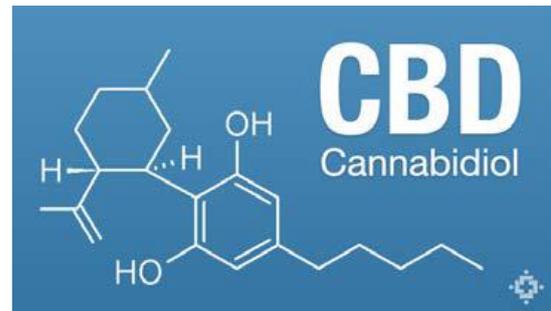


# CBD - Cannabidiol

## Dr. med. Heinz Lüscher

**CBD is an ingredient of the hemp plant with promising medicinal properties. The substance has an analgesic, anti-epileptic and anti-psychotic effect. CBD is also a powerful antioxidant and a potent anti-inflammatory. Finally, the nerve-protective properties of CBD are of particular interest.**

Cannabidiol or CBD for short is an ingredient of the hemp plant. The perennial up to 4 meters high contains over 60 different such cannabinoids. In commercial or industrial hemp, CBD is the cannabinoid with the highest concentration. These legally cultivable strains contain little THC, but a lot of CBD.



CBD is not psychoactive, i.e. it does not cause any psychological effects. Instead, it has various medically desirable properties and, even in high doses, does not cause any relevant side effects. Taking CBD is considered extremely safe.



### **The endocannabinoid system**

With the research of the plant cannabinoids one discovered the endocannabinoid system in the human body. This is a subsystem of the nervous system that, among other things, regulates pain, controls memory and controls the immune system. The body's own substances, the so-called endocannabinoids, act in this system. on the receptors CB1 and CB2 and thus trigger different signaling pathways. There is almost no organ system in which endocannabinoids play no role.

### **Properties of CBD**

CBD has pain relieving properties. It has a relaxing, anti-epileptic, anti-psychotic and anxiolytic effect. CBD is also anti-inflammatory and antioxidant. It has nerve-protective properties and has an antibacterial effect against certain germs (MRSA) with a high level of antibiotic resistance. Ultimately, CBD inhibits nausea and reduces the risk of developing diabetes. All of this makes it an interesting candidate for the treatment of chronic pain, inflammatory diseases of the nervous system, epilepsy, anxiety disorders, psychosis or schizophrenia.



Of particular interest is the neuroprotective potential of CBD, which is currently being investigated in more detail in connection with neurodegenerative diseases such as

Alzheimer's, Parkinson's, Huntington's disease or amyotrophic lateral sclerosis (ALS). CBD seems to be able to reduce harmful phenomena such as neuroinflammation, an excess of the neurotransmitter glutamate (which can lead to the death of nerve cells = excitotoxicity), oxidative stress and nerve degeneration in the brain. CBD could

continue to be a candidate for the treatment of inflammatory bowel diseases such as ulcerative colitis or Crohn's disease.

### **Mechanisms of action of CBD**

CBD works in the body in many different ways. According to the CBD expert Dr. med. Franjo Grotenhermen, the following mechanisms of action are among the most important:



- CBD also stimulates the vanilloid receptor type 1 maximum effect, similar to capsaicin in Cayenne pepper. That explains part of the pain relieving effects of CBD.
- CBD further relieves inflammatory and neuropathic pain. This suppression of chronic pain stimuli by CBD is probably mediated by the glycine receptor.
- CBD inhibits the breakdown of the body's own cannabinoid anandamide and thus increases its concentration. The observed antipsychotic effects of CBD are attributed to this increase in anandamide levels.
- CBD strengthens the signaling effect of adenosine. This endogenous substance blocks the release of activating and invigorating neurotransmitters (= messenger substances in the nervous system). This is the mechanism by which some of the anti-inflammatory effects of CBD could be based. Another reason CBD has anti-inflammatory effects is because it binds to the GPR55 receptor.
- CBD is a powerful antioxidant (= free radical catcher). CBD has been shown to prevent oxidative damage at least as well as vitamin C or vitamin E.
- CBD inhibits the reproduction of certain brain tumor cells (glioma cells) by causing their autophagy, a form of cell destruction.
- Researchers have been studying the anti-cancer effects of CBD for several years. It has been shown that CBD inhibits the formation of new blood vessels in tumor tissues.
- CBD binds antagonistically (i.e. as an opponent) to the CB1 receptor and therefore inhibits several effects of THC.

What is remarkable is the fact that CBD only weakly interacts with the receptors of the endocannabinoid system. Rather, its effect comes from the fact that it inhibits the breakdown of the body's own endocannabinoids. By taking CBD, the effects of the body's own substances can be extended and strengthened.

## Dosage of CBD



CBD is effective from doses of 10 to 40 mg. Depending on the treatment goal, it can also be used in high doses (up to 800 mg for adults). For children, dosages between 2 and

Mehr zu diesem AusgangstextFür weitere Übersetzungsinformationen ist ein Ausgangstext erforderlich.

Experience in children with epilepsy shows that everyone reacts differently to CBD. For some children, even small doses were sufficient, while for others high doses were necessary and third parties did not respond at all to treatment with CBD.

## Medical uses of CBD

- CBD and pain

CBD is a promising pain reliever. This clearly applies to nerve pain and pain that arises due to inflammation. In these cases, CBD can simultaneously reduce inflammation and reduce the sensation of pain. CBD has proven to be effective in combating pain in multiple sclerosis. However, CBD is effective for other types of pain as well.



- CBD and migraines

Although the causes of migraines are still largely unknown, the severe headaches seem to be related to nervous inflammation. Genetic studies further indicate that an existing migraine tendency could be associated with a lack of CB1 receptors in the brain. CBD could help here by inhibiting the breakdown of anandamide and this messenger substance is available at least in a higher concentration for interaction with the remaining CB1 receptors.

- CBD and epilepsy

In some forms of epilepsy, CBD is able to suppress the seizures effectively without being neurotoxic or causing a habituation effect that would require a constant increase in the dose. This is especially true of certain genetic forms of epilepsy in children. In studies, half of the patients taking CBD stopped having seizures, while 38% experienced at least partial improvement. The story of a 5-year-old girl from the USA who suffered from a rare form of epilepsy and ended up having up to 300 seizures per day is known. Because no more medication helped, the parents finally resorted to an extract from a CBD-rich hemp variety. That helped: the seizures reduced from hundreds a day to one a week. The girl can eat, talk and even ride a bike again.

- CBD and Alzheimer's

With Alzheimer's disease, the brain increasingly atrophies. Possible reasons are an inflammatory reaction in the nerve tissue, deposits in the brain, the death of nerve cells and oxidative stress. Various studies show that CBD treatment can effectively reduce the inflammatory response in the brain. In addition, CBD reduces oxidative stress and protects the nerve cells from dying or degeneration.

- CBD and Parkinson's



Parkinson's is a slowly progressing neurodegenerative disease, which can show various symptoms from the well-known tremor to restricted mobility to muscle stiffness. One of the reasons is the death of dopamine-producing nerve cells in the brain. According to studies, CBD can reduce this loss of dopamine. In addition, the psychotic symptoms of Parkinson's patients could be reduced.

- CBD and ALS

Amyotrophic lateral sclerosis (ALS) is a degenerative disease of the motor nervous system that leads to paralysis and muscle weakness. Studies consistently show that CBD could stop or at least delay the degeneration of nerve cells caused by ALS. This is due to its ability to bring the balance of the neurotransmitter glutamate into balance, to reduce oxidative stress and to dampen local inflammatory reactions.



- CBD and schizophrenia

While THC can promote the onset of psychosis, CBD does exactly the opposite. In a double-blind study from 2012, CBD supplements were just as successful as drugs in patients with acute schizophrenia - but with far fewer side effects. Experts unanimously assume that this is related to the described increase in anandamide levels caused by CBD.

- CBD and cancer

Several studies show CBD's anti-cancer properties. In a study, CBD triggered programmed cell death in breast cancer cells. A reduction in viability and induction of cell death by CBD has also been observed in leukemia cells. The same applies to prostate cancer cells. In cell experiments, CBD inhibited the formation of metastases in lung cancer. Another anti-cancer effect is that CBD inhibits the formation of new blood vessels in tumors. Treatment with CBD is not an alternative to normal cancer therapy, but it can be a useful addition.

- CBD and addictions

There is evidence of a therapeutic potential for CBD in the case of addiction to THC, nicotine and opiates. CBD appears to be able to alleviate withdrawal symptoms. In a study \*, smokers who were willing to quit using CBD found it easier to give up cigarettes than a comparison group who received a placebo. The number of cigarettes smoked fell by around 40% in the CBD group, while there was no decline in the control group

g in tobacco consumption.

\* Morgan et al. (2013): Cannabidiol reduces cigarette consumption in tobacco smokers: preliminary findings. Addictive Behaviors 38 (9): pp. 2433-2436.



CBD has a preventive or curative effect on the following diseases:

Neurological diseases

- Alzheimer's
- Parkinson's
- Multiple Sclerosis (MS)
- Amyotrophic lateral sclerosis (ALS)
- Huntington's Disease, Huntington's Disease (HD)
- brain tumors
- epilepsy
- Peripheral neuropathies

Psychiatric illness

- Quitting smoking and smoking weed
- Anxiety (phobias)
- Mild schizophrenia

Pain

- Nerve pain
- migraines
- muscle spasms
- Arthrosis

Drug interactions

CBD is broken down in the liver. There it inhibits the activity of two enzymes that are responsible for breaking down various drugs. These drugs may break down more slowly and work more effectively when taken with CBD. The acid inhibitors pantoprazole and ondansetron as well as the antiepileptic drugs clobazam (Frisium) and risperidone (Risperdal) are affected. Caution should therefore be exercised when taking large amounts of CBD if one of these drugs has to be taken at the same time.

#### Side effects

CBD is considered extremely safe. Only during pregnancy should CBD not be taken, since according to a study, CBD can reduce the protective function of the placenta and change its properties