Cannabidiol (CBD) Review - Potential Benefits Relating to Functional, Healthy Balance

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Introduction: This review digs into the World Health Organization's CBD Critical Report, as well as several cited articles, pertaining to CBD's potential to **assist** our **Endocannabinoid System** with maintaining **Homeostasis**. Specifically, CBD's clinically tested **Therapeutic Properties: Neuroprotective, Anti-epileptic, Hypoxia-ischemia, Anxiolytic, Anti-psychotic, Analgesic, Anti-inflammatory, Anti-asthmatic and Anti-tumor properties** - all while having **no evidence of any public health related problems** associated with CBD to date. In addition, a review of Phytocannabinoids found in Cannabis - Primarily THC (gets you high) and CBD - which exhibits properties that possibly diminish ailments because it is an anti-inflammatory and anti-anxiolytic properties. Hence, CBD is believed to act as an organic stress reliever, anxiety suppressor and chronic pain easer. Several studies (cited below) support the above.

Section One: Summary from The World Health Organizations June 2018 Critical Review of Cannabidiol (CBD)

Click for Complete World Health Organization (WHO) Cannabidiol (CBD) Critical Report

WHO CBD Critical Report Summary from June 2018

Cannabidiol (CBD) is one of the naturally occurring cannabinoids found in cannabis plants. It is a 21-carbon terpenophenolic compound which is formed following decarboxylation from a cannabidiolic acid precursor, although it can also be produced synthetically. CBD can be converted to tetrahydrocannabinol (THC) under experimental conditions; however, this does not appear to occur to any significant effect in patients undergoing CBD treatment. In experimental models of abuse liability, CBD appears to have little effect on conditioned place preference or intracranial self-stimulation. In an animal drug discrimination model CBD failed to substitute for THC. In humans, **CBD exhibits no effects indicative of any abuse or dependence potential. CBD has been demonstrated as an effective treatment of epilepsy in several clinical trials, with one pure CBD product (Epidiolex®) currently in Phase III trials**. There is also **preliminary evidence that CBD may be a useful treatment for a number of other medical conditions**. There is unsanctioned medical use of CBD based products with oils, supplements, gums, and high concentration extracts available online for the treatment of many ailments. **CBD is generally well tolerated with a good safety profile. Reported adverse effects may be as a result of drug-drug interactions between CBD and patients' existing medications**. Several countries have modified their national controls to accommodate CBD as a medicinal product. **To date, there is no evidence of recreational use of CBD or any public health related problems associated with CBD. [10]**

Section Two: CBD - A Phytocannabinoid Derived from Industrial Hemp (Cannabis Sativa L) and How if Differs from THC - a Phytocannabinoid Derived from Marijuana

Cannabis Farms range from those grown to produce cannabis for recreational purposes **(Marijuana)** to those produced in order to use hemp fiber derived from the stems of the plant **(Industrial Hemp)** Marijuana - grown for recreational purposes contains higher concentrations of THC vs CBD in the dried female flowers/buds. In contrast, Cannabis grown as Industrial Hemp produce substantially more CBD than THC [1]

In plants, THC and CBD are derived from their acidic precursors Δ9 - tetrahydrocannabinolic acid (THCA) and cannabidiolic acid (CBDA). THCA and CBDA are both derived from cannabigerolic acid (CBGA). The final step differs, with THCA synthase and CBDA synthase producing THCA or CBDA, respectively, from CBGA. Subsequent decarboxylation of THCA and CBDA via light exposure, heating, or aging, results in THC or CBD. [1]

Section Three: Cannabidiol works with our Endocannabinoid System to assist our Central Nervous System, Brain and Peripheral Nervous System

There are two main cannabinoid (CB) receptors, CB1 which is primarily located in the central nervous system with some expression in peripheral tissues and CB2 receptors, which can be found in the periphery on cells with immune function, in the gastrointestinal tract and at low densities in the central nervous system.[14]

Across a range of measures in humans and animals, CBD had been shown to have very different effects from those of THC. In mice, CBD failed to produce the behavioral characteristics (e.g. suppression of locomotor activity, hypothermia, antinociception) associated with CB1 activation, whereas THC generated all of the effects which occur when CB1 is activated. [14, 15] Neuroimaging studies in humans and animals have shown that CBD has effects which are generally opposite to those of THC. [12] In contrast to THC, CBD has no effect on heart rate or blood pressure under normal conditions, but in animal models of stress it reduces heart rate and blood pressure

Section Three - Continued

Some studies have shown that CBD may reduce or antagonize some of the effects of THC. The mechanism for this is unclear, with some suggesting that it may be a weak CB1 antagonist. Recent evidence suggests that it may be a negative allosteric modulator of the CB1 receptor, thereby acting as a noncompetitive antagonist of the actions of THC and other CB1 agonists. [2,3] A recent study suggests that CBD may also act as an allosteric modulator at the CB2 receptor. [15] CBD may also interact with the endocannabinoid system through indirect mechanisms such as enhanced action of the endogenous cannabinoid ligand anandamide. This results from blockade of anandamide reuptake and the inhibition of its enzymatic degradation. [2,3,4]

Section Two and Three Summary: CBD works with our Endocannabinoid to help maintain our body's Functional, Healthy Balance - without the feeling of being "high" or "stoned". THC is known to have psychoactive properties effecting our nervous system.

Section Four: Cannabidiol has Therapeutic Properties Benefiting Several Medical Conditions without Negative Effects. Autism, Depression, Arthritis, Insomnia, Anxiety, Asthma, Epilepsy, and More

There is also evidence that CBD may be a useful treatment for a number of other medical conditions. However, this research is considerably less advanced than for treatment of epilepsy. For most indications, there is only pre-clinical evidence, while for some there is a combination of pre-clinical and limited clinical evidence. The range of conditions for which CBD has been assessed is diverse, consistent with its neuroprotective, anti-epileptic, hypoxia-ischemia, anxiolytic, anti-psychotic, analgesic, anti-inflammatory, anti-asthmatic, and anti-tumor properties. [7,8,9] The evidence for some of these indications was recently reviewed by Pisanti et al.,.[7] Additionally, recent human studies have reported a therapeutic signal for CBD for transplant acceptance (decreasing the development of graft vs. host disease after hematopoietic cell transplants) [10] and reducing some of the positive symptoms of schizophrenia (1000 mg/day, PO) [11]. Other recent reports have failed to demonstrate CBD efficacy to reduce symptoms of ulcerative colitis (up to 500 mg/day, PO) [12], chronic pain in kidney transplant patients (50 – 300 mg/day, PO) [13], and experimentally-induced anxiety (600 mg, PO). [9] Another possible therapeutic application which has been investigated is the use of CBD to treat drug addiction. A recent systematic review concluded that there were a limited number of preclinical studies which suggest that CBD may have therapeutic properties on opioid, cocaine, and psychostimulant addiction, and some preliminary data suggest that it may be beneficial in cannabis and tobacco addiction in humans. However, considerably more research is required to evaluate CBD as a potential treatment. Potential toxic effects have been extensively reviewed noting 2 recent studies. [7,8]. The first of which studied Cannabidiol's effect on opioid addiction and the other on it's ability to excite dopamine neurons.

Conclusion: Cannabidiol (CBD), according to clinical data, is potentially full of Therapeutic Properties relating to our Physiological System. Dosing varies by severity of symptoms, but there's no evidence any health related problems to date.

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