EVERYTHING YOU NEED TO KNOW ABOUT CANNABIDIOL

Color Up Therapeutics

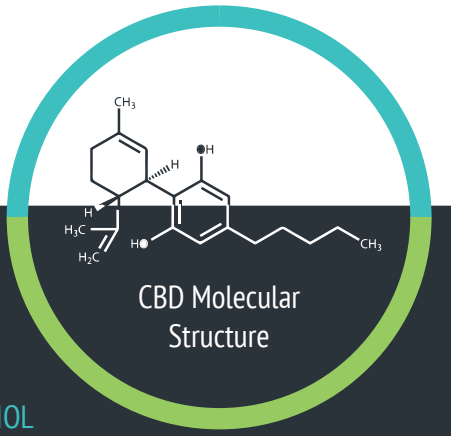
CBD IS

- one active cannabinoid identified in hemp that is safe and benign
- supported by evidence to benefit the human endocannabinoid system
- currently being studied internationally and has since 1978
- a researched anticonvulsant as well as other medical properties
- well tolerated and safe even at high doses

CBD IS USED AS

- a dietary supplement
- a food
- a medicine
- a cosmetic
- a pet product

WHAT IS CBD



CBD Molecular Structure

cannabidiol
noun | can·na·bi·di·ol
kan-ə-bə-ˈdī-ˌȯl, kə-ˈnab-ə-, -ˌōl
Medical Definition of CANNABIDIOL
: a crystalline diphenol C21H28(OH)2 obtained from the hemp plant that is non-psychoactive.

Cannabidiol is rapidly gaining popular recognition from mass media for its medical properties. Levels of CBD vary from different hemp plants dependent upon what the plant genetics and purpose. Hemp cultivators can breed plants to have higher or lower levels of CBD.

HISTORICAL BACKGROUND

1937 - CBD Prescribed to children

Cannabidiol was commonly used and prescribed prior to prohibition in 1937. The labeling included child dosing.

2012 - CBD causes neurogenesis

The International Journal of Neuropharmacologists discovered Cannabidiol (CBD) as a cause of Neurogenesis in the brain; specifically in the Hippocampus, an area typically associated with conscious memory and navigation [1].

2014 - USA Clincial Trials

Research done by G.W. Pharmaceuticals suggests that CBD could be used for treating symptoms of rheumatoid arthritis and other autoimmune diseases, pain, epilepsy, diabetes, nausea, bowel disorders [2].

2737 BC - First reported use of hemp medicinally

Cannabidiol is derived from a whole plant botanical substance that has been used for thousands of years with no documented deaths.

1978 - Early CBD trials

Four studies were conducted between 1978-1990 and included a total of 48 patients.

The earliest study, conducted in Brazil and funded by the U.S. government, involved 9 patients given either 200mg of CBD or placebo daily. Two of the four patients given CBD became seizure free during the three-month study. None given placebo showed any improvement.

Another study, published in 1980, involved 16 patients given 200-300 mg of CBD or placebo daily for up to four months. Four of the 8 who received CBD remained "almost free" of convulsions throughout the experiment and three other patients showed "partial improvement." Seven of the eight given placebo showed no changes.

1. Campos, Alline, Zaira Ortega, Javier Palazuelos, Manoela Fogaça, and Daniele Aguiar. "The Anxiolytic Effect of Cannabidiol on Chronically Stressed Mice Depends on Hippocampal Neurogenesis: Involvement of the Endocannabinoid System." International Journal of Neuropsychopharmacology 16.6 (2013): 1407-419. Print.
2. Blake, D. R., P. Robson, M. Ho, R. W. Jubb, and C. S. McCabe. "Preliminary Assessment of the Efficacy, Tolerability and Safety of a Cannabis-based Medicine (Sativex) in the Treatment of Pain Caused by Rheumatoid Arthritis." Rheumatology. Web. 10 July 2015. http://rheumatology.oxfordjournals.org/content/early/2005/11/09/rheumatology.kei183.short.

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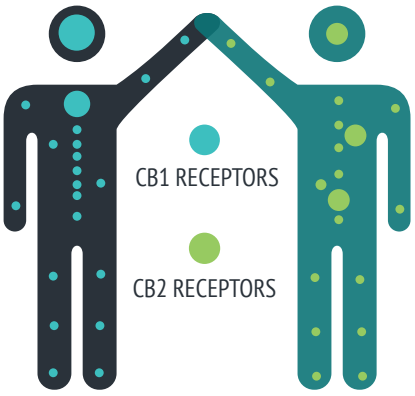
The Endocannabinoid System is perhaps the most important physiologic system involved in establishing and maintaining human health. Although the endocannabinoid system affects a wide variety of biological processes, experts believe that its overall function is to regulate homeostasis.

Only recently discovered in 1990, the endocannabinoid system (ECS) is located in the brain and throughout the central and peripheral nervous systems consisting of neuromodulatory lipids and their receptors.

ECS

APPETITE
ANALGESIA
AUTONOMIC NERVOUS SYSTEM
ENERGY & BALANCE
IMMUNE FUNCTION
MEMORY
METABOLISM
SLEEP
STRESS RESPONSE
THERMOREGULATION



FUNCTIONS OF THE ENDOCANNABINOID SYSTEM

The endocannabinoid system includes two primary types of receptors that bind to cannabinoids: CB1 and CB2. Unlike THC, which fits directly into the CB1 receptor, **Cannabidiol does not fit into either type of receptor perfectly. Instead, it stimulates activity in both receptors without actually binding to them**. This results in changes within any cells that contain either receptor. Because CB1 and CB2 receptors are present throughout the body, **the effects of CBD are systemic**.

Tetrahydrocannabinol fits directly into the CB1 receptor.

Cannabinol fits directly into the CB2 receptor.

Cannabidiol does not fit into the CB1 or CB2 receptors.

MEDICAL PROPERTIES OF CBD

According to a 2013 review published in the British Journal of Clinical Pharmacology [4], studies have found CBD to possess the following medical properties:

- **Antiemetic** — Reduces nausea and vomiting
- **Anticonvulsant** — Suppresses seizure activity
- **Antipsychotic** — Combats psychosis disorders
- **Anxiolytic/Anti-depressant** — Combats anxiety and depression disorders
- **Anti-tumoral/Anti-cancer** — Combats tumor and cancer cells
- **Antioxidant** — Combats neurodegenerative disorders
- **Anti-inflammatory** — Combats inflammatory disorders

In October 2003, the United States federal government obtained US Patent 6630507 titled, "Cannabinoids as antioxidants and neuroprotectants [3]." The patent claims:

Cannabinoids have been found to have antioxidant properties...useful in the treatment...of [a] wide variety of...diseases, such as... inflammatory and autoimmune diseases.The cannabinoids are found to have...application as neuroprotectants...in the treatment of neurodegenerative diseases...

READ STUDIES ON CBD

Pre-clinical and recent clinical data suggest that Cannabidiol is safe, therapeutic, and does not have potential for abuse.

CBD as an anticonvulsant
www.tinyurl.com/anticonvulsant1
www.tinyurl.com/anticonvulsant2
[up to 15]

Safety of CBD
www.tinyurl.com/CBDsafety1
www.tinyurl.com/CBDsafety2
[or 3]

3. The United States of America as represented by the Department of Health and Human Services. 2003. Cannabinoids as antioxidants and neuroprotectants. U.S. Patent 6,630,507, filed April 21, 1999, and issued October 7, 2003.
4. Fernández-Ruiz J, Sagredo O, Pazos MR, García C, Pertwee R, Mechoulam R, Martínez-Orgado J. British Journal of Clinical Pharmacology. 2013 Feb;75(2):323-33. doi: 10.1111/j.1365-2125.2012.04341.x. Review.