HOW DOES CBD WORK?

Ever since the update to the 2018 U.S. Farm Bill, hemp has been farmed for CBD in ever-increasing numbers throughout the United States. CBD is found in everything from oils and treats to beverages and skin care. But how does it work? How is it able to do what it has done for countless consumers throughout the country?

Through the magic that is the Endocannabinoid System.

As you may already be aware, CBD is an acronym for Cannabidiol, one of hundreds of plant compounds found in Cannabis. When one enjoys a product with CBD in it (no matter the delivery method) that CBD compound will find its way to the receptors of the Endocannabinoid System.

What is the Endocannabinoid System?
Discovered in 1990, the Endocannabinoid System is a neuromodulatory system found in mammals such as us humans. We're born with it and it is said to have a very important purpose. In this system are receptors, the body-made (endogenous) cannabinoids, and the enzymes that are responsible for making and breaking down these endocannabinoids.

Described as a "widespread neuromodulatory system", the ECS is said to "play an important role in central nervous system (CNS) development, synaptic plasticity, and the response to endogenous and environmental insults" (1).

The most talked of compounds our body makes in this system are Anandamide and 2-AG with Anandamide being the first to be discovered. This system leaps into action when needed thanks to activation, where "endocannabinoids are liberated in one or two rapid enzymatic steps and released into the extracellular space" (1).

The body's endocannabinoid compounds (Anandamide and 2-AG) are lipids which are organic compounds that are fatty acids (or their derivatives) which are insoluble in water. This is one of many parallels that the Cannabis plant compounds bring, as the compounds (like CBD and THC)) are also lipids. This is why they are typically infused with oils or other fats like butter for goods and products.

The effects from both the body's endocannabinoids and the plant-grown ones in Cannabis are facilitated by the receptors of the system. These receptors known primarily as CB1 and CB2 are the ports that the compounds moor up to to get the job done.

The CB1 receptors are found primarily in the "central nervous system (CNS), particularly in cortex, basal ganglia, hippocampus, and cerebellum" while the CB2 receptors are found in organelles, vascular elements and immune cells (1) (4). While CB2 receptors are not as numbered or present as CB1 in day-to-day activities, an interesting point of note is that CB2 receptors "appear to be highly inducible, with expression in CB2 increasing up to 100 fold following tissue injury or during inflammation" (1).

Why do we want to know that? Because, it turns out, CBD is quite attracted to CB2 receptors. Whereas THC is primarily attracted to CB1 receptors, CBD tends to go for the CB2, which allows it to really show this compound's well documented anti-inflammatory properties (3).

There are countless studies that show the potential of the plant compounds, and the link to the ECS. This is leading many physicians to discuss something referred to as one potentially being Endocannabinoid Deficient.
One group in Washington reported that they believe conditions such as "migraine, fibromyalgia, and irritable bowel syndrome" can be attributed to this idea of being Endocannabinoid deficient. This idea was first circulated back in 2001 and was originally based on noticing "genetic overlap and comorbidity, patterns of symptomatology that could be mediated by the endocannabinoid system (ECS)" and the treatment using cannabinoids like Cannabis-made compounds "frequently provided symptomatic benefit" (2).

In fact, the same study reported that "statistically significant differences in cerebrospinal fluid anandamide levels have been documented in migraineurs, and advanced imaging studies have demonstrated ECS hypofunction in post-traumatic stress disorder" furthering their study into links of the ECS, where the receptors lie, and how plant-made cannabinoid compounds - like those in Cannabis - can be a way to assist many(2).
So what does all this mean?

Basically, when one enjoys plant cannabinoids like CBD, that compound is picked up by the receptors of the Endocannabinoid System. Since CBD is primarily attracted to CB2 receptors, this will often show how the body utilizes it in areas that CB2 would leap into action for, such as in anti-inflammation endeavors. This has led many scientific studies to be conducted on conditions that are exacerbated by, or result in, inflammatory response.

With this plant family, and her flower's compounds, continually proving to be bursting with potential for humans, it is no wonder that more are turning to these options as a way to assist in their own wellness goals and endeavors.

CITATIONS

1. Lu HC, Mackie K. An Introduction to the Endogenous Cannabinoid System. Biol Psychiatry. 2016;79(7):516-525. doi:10.1016/j.biopsych.2015.07.028
2. Russo EB. Clinical Endocannabinoid Deficiency Reconsidered: Current Research Supports the Theory in Migraine, Fibromyalgia, Irritable Bowel, and Other Treatment-Resistant Syndromes. Cannabis Cannabinoid Res. 2016;1(1):154-165. Published 2016 Jul 1. doi:10.1089/can.2016.0009
3. Atalay S, Jarocka-Karpowicz I, Skrzydlewska E. Antioxidative and Anti-Inflammatory Properties of Cannabidiol. Antioxidants (Basel). 2019;9(1):21. Published 2019 Dec 25. doi:10.3390/antiox9010021
4. Nagarkatti P, Pandey R, Rieder SA, Hegde VL, Nagarkatti M. Cannabinoids as novel anti-inflammatory drugs. Future Med Chem. 2009;1(7):1333-1349. doi:10.4155/fmc.09.93

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