

Bliss molecule is an endocannabinoid mandamide

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How Does CBD Affect the Endocannabinoid System?

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60 Second Summary

Recent science has found that the endocannabinoid system does not just respond to the endocannabinoids produced in the body, but also respond to external cannabinoids like the phytocannabinoid cannabidiol, or CBD. Introducing CBD to the body can help reduce the symptoms of a wide range of illnesses including epilepsy, multiple sclerosis, chronic inflammation, depression, diabetes, rheumatoid arthritis, anxiety, and opioid withdrawal.

CBD acts upon **CB1** and **CB2** receptors located throughout the body to produce a variety of potentially positive outcomes. CBD does not bind directly to either of these receptors but instead impacts them indirectly. These indirect actions include activating **TRPV1** Receptors that work to control important functions like pain perception, body temperature, and inflammation. CBD can also increase the amount of anandamide in the body. Known as the "bliss molecule," anandamide plays a role in the neural generation of pleasure and motivation.

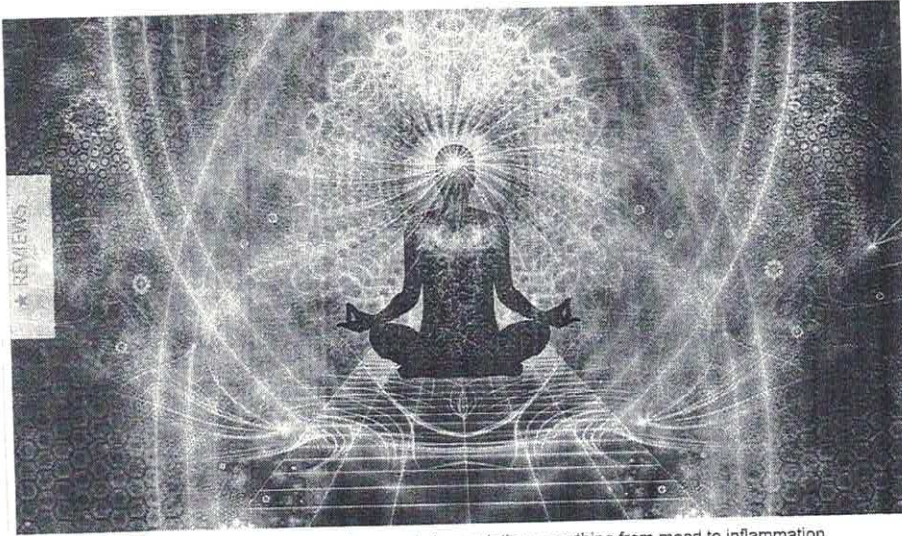
By stimulating the endocannabinoid system, CBD promotes homeostasis, reduces pain sensation and decreases inflammation.

How Does CBD Affect the Endocannabinoid System?

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Your endocannabinoid system plays a role in regulating everything from mood to inflammation.

The endocannabinoid system's purpose is to respond to endogenous cannabinoids produced within the human body.

During their research, scientists have learned that the system will also recognize and respond to cannabinoids from external sources, including the phytocannabinoid cannabidiol (CBD).

According to the National Institute of Health, manipulating the endocannabinoid system by introducing external cannabinoids like CBD could be useful in treating a variety of medical ailments, including:

- Pain
- Epilepsy
- Multiple Sclerosis (MS)
- Amyotrophic Lateral Sclerosis (ALS)
- Parkinson's
- Inflammation
- Acne
- Dyskinesia
- Psoriasis
- Broken Bones
- Mad Cow Disease
- Depression
- Bacterial Infections
- Diabetes
- Rheumatoid Arthritis
- Nausea
- Anxiety
- ADHD
- Schizophrenia
- Substance Abuse/Withdrawal
- Heart Disease
- Irritable Bowel Syndrome (IBS)

Keep in mind that this CBD benefits chart is not a full list, and we are only beginning to discover how cannabinoids can help and heal.

CBD and Cannabinoid Receptors

names, these two receptors perform very different functions in the human body.

Cannabinoid Receptor Type 1 (CB1)

CB1 receptors (first discovered in 1990) exist in high numbers in the brain (especially the hypothalamus, hippocampus, and amygdala), central nervous system (CNS), intestines, connective tissues, gonads, and various other glands.

Benefits of activating the CB1 receptor include:

- Relieving depression [S]
- Increasing myelin formation [S] *covering of nerve cells*
- Lowering intestinal inflammation [S]
- Decreasing intestinal permeability (Leaky Gut Syndrome) [S]
- Lowering blood pressure [S]
- Lowering anxiety [S]
- Reducing fear and paranoia [S]
- Increasing BDNF levels [S] → *Brain neuroplasticity*
- Increasing PPARγ expression [S] → *insulin levels*
- Reducing GPR55 signaling [S] → *cardiovascular - blood vessels ↓ BP.*
- Lowering prolactin [S] → *Breast feeding hormone.*

estrogen

THC effects

While these are desirable effects for most people, CB1 receptor activation does not come without risks. These risks include:

Risks

- Lowered thyroid hormones [S]
- Reduced ability of the circadian timekeeper (SCN) to entrain to daylight [S]
- Decreased cognitive function (through decreasing acetylcholine, LTP, cAMP, and glutamate) [S]
- Increased anxiety for an individual going through alcohol withdrawal [S]
- Constipation [S]
- Increased liver fat [S]
- Increased food intake [S]
- Less burning of fat for energy [S]
- Neurological symptoms such as depersonalization, paranoia, delusions, hallucinations, and impairments in attention and memory [S]

THC

Please note that these are most often side effects associated with chronic consumption of a potent CB1 receptor agonist such as THC, and not with a non-psychoactive substance such as CBD.

Cannabinoid Receptor Type 2 (CB2)

CB2 receptors (first discovered in 1993) occur most commonly in the spleen, tonsils, thymus, and immune cells such as mast cells, monocytes, macrophages, B and T cells, and microglia; only a small number exist in the brain.

Changes in CB2 receptor function is synonymous with virtually every type of human disease; be it cardiovascular, gastrointestinal, neurodegenerative, psychiatric, and autoimmune. It even plays a role in liver and kidney function, bone and skin health, cancer, and even pain-related illnesses. [S]

CBD

Activating the CB2 receptor induces macrophages to destroy the beta-amyloid protein which is the main component of the plaque found in the brains of people with Alzheimer's disease.

Human Body Produces Cannabinoids like CBD?

The human body does produce cannabinoids. **Endogenous Cannabinoids** are neurotransmitters produced within our bodies that bind to cannabinoid receptors in the



Endocannabinoids perform differently to the more well-known neurotransmitters like serotonin, dopamine, and norepinephrine.

Dopamine, for example, is synthesized in advance, stored in the vesicle, and in response to stimuli, is released from the presynaptic cell, where it crosses the synapse, lands on the postsynaptic cell, and causes activation.

Endocannabinoids, on the other hand, are key components of cellular membranes that are manufactured on demand. Since endocannabinoids are hydrophobic, they cannot travel very far in the body and so their effects are localized.

Endocannabinoids also travel in the opposite direction to other neurotransmitters. They first leave the postsynaptic cell and end at the presynaptic cell where there are high concentrations of axons. Axons are responsible for the release of traditional neurotransmitters.

This allows the postsynaptic cell to control the flow of neurotransmitters coming from the presynaptic cell.

CBD's Indirect Effects on the Endocannabinoid System

While THC has a strong binding affinity for both CB1 and CB2 receptors, cannabidiol (CBD) has no particular binding affinity. Instead, many of the therapeutic benefits of CBD are created through indirect actions.

These actions include activating **TRPV1 Receptors**. These receptors are involved in regulating pain, body temperature, and inflammation.

CBD also works to inhibit Fatty Acid Amide Hydrolase (FAAH). This inhibition creates higher levels of endocannabinoids like anandamide. Anandamide, or the bliss molecule, plays a role in the neural generation of pleasure and motivation so it's appropriate that its name is derived from "ananda," a Sanskrit word meaning bliss. It also performs other important functions like regulating feeding behaviors and assisting with embryo implantation during the early stages of pregnancy.

Implications of CBD in Medicine and Health

CBD's effect on the endocannabinoid system, as well as its impact on other areas of the human body, suggest that it may be useful in treating a multitude of medical conditions.

For example, the medical community has already identified that THC can be an effective treatment for multiple ailments, including the side effects of chemotherapy.

Because CBD inhibits the negative effects of THC, there is a possibility that administering the two together could be more beneficial than supplementing with THC alone.

Because CBD stimulates the endocannabinoid system, it helps to promote homeostasis in the body, reducing the sensation of pain and inhibiting inflammation.

Research into the possible uses of CBD and other cannabis compounds is a growing area of study, meaning the list of potential benefits is likely to grow.

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