, the 5-HT1A receptor initiates the production of serotonin.

While the results of these studies are impressive, they come from restrictive-sized models and animal studies, which don't allow researchers to make concrete claims about CBD's ability to cure conditions like depression.

There is contradicting evidence showing that CBD has no effect on mood. One double-blind placebo-controlled study found that healthy people given CBD didn't experience any changes in mood when exposed to unpleasant images or words compared to a placebo group.

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## CBD for seizures

Several clinical trials have been conducted to explore the effects of CBD on children and teenagers who have drug-resistant epilepsy.

In the US, the FDA approved a concentrated CBD medicine called Epidiolex in 2018 as a form of seizure therapy for patients over the age of two. Epidiolex is also legally available with a prescription in Australia.

The research into Epidiolex is promising, with multiple randomised double-blind and placebo-controlled clinical trials (including over 500 people) concluding that Epidiolex is effective in reducing seizure frequency.

The use of CBD as a seizure therapy is particularly appealing as CBD is non-psychoactive. This means CBD can be used on children without fear that psychoactive effects of THC will harm a child's developing brain.

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### CBD for sleep

Many anecdotal reports claim that CBD has sleep-inducing effects. The results of a world-first study at The University of Western Australia have shown that medicinal cannabis can be used as a novel treatment for adults suffering from chronic insomnia.

Around one in three Australians has regular difficulty getting to sleep and the sedation effect brought on by medicinal cannabis is believed to be an alternative treatment for those experiencing the condition.

A large [case series](#) looking at the effects of CBD on anxiety and sleep found that it was able to reduce anxiety in 80% of patients and improve sleep scores in 66% of patients. Another [chart review](#) of 72 psychiatric patients given CBD concluded that while CBD did decrease anxiety levels, sleep wasn't significantly affected.

Research shows that CBD may be able to reduce the symptoms of excessive daytime sleepiness and REM sleep behaviour disorders. However, it is possible that the sleep-inducing qualities for which CBD is becoming known may be the result of CBD's ability to reduce anxiety (anxiety is a known cause of sleep-related conditions such as insomnia).

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### CBD for pain

Pain relief is by far the most popular use for CBD. One survey of 5,000 people in the US concluded that 60% of CBD users consume CBD for pain relief, according to the [Brightfield Group](#), which is a cannabis market research firm.

While surveys are not enough to claim CBD can cure pain, a substantial amount of research shows that CBD can help reduce pain through a variety of mechanisms.

CBD can bind to and activate the [5-HT1A serotonin receptor](#), which can lead to a cellular cascade and inhibitory response that results in reduced pain perception. CBD also enhances the expression of [Glycine receptors \(GlyRs\)](#), which are receptors that are involved in the suppression of pain and inflammation. [Studies](#) show that CBD may also help to reduce chronic pain by modifying the activity of cannabinoid receptor type 2 (CB2), which may cause a reduction in inflammation associated with pain.

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### CBD for addiction

It may seem counterintuitive to treat addiction using compounds found in a drug still regarded as illegal in many contexts. However, strong evidence suggests that CBD may be effective for treating opioid misuse disorders.

One [double-blind randomised placebo-controlled trial](#) explored the effects of CBD on 42 drug-abstinent individuals addicted to heroin. CBD was administered to some participants while a placebo was administered to others. The results showed that CBD was able to "reduce cue-induced craving and anxiety". Researchers concluded that it's worthwhile exploring the potential of CBD as a treatment for opioid use disorders.

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### CBD for multiple sclerosis

CBD can also be prescribed for patients with multiple sclerosis in the form of the medicine [Sativex](#). Sativex is a mouth spray containing both CBD and THC. It is available in Australia.

One [study](#) examined 47 people with multiple sclerosis taking Sativex for one month. The results showed that participants displayed improved symptoms, with an improved ability to walk and decreased muscle spasticity. These are promising results, but it's important to keep in mind that this study had no control group.

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\* The World Health Organisation (WHO) has publicly stated that CBD is “generally well tolerated with a good safety profile”. This doesn’t mean that CBD is for everyone; some side effects are possible.

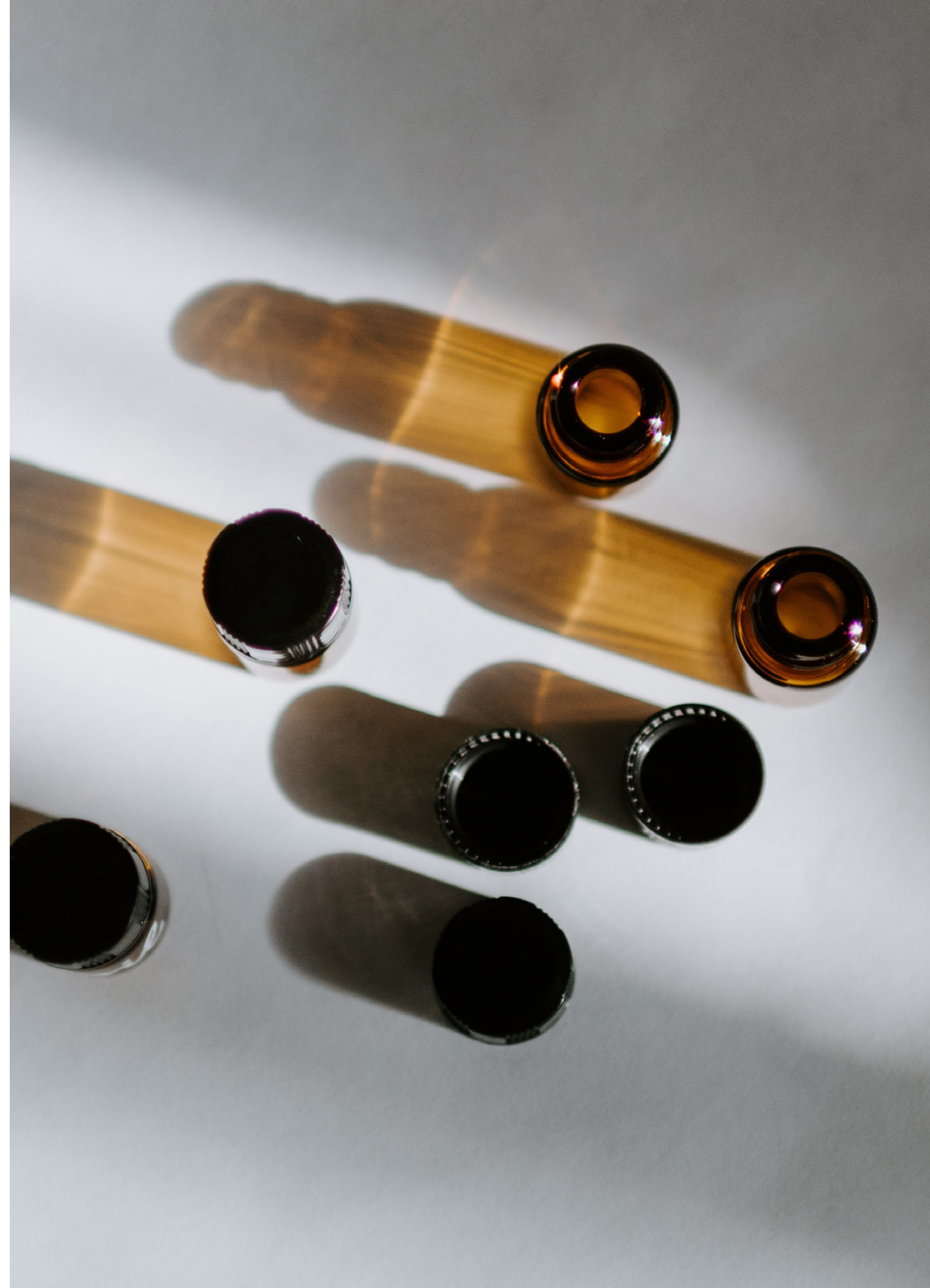
A 2017 review of multiple studies on CBD concluded that diarrhoea, fatigue, appetite and weight changes are the most commonly reported side effects, although these side effects are uncommon and dose-dependent.



## SUMMARY

CBD is one of two primary cannabinoids found in cannabis. It is non-psychoactive, meaning it does not induce a high in users like THC does. CBD is popular for reducing stress, anxiety, insomnia and pain relief.

Although there is considerable evidence supporting the medicinal benefits of CBD, more rigorous double-blind controlled trials are needed to make more concrete claims about CBD's efficacy for treating conditions such as sleep and mood disorders.



# MEDIGROWTH

Medigrowth is driven by passion and the pursuit of excellence in cannabinoid medicine. As a fully licenced Australian medicinal cannabis biotech, our success is measured in real world change: improving lives for Australian patients and delivering results as a trusted B2B, research and medical partner. Our commitment to pure, safe and trusted Australian made medicinal cannabis drives our company culture to continually inspire, innovate and exceed.

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