

# Why Are CBD-Focused Laws Not Enough?

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**Marijuana's medical efficacy derives largely from more than 70 unique chemicals – called cannabinoids – that each have important therapeutic properties. Currently, 23 states, the District of Columbia, Guam and Puerto Rico have adopted comprehensive medical marijuana laws that provide patients with access to all of marijuana's beneficial ingredients. However, an additional 16 states have enacted laws that only allow access to marijuana with high levels of one cannabinoid – CBD – and low levels of THC, marijuana's most well-known and extensively studied compound. While such laws represent a growing rejection of the federal prohibition on marijuana, denying access to the whole plant leaves the vast majority of patients without relief.**

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## What is CBD?

CBD refers to Cannabidiol, one of more than 70 known chemical compounds, cannabinoids, which are unique to the marijuana plant. Like THC, marijuana's most well-known therapeutic compound, CBD has significant medical effects, including anti-inflammatory, anti-pain, anti-anxiety, anti-psychotic and anti-spasm properties.<sup>1</sup> Unlike THC, however, it is non-psychoactive – meaning that it does not make people feel intoxicated.<sup>2</sup> In fact, CBD can counter the psychoactivity of THC.<sup>3</sup>

## What Does the Research Say About CBD?

Emerging research on CBD is quite promising. Evidence of varying quality supports the use of CBD for a wide range of serious medical conditions, including Alzheimer's,<sup>4</sup> anorexia,<sup>5</sup> anxiety,<sup>6</sup> atherosclerosis,<sup>7</sup> arthritis,<sup>8</sup> cancer,<sup>9</sup> colitis/Crohn's,<sup>10</sup> depression,<sup>11</sup> diabetes,<sup>12</sup> epilepsy/seizure,<sup>13</sup> fibromyalgia,<sup>14</sup> glaucoma,<sup>15</sup> irritable bowel,<sup>16</sup> multiple sclerosis,<sup>17</sup> neurodegeneration,<sup>18</sup> obesity,<sup>19</sup> osteoporosis,<sup>20</sup> Parkinson's,<sup>21</sup> PTSD,<sup>22</sup>

schizophrenia,<sup>23</sup> substance dependence/addiction,<sup>24</sup> and stroke/traumatic brain injury.<sup>25</sup>

Medical marijuana growers and providers in Colorado have developed a strain of marijuana with a high amount of CBD and a low amount of THC – named Charlotte's Web – that is being used to treat children with a rare and life-threatening form of childhood epilepsy called Dravet's syndrome. The success of this treatment for pediatric patients<sup>26</sup> has attracted significant media attention,<sup>27</sup> which has led families of children with epilepsy to organize around the country to advocate for access to medical marijuana. Some families have relocated to Colorado to access the only treatment that may work for their children.

## What about THC?

There is a large body of research validating the therapeutic properties of THC, which has been far more extensively studied than CBD. There are some conditions for which marijuana with THC is more effective, namely conditions usually associated with cancer and HIV.<sup>28</sup> Research shows that marijuana with an equal THC/CBD ratio is the most effective at treating pain associated with cancer.<sup>29</sup> Additionally, research shows that marijuana with more THC than CBD is most effective at treating nausea associated with chemotherapy.<sup>30</sup> Wasting and weight loss related to HIV and anorexia were found to respond significantly to 5mg of a synthetic version of THC (Dronabinol).<sup>31</sup> Multiple studies have shown that neuropathic pain, one of the most difficult conditions to treat and common among cancer and HIV patients, responds to THC.<sup>32</sup>

Moreover, the most cutting-edge research shows that THC and CBD have a synergistic effect, which means that they work better together than either one does alone.<sup>33</sup> This synergy is known as the "Entourage

Effect" and is documented in several research studies.<sup>34</sup> All marijuana plants have both THC and CBD, even if the THC is in trace amounts. They are both important in maximizing the benefits of the marijuana plant.<sup>35</sup>

### What States Currently Have CBD-Only Laws?

Due to the increased attention around CBD, many state legislatures have decided to adopt laws that allow access only to high-CBD and low-THC types of marijuana. As of August 1, 2015, 16 states – Alabama, Florida, Georgia, Iowa, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Utah, Virginia and Wisconsin – have enacted such CBD-only laws.<sup>36</sup> Most of these laws will allow access to a small number of patients and include components that will make them difficult to implement – and therefore are largely symbolic. None of these states have yet provided patients with access to CBD.

### CBD-Only Laws Fail to Help a Majority of Patients

These laws represent a recognition on the part of several states of the need to depart from federal policy on medical marijuana. They demonstrate what most of

the U.S. public knows, but which the federal government refuses to acknowledge: that marijuana has medicinal value, that patients are suffering, and that states need to act on their own to provide relief to patients in the face of federal inaction.

Yet these CBD-only laws are extremely limited and leave out the vast majority of patients who need THC and other cannabinoids in the plant (or the whole plant) to treat or alleviate their medical conditions. Research shows that therapeutic benefits are maximized by utilizing the whole plant. As some conditions respond better to a THC-rich strain of marijuana, the adoption of high-CBD/low-THC programs denies access to patients who can benefit from marijuana strains higher in THC.

Arbitrarily restricting medical marijuana access to certain therapeutic compounds hurts sick and dying people. Restricting options for the most effective medical treatment limits relief for patients suffering from serious medical conditions. States should adopt comprehensive medical marijuana laws, which allow patients to access the full spectrum of marijuana's medically beneficial qualities.

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<sup>1</sup> F. Grotenhermen and K. Müller-Vahl, "The therapeutic potential of cannabis and cannabinoids," *Dtsch Arztebl Int* 109, no. 29-30 (2012); A. W. Zuardi et al., "A critical review of the antipsychotic effects of cannabidiol: 30 years of a translational investigation," *Curr Pharm Des* 18, no. 32 (2012); A. R. Schier et al., "Cannabidiol, a Cannabis sativa constituent, as an anxiolytic drug," *Rev Bras Psiquiatr* 34 Suppl 1(2012); Mateus Machado Bergamaschi et al., "Safety and side effects of cannabidiol, a Cannabis sativa constituent," *Current Drug Safety* 6, no. 4 (2011); A. A. Izzo et al., "Non-psychoactive plant cannabinoids: new therapeutic opportunities from an ancient herb," *Trends Pharmacol Sci* 30, no. 10 (2009).

<sup>2</sup> Ethan Russo and Geoffrey W. Guy, "A tale of two cannabinoids: the therapeutic rationale for combining tetrahydrocannabinol and cannabidiol," *Medical Hypotheses* 66, no. 2 (2006).

<sup>3</sup> A. Englund et al., "Cannabidiol inhibits THC-elicited paranoid symptoms and hippocampal-dependent memory impairment," *J Psychopharmacol* 27, no. 1 (2013); D. T. Malone, D. Jongejans, and D. A. Taylor, "Cannabidiol reverses the reduction in social interaction produced by low dose Delta(9)-tetrahydrocannabinol in rats," *Pharmacol Biochem Behav* 93, no. 2 (2009); Sagnik Bhattacharyya et al., "Opposite effects of  $\delta$ -9-tetrahydrocannabinol and cannabidiol on human brain function and psychopathology," *Neuropsychopharmacology* 35, no. 3 (2009).

<sup>4</sup> A. W. Zuardi, "Cannabidiol: from an inactive cannabinoid to a drug with wide spectrum of action," *Rev Bras Psiquiatr* 30, no. 3 (2008); N. M. Kogan and R. Mechoulam, "Cannabinoids in health and disease," *Dialogues Clin Neurosci* 9, no. 4 (2007).

<sup>5</sup> Maria Scherma et al., "The Role of the Endocannabinoid System in Eating Disorders: Neurochemical and Behavioural Preclinical Evidence," *Current pharmaceutical design* 20, no. 13 (2014).

<sup>6</sup> Schier et al., "Cannabidiol, a Cannabis sativa constituent, as an anxiolytic drug."

<sup>7</sup> Ronen Durst et al., "Cannabidiol, a nonpsychoactive Cannabis constituent, protects against myocardial ischemic reperfusion injury," *American Journal of Physiology-Heart and Circulatory Physiology* 293, no. 6 (2007); F. Mach and S. Steffens, "The role of the endocannabinoid system in atherosclerosis," *J Neuroendocrinol* 20 Suppl 1(2008).

<sup>8</sup> Carmen La Porta et al., "Involvement of the endocannabinoid system in osteoarthritis pain," *European Journal of Neuroscience* 39, no. 3 (2014).

<sup>9</sup> P. Pacher, "Towards the use of non-psychoactive cannabinoids for prostate cancer," *Br J Pharmacol* 168, no. 1 (2013); Luciano De Petrocellis et al., "Non-THC cannabinoids inhibit prostate carcinoma growth in vitro and in vivo: pro-apoptotic effects and underlying mechanisms," *British Journal of Pharmacology* 168, no. 1 (2013).

<sup>10</sup> Timna Naftali et al., "Cannabis Induces a Clinical Response in Patients with Crohn's Disease: a Prospective Placebo-Controlled Study," *Clinical Gastroenterology and Hepatology* 11, no. 10 (2013).

R. Schicho and M. Storr, "Cannabis finds its way into treatment of Crohn's disease," *Pharmacology* 93, no. 1-2 (2014).

<sup>11</sup> Alexandre R de Mello Schier et al., "Antidepressant-Like and Anxiolytic-Like Effects of Cannabidiol: A Chemical Compound of Cannabis sativa," *CNS & Neurological Disorders-Drug Targets (Formerly Current Drug Targets-CNS & Neurological Disorders)* 13, no. 6 (2014).

<sup>12</sup> M. Rajesh et al., "Cannabidiol attenuates cardiac dysfunction, oxidative stress, fibrosis, and inflammatory and cell death signaling pathways in diabetic cardiomyopathy," *J Am Coll Cardiol* 56, no. 25 (2010); L. Weiss et al., "Cannabidiol lowers incidence of diabetes in non-obese diabetic mice," *Autoimmunity* 39, no. 2 (2006); V. Di Marzo,

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"The endocannabinoid system in obesity and type 2 diabetes," *Diabetologia* 51, no. 8 (2008).

<sup>13</sup> Brenda E Porter and Catherine Jacobson, "Report of a parent survey of cannabidiol-enriched cannabis use in pediatric treatment-resistant epilepsy," *Epilepsy & Behavior* 29, no. 3 (2013).

<sup>14</sup> Ethan B Russo, "Clinical endocannabinoid deficiency (CECD): can this concept explain therapeutic benefits of cannabis in migraine, fibromyalgia, irritable bowel syndrome and other treatment-resistant conditions?," *Neuro endocrinology letters* 25, no. 1-2 (2003).

<sup>15</sup> Azza B. El-Remessy et al., "Neuroprotective Effect of (-)-Δ9-Tetrahydrocannabinol and Cannabidiol in N-Methyl-d-Aspartate-Induced Retinal Neurotoxicity," *The American Journal of Pathology* 163, no. 5.

<sup>16</sup> Giuseppe Esposito et al., "Cannabidiol in inflammatory bowel diseases: a brief overview," *Phytotherapy Research* 27, no. 5 (2013).

<sup>17</sup> Ewa Kozela et al., "Cannabidiol inhibits pathogenic T cells, decreases spinal microglial activation and ameliorates multiple sclerosis-like disease in C57BL/6 mice," *British Journal of Pharmacology* 163, no. 7 (2011).

<sup>18</sup> J. Fernandez-Ruiz et al., "Cannabidiol for neurodegenerative disorders: important new clinical applications for this phytocannabinoid?," *Br J Clin Pharmacol* 75, no. 2 (2013); Javier Fernández-Ruiz et al., "Prospects for cannabinoid therapies in basal ganglia disorders," *British Journal of Pharmacology* 163, no. 7 (2011); Teresa Iuvone et al., "Cannabidiol: a promising drug for neurodegenerative disorders?," *CNS neuroscience & therapeutics* 15, no. 1 (2009).

<sup>19</sup> J. A. Farrimond, B. J. Whalley, and C. M. Williams, "Cannabinol and cannabidiol exert opposing effects on rat feeding patterns," *Psychopharmacology (Berl)* 223, no. 1 (2012); Di Marzo, "The endocannabinoid system in obesity and type 2 diabetes."

<sup>20</sup> A. I. Idris, "Cannabinoid receptors as target for treatment of osteoporosis: a tale of two therapies," *Curr Neuropharmacol* 8, no. 3 (2010).s

<sup>21</sup> M. H. Chagas et al., "Effects of cannabidiol in the treatment of patients with Parkinson's disease: An exploratory double-blind trial," *J Psychopharmacol* (2014); A. W. Zuardi et al., "Cannabidiol for the treatment of psychosis in Parkinson's disease," *ibid.* 23, no. 8 (2009); M. H. Chagas et al., "Cannabidiol can improve complex sleep-related behaviours associated with rapid eye movement sleep behaviour disorder in Parkinson's disease patients: a case series," *J Clin Pharm Ther* 39, no. 5 (2014).

<sup>22</sup> A. Neumeister, "The endocannabinoid system provides an avenue for evidence-based treatment development for PTSD," *Depress Anxiety* 30, no. 2 (2013).

<sup>23</sup> S. Deiana, "Medical use of cannabis. Cannabidiol: a new light for schizophrenia?," *Drug Test Anal* 5, no. 1 (2013); D. Hermann and M. Schneider, "Potential protective effects of cannabidiol on neuroanatomical alterations in cannabis users and psychosis: a critical review," *Curr Pharm Des* 18, no. 32 (2012); C. J. Morgan and H. V. Curran, "Effects of cannabidiol on schizophrenia-like symptoms in people who use cannabis," *Br J Psychiatry* 192, no. 4 (2008).

<sup>24</sup> Celia J. A. Morgan et al., "Cannabidiol reduces cigarette consumption in tobacco smokers: preliminary findings," *Addictive Behaviors* 38, no. 9 (2013).

<sup>25</sup> For a good overview, see Project CBD, <http://www.projectcbd.org/>; and Izzo et al., "Non-psychotropic plant cannabinoids: new therapeutic opportunities from an ancient herb."

<sup>26</sup> Porter and Jacobson, "Report of a parent survey of cannabidiol-enriched cannabis use in pediatric treatment-resistant epilepsy."

<sup>27</sup> Sanjay Gupta, "Why I Changed My Mind on Weed," *CNN.com*, August 8 2013.

<sup>28</sup> See, e.g., Grotenhermen and Muller-Vahl, "The therapeutic potential of cannabis and cannabinoids; DI Abrams et al., "Cannabis in painful HIV-associated sensory neuropathy A randomized placebo-controlled trial," *Neurology* 68, no. 7 (2007).

<sup>29</sup> J. R. Johnson et al., "Multicenter, double-blind, randomized, placebo-controlled, parallel-group study of the efficacy, safety, and tolerability of THC:CBD extract and THC extract in patients with intractable cancer-related pain," *J Pain Symptom Manage* 39, no. 2 (2010).

<sup>30</sup> Keith A Sharkey, Nissar A Darmani, and Linda A Parker, "Regulation of nausea and vomiting by cannabinoids and the endocannabinoid system," *European journal of pharmacology* 722(2014); Barbara Todaro, "Cannabinoids in the treatment of chemotherapy-induced nausea and vomiting," *Journal of the National Comprehensive Cancer Network* 10, no. 4 (2012).

<sup>31</sup> Margaret Haney et al., "Dronabinol and marijuana in HIV-positive marijuana smokers: Caloric intake, mood, and sleep," *JAIDS Journal of Acquired Immune Deficiency Syndromes* 45, no. 5 (2007); Margaret Haney et al., "Dronabinol and marijuana in HIV+ marijuana smokers: acute effects on caloric intake and mood," *Psychopharmacology* 181, no. 1 (2005).

<sup>32</sup> B. Wilsey et al., "Low-dose vaporized cannabis significantly improves neuropathic pain," *J Pain* 14, no. 2 (2013); Igor Grant et al., "Medical marijuana: clearing away the smoke," *Open Neurology Journal* 6(2012); M. A. Ware et al., "Smoked cannabis for chronic neuropathic pain: a randomized controlled trial," *CMAJ* 182, no. 14 (2010); R. J. Ellis et al., "Smoked medicinal cannabis for neuropathic pain in HIV: a randomized, crossover clinical trial," *Neuropsychopharmacology* 34, no. 3 (2009); D. I. Abrams et al., "Cannabis in painful HIV-associated sensory neuropathy: a randomized placebo-controlled trial," *Neurology* 68, no. 7 (2007). B. Wilsey et al., "A randomized, placebo-controlled, crossover trial of cannabis cigarettes in neuropathic pain," *J Pain* 9, no. 6 (2008).

<sup>33</sup> Katherine Ann Scott et al., "Enhancing the Activity of Cannabidiol and Other Cannabinoids In Vitro Through Modifications to Drug Combinations and Treatment Schedules," *Anticancer research* 33, no. 10 (2013).

<sup>34</sup> See, e.g., Ethan B. Russo, "Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects," *British Journal of Pharmacology* 163, no. 7 (2011).

<sup>35</sup> E. B. Russo and J. M. McPartland, "Cannabis is more than simply delta(9)-tetrahydrocannabinol," *Psychopharmacology (Berl)* 165, no. 4 (2003); Russo and Guy, "A tale of two cannabinoids: the therapeutic rationale for combining tetrahydrocannabinol and cannabidiol."

<sup>36</sup> National Conference of State Legislatures, "State Medical Marijuana Laws," (last modified July 20, 2015), <http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>.