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# CBD Effects On The Brain

The popularity of CBD is growing at an exceptional rate here in the UK, so much so that the British CBD market is the second largest in the world behind the US. Yet, as with any new and trendy product on the shelves, consumers rightfully have many questions. What is CBD exactly? How does it work? And are there any potential benefits?

The topic of conversation in this article, therefore, starts with the place where CBD operates: the brain, specifically, the endocannabinoid system (ECS), to help explain how the compound impacts our bodies.

However, before we give you a detailed exploration of CBD, we first need to clarify that, while it originates from the same plant as tetrahydrocannabinol (THC — the psychoactive compound responsible for causing a high), CBD's effect on the brain is different. CBD and THC are similar, yet very unique — read on to find out more.

## How does CBD work on the brain?

CBD has many purported benefits, one of these being how it can positively impact brain health. Studies found that it "modulates brain activity and connectivity in neural systems relevant for psychosis and anxiety, possibly reflecting CBD's therapeutic effects." To better understand how CBD works in the brain though, you need to know about the ECS first.

## What is the ECS?

The ECS is a network of cells and receptors in the body that is responsible for regulating our internal homeostasis. In simple terms, it's the communication hub that controls our brain's physiology, which then impacts our psychology. The ECS affects our brain in many ways, and as a result, it can impact everything from stress, sleep and appetite, to cognition, memory and brain development.

## How does CBD impact the ECS system?

Research has found that CBD "can function as agonist and antagonistic on various receptors in the ECS." Experts aren't 100% sure how it interacts with the ECS system, however, what is known for certain is that it doesn't bind with the CB1 and CB2 receptors like THC does. Rather, it's suggested that CBD increases ECS activity by inhibiting enzymes that break down endocannabinoids, temporarily increasing their availability in the brain and altering brain function.

## Four ways CBD affects the brain

Now you know how CBD impacts the endocannabinoid system, we're going to dive into the specific effects it can have on the brain.

### 1. Reduces oxidative damage

Oxidative stress is a natural process in which cells generate energy and free radicals (unstable atoms that cause damage) are created as a waste product. The body normally stabilises these by using antioxidants, however, an imbalance allows the free radicals to steal DNA particles, which can lead to conditions like Alzhemiers and Parkinsons.

It has been noted that CBD exhibits "strong antioxidant behaviour, stronger than vitamin C, A and E" and is able to "reduce the oxidative stress" that occurs within the body. In fact, research shows that CBD has the ability to "reverse cognitive deficits of AD [Alzheimer's Disease] in transgenic mice and to exert neuroprotective, anti-oxidative, and anti-inflammatory properties in vitro and in vivo." Although this study is based upon animals, the outcome is promising.

### 2. Influences serotonin levels

Serotonin (the body's feel-good chemical) is a neurotransmitter responsible for regulating mood, digestion, sleep and more. However, low levels can cause depression, anxiety and sleep issues.

While taking CBD doesn't directly impact serotonin levels, it does interact with the 5-HT1A receptor associated with it. This may lead to users experiencing an antidepressant like effect, as well as reduced anxiety symptoms. The presence of CBD is also said to have a slight impact on the shape of the 2A receptor that is linked to anxiety, headaches and stress, helping to further influence serotonin levels.

### 3. Provides antipsychotic benefits

Anandamide (another neurotransmitter), also known as the 'bliss molecule', binds to the cannabinoid receptors in the brain and body. This enhances happiness and a sense of mental wellbeing. The fatty acid amide hydrolase (FAAH) enzyme breaks down this molecule, however, CBD inhibits the enzyme, enabling anandamide to remain active for longer in the ECS and enhance its potency. Research found that "cannabidiol, at a concentration that reduces FAAH activity by 50% does not significantly interact with a broad panel of neurotransmitter receptors that are relevant to schizophrenia, including dopamine, glutamate and serotonin."

In fact, scientists also discovered a link between higher levels of the bliss molecule and decreased psychotic symptoms. The study revealed that "anandamide levels were higher in subjects exposed to cannabidiol than in those exposed to amisulpride" — an antipsychotic medication.

### 4. Lowers the degree of excitation in brain cells

Brain excitability simply means the likelihood of neurons firing, and it differs from person to person. However, overstimulation can cause excitotoxicity (damage to the cells). This may happen after a traumatic head injury, a stroke, hearing loss or neurodegenerative diseases such as multiple sclerosis and Alzheimer's.

Researchers at University of California San Diego School of Medicine have found that taking CBD may help with neurodevelopmental conditions like Autism Spectrum Disorder (ASD). According to the study: "Excitatory neurotransmitters are inhibited, leading to a reduction in behavioural and social deficits characteristics of ASD". Another study published in February 2019 concluded that "CBD shifts glutamate and GABA+ which are known to contribute to the regulation of inhibitory and excitatory neurotransmission in both autistic and typical brains.

## Start your CBD journey with TRIP

You should now have a more solid understanding of CBD's effect on the brain and its many complexities. If the science has piqued your interest, we have a range of products at TRIP for you to try out, including flavoured CBD oils and infused-drinks. These are extracted from organically grown hemp, are THC-free and entirely vegan. Thanks for reading!

By Chloe Palmer    Apr 7, 2022

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