



Cannabidiol is a molecular compound found in the cannabis and hemp plant proven to be an effective holistic treatment.

Cannabidiol, commonly referred to as CBD, is a molecular compound found in the cannabis and hemp plant proven to be an effective holistic treatment for a wide range of health conditions, ailments, and diseases. CBD has been scientifically proven to modulate and repair many physiological systems in the human brain and body, through the endocannabinoid system. Found in all mammals, the endocannabinoid system is made up of several receptors that react only to cannabinoids, such as CBD and the more well-known compound, THC (tetrahydrocannabinol). This is why these plant-based compounds have been known to help ease the pain of various medical conditions.

The key difference between CBD and THC is that unlike THC, CBD is 100% non-psychoactive and does not produce the adverse sensation of being “high.” CBD comes in many variations and can be taken as a general health booster or as an alternative remedy. CBD products include topical creams and ointments (beauty and medical), aromatherapy, tinctures (drops), vape oils, ingestibles (drinks and food), and many more.

Preclinical trials have shown astonishing results of CBD as an effective treatment to various health afflictions including:

- Arthritis
- Osteoporosis
- Asthma
- Psoriasis
- Anxiety
- Anorexia
- Nausea
- Morphine dependency
- Alcoholism
- PTSD
- Chronic pain
- Depression
- Schizophrenia

### **Learn more about CBD**

CBD is a non-intoxicating<sup>1</sup> type of substance known as a cannabinoid. Cannabinoids are active compounds mainly found within the cannabis genus of plants, which includes the commonly-identified “species” cannabis sativa and cannabis indica (the classification of cannabis species and sub-species is highly disputed)<sup>1</sup>. Toward the end of the 1980s, an animal study revealed a specific biological signaling system for these compounds<sup>2</sup>; now known as the endocannabinoid system (ECS), it is seemingly involved in an “ever-increasing” number of pathological conditions.<sup>3</sup>

The discovery and subsequent study of the ECS revealed cannabinoid-type compounds produced endogenously (that is, within the body), which are active in the ECS; the endogenous cannabinoid anandamide (AEA) was discovered in 1992<sup>4</sup>, and the ECS activity of a compound called 2-arachidonoylglycerol (2-AG) was discovered in 1994-1995.<sup>2</sup> These primary ECS compounds, and others of the same type discovered since, are now accordingly called endocannabinoids.

The ECS, in broad terms, consists of: endocannabinoids, the receptors they (and other exogenous cannabinoids such as those found in cannabis) bind to in order to perform various biological functions, and the enzymes that synthesize and

degrade the endocannabinoids. The two mainly-identified ECS receptors are the CB1 and CB2 receptors, which are primarily located in nerve cells (neurons) and immune cells, respectively.<sup>5</sup> However, the CB1 receptor has been shown to exist in many peripheral organs and tissues, including the skin, heart, lungs, blood vessels and more, in addition to the CNS (central nervous system)<sup>6</sup>, while the CB2 receptor has been located in CNS neurons.<sup>5</sup>

So where does CBD fit into all of this? In short, the expression (concentration) of the ECS receptors (and other receptors) in various regions of the body (including those affected by an adverse condition such as inflammation or a tumor) can potentially indicate a role of compounds which affect those receptors in the stable functioning of the healthy areas, or in the relief of conditions plaguing adversely affected ones. CBD is a complex molecule in that it has been found to utilize many bodily mechanisms, both inside and outside of the ECS.

Inside the ECS, for example, while CBD has low binding affinity for (does not bind strongly to) the ECS receptors<sup>7</sup>, it has been shown to indirectly affect them by inhibiting the enzyme responsible for breaking down anandamide.<sup>8</sup> One study<sup>9</sup> discusses how it also performs many other biological functions according to other research: lowering of cardiovascular and ocular (eye) blood pressure, lowering of heart rate, inhibition of contractions of smooth muscles in the gastrointestinal and urinary system, modulation of uterus-embryo interactions during pregnancy, and various immune responses. Outside the ECS, for example, one study<sup>10</sup> shows that CBD activates 5-HT<sub>1A</sub> receptors in the brain, reducing the behavioural and cardiovascular response to acute restraint stress in rats, and further suggests potential in stress-coping mechanisms related to psychiatric conditions such as depression and post-traumatic stress disorder (PTSD).

As a consequence of all this, these many complex mechanisms must be considered in the scope of medical research surrounding CBD, despite the immense therapeutic potential demonstrated for a wide range of conditions. Unfortunately, these are complicated matters not typically understood by the everyday individual to be able to voice a need to investigate this potential. These scientific barriers, as well as political barriers built by the controversy surrounding cannabis, are no doubt mostly responsible for the “slow” progress of research. It is our hope that we can help build a well-informed community with a voice, to be able to break these barriers and steadily move CBD into the forefront of medical investigations.