

CBD for Pain: Is Cannabidiol a Natural Alternative to Opioid Drugs?

Chris Meletis, ND

Chris D. Meletis, ND, is an educator, international author and lecturer. His personal mission is “Changing World’s Health, One Person at a Time.” He believes that when people become educated about their bodies is the moment when positive change begins.

*He is widely recognized as a world-renowned expert on the science of CBD’s and has authored 16 books and over 200 national scientific articles in such journals and magazines as *Natural Health, Alternative and Complementary Therapies, Townsend Letter for Doctors and Patients, Life Extension and The Journal of Restorative Medicine.**

*Dr. Meletis served as Dean of Naturopathic Medicine and Chief Medical Officer for seven years at NUNM, the oldest Naturopathic Medical School in North America. He has received numerous awards, including the prestigious Physician of the Year Award by the American Association of Naturopathic Physicians; Excellence Award for his work in treating and advocating for the medically underserved; and most recently, the NUNM Hall of Fame Award. (*Altern Ther Health Med.* 2020;26(S1):6-7.)*

The increased dependence upon opioid medications to treat pain has become alarming given the potential to grow dependent upon and overdose on these medications. More than 130 individuals die every day due to opioid overdose.¹ This includes prescription opioid pain killers, heroin, and synthetic opioids such as fentanyl. In 2017, more than 47 000 people in the U.S. died from overdosing on one of these medications.¹ This has created what has been commonly termed “the opioid crisis.”

In the 1990s, pharmaceutical companies assured physicians that opioid drugs were not addictive, and doctors began to prescribe these medications.² Since then widely, clinical experience and science has shown that this class of medications is indeed highly addictive.^{2,3} Furthermore, a paper published in the journal *Pain* found that 21% to 29% of individuals using opioids for chronic pain misuse the drugs.⁴ Despite the awareness of the addictive nature of opioids, the number of prescriptions written for this class of medications has skyrocketed by 300% since 1991.⁵

A safe and natural alternative to opioids is needed, and accumulating evidence indicates that alternative is cannabidiol (CBD) oil.

THE ENDOCANNABINOID SYSTEM AND PAIN

CBD is a phytocannabinoid derived from hemp. Unlike the primary cannabis-derived phytocannabinoid known as tetrahydrocannabinol (THC), CBD has no psychoactive effects. It interacts with the endocannabinoid system, which is integrally involved in pain perception. CBD indirectly acts upon CB₁ and CB₂, along with type 1 vanilloid receptors (TRPV), which regulate pain perception and inflammation.⁶ CBD also boosts levels of the endogenous cannabinoid anandamide, which is involved in controlling pain through the CB₁ receptor.^{7,8}

SHARED PATHWAYS BETWEEN OPIOIDS AND CBD

The endocannabinoid and opioid systems are intertwined. CB₁ receptors and opioid receptors are found in many of the same regions of the brain.⁵ Modulating CB₁ receptors can influence the rewarding properties of opioids, and opioid administration can also alter the effects of cannabinoids.⁵ Further corroborating this endocannabinoid-opioid connection was a human study that determined CB₁ was upregulated in the reward pathway of opioid users.⁵ Additionally, blocking CB₁ receptors in the amygdala interferes with opioid withdrawal in rats.⁹

Due to these shared pathways, CBD has been shown to demonstrate properties that may make it beneficial for people withdrawing from opioids. In people with addictions, the recall of memories related to a drug experience can lead to craving and relapse. Research indicates memories related to the use of a drug are reactivated due to environmental cues and are strengthened through a process known as reconsolidation. This can lead to the cycle of addiction. However, rodent studies indicate CBD can disrupt reconsolidation of drug-related memories and reduce the risk of relapse.¹⁰ Furthermore, in other rodent studies, CBD has ameliorated the rewarding effects of several drugs of abuse including cocaine and amphetamine.^{5,11} A double-blind pilot study in humans found that in people who had

recently abstained from heroin, CBD inhibited heroin cravings.¹² The reduction in cravings was noted as soon as 1 hour after administration of the CBD and lasted for as long as 7 days. CBD also reduced anxiety in the subjects.

One group of researchers concluded, “Because CBD is neither intoxicating nor rewarding and has an extremely large therapeutic window and impressive safety profile, the use of CBD to inhibit opioid craving has great therapeutic potential.”²⁵

CBD AND ABDOMINAL PAIN

CBD's role in ameliorating opioid addiction extends beyond its ability to ease withdrawal and reduce cravings. CBD may also have a role to play in supporting the health of people who are suffering from pain—the main reason many people turn to opioids in the first place. The endocannabinoid system has been studied for its role in pain perception in various areas of the body. One example is the relationship between gut, pain, and endocannabinoids. The endocannabinoid system can regulate the perception of visceral pain^{13,14} and may also be the bridge linking stress to abdominal pain.¹⁴

There is a cross-talk between the endocannabinoid system and the gut microbiota that plays a role in the regulation of visceral pain. The probiotic *Lactobacillus* given orally to rodents inhibited visceral pain while also upregulating CB₂ receptors in the intestinal epithelium.¹⁵ Blocking CB₂ canceled out the probiotic's beneficial effects. Furthermore, in a model of chronic colonic hypersensitivity, *Lactobacillus acidophilus* produced analgesia.¹⁵ This study also observed that CB₂ receptors may play a role in the correlation between gut microbiota and visceral hypersensitivity.

CBD AND OTHER FORMS OF PAIN

CBD has been directly studied in different forms of pain in humans. Seven kidney transplant patients suffering from pain were given an initial dose of up to 100 mg/day of CBD.¹⁶ Two subjects experienced complete resolution of pain, four had a partial improvement in the first 15 days, and one subject did not have any improvement. Additionally, cannabinoid-rich hemp oil was associated with less body pain and alleviated other symptoms in girls who had suffered from an adverse reaction to the human papillomavirus (HPV) vaccine.¹⁷ Another study observed that the oil of cannabis seeds reduces pain in people with chronic musculoskeletal inflammation.¹⁸ It was thought this effect was due to the ideal omega-3/omega-6 ratio content in the oil. In a survey of 484 women using various strategies for their endometriosis pain, hemp/CBD oil was one of the supportive measures rated as most effective.¹⁹ The hemp/CBD oil had a mean effectiveness of 6.33 on a 10-point scale. In rats, local CBD treatment reduced joint inflammation, and prophylactic administration of CBD blocked the development of osteoarthritis.²⁰

CONCLUSION

An alarming number of patients have suffered the consequences of the opioid crisis. The addictive nature of these drugs indicates that a natural alternative to opioids is needed. Based on accumulating evidence, CBD oil may be that alternative. Studies have pointed to the potential effectiveness of CBD in pain related to endometriosis and osteoarthritis as well as abdominal pain and other disorders.

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