



The Need for Evidence Regarding Cannabidiol

Wilson M. Compton, MD, MPE; Emily B. Einstein, PhD

Consumer products containing cannabidiol (CBD) have markedly increased in popularity.¹ Although many of these products are marketed in ways that may suggest potential effects on a variety of bodily functions, the precise health conditions that consumers believe they are treating with CBD products is uncertain. Is a consumer seeking a general wellness benefit, or are they attempting to treat a specific health condition? That is, is the consumer using CBD as a medication? If so, the US Food and Drug Administration (FDA) may have an important role to play in combatting unsupported claims of medical benefit. The article by Leas et al² addresses this issue, and their analysis of user testimonials on the largest social media forum devoted to discussing CBD provides support for the idea that consumers are using products containing CBD to treat conditions that have FDA-approved, effective therapeutics. Although this finding is not unexpected given the substantial increase in sales and marketing of CBD-containing products,¹ these data highlight a potential patient population that may be substituting CBD for evidence-based care.

Media portrayals of CBD as a health aid and a proliferation of products from cosmetics to candy that tout CBD as an ingredient contribute to the perception that CBD is a benign natural product.³ In addition, CBD is often cited as the component of cannabis that is nonpsychoactive likely because it does not contribute to the typical cannabis intoxication. Unlike $\Delta 9$ -tetrahydrocannabinol (THC), CBD is a cannabinoid that does not make people high, and so this drug is not popular for recreational use. However, FDA approval of a CBD formulation to treat severe seizure disorders shows the capacity of CBD to alter brain activity. In addition, preclinical work shows that CBD has psychoactive properties based on its association with lessening the symptoms of such conditions as anxiety and addiction.^{4,5} Furthermore, CBD may also interact with medications or diminish their efficacy owing to its effects on components of drug metabolism.⁶ For these reasons, it is important that consumers understand that CBD should be regarded as a psychoactive chemical with multiple biological effects and is not just an uncomplicated dietary supplement.

A challenge to using evidence in the CBD debate, as Leas and colleagues² suggest, is that the evidence base is still developing at a pace that is outstripped by the uptake of CBD. For instance, the study suggests that some persons with an addictive disorder are using CBD to treat their own condition. Such use of an unproven treatment could mean that effective treatments are not properly used; in some cases, this could result in serious harm.

Findings from ongoing and future research might show that CBD can be effective for addictions and other indications. If there is supporting evidence, the National Institutes of Health may be able to fund the research that can test CBD as a medication, such as the potential use of CBD for addictive disorders.⁵ The current research portfolio of the National Institutes of Health includes such research on the therapeutic potential of CBD for conditions ranging from addiction to gastroparesis and posttraumatic stress disorder.

Although it is possible that the respondents sampled in the study by Leas et al² may have been using CBD to treat a condition for which it could eventually be shown to be therapeutic, an ongoing concern is that currently available CBD products fall short of the manufacturing and purity standards that are required for sale as a medication. To clarify best practices for clinical research toward developing medications from cannabis-derived compounds such as CBD, the FDA has drafted guidance for industry.⁷ Rigorous research toward FDA approval of novel medications is the safest path for realizing any therapeutic potential of CBD, including assessment and quality control of manufacturing and dosing of any such new medications.

+ Related article

Author affiliations and article information are listed at the end of this article.

Open Access. This is an open access article distributed under the terms of the CC-BY License.

In the present landscape, in which consumers are bombarded with health claims related to CBD products, clear communication about possible risks is essential. A recent example of this is an article in the newsletter distributed to all Kaiser Permanente patients⁸ that describes currently available information about possible health benefits and risks. Under the heading "Is it safe to try CBD?" the article concludes: "At this point, [we] don't recommend the use of CBD products...We just don't have enough evidence right now on the health benefits, and a big concern is the lack of regulation and possible health risks. If you're going to try CBD, it's important to be cautious and know the risks. And whether you're interested or already using CBD, [we encourage] you to talk to your doctor about it."

More research will be the key to understanding possible therapeutic indications of CBD. For now, education is critical to ensure that consumers approach the health claims of CBD-containing products with appropriate skepticism and do not forgo evidence-based care in favor of CBD.

ARTICLE INFORMATION

Published: October 15, 2020. doi:[10.1001/jamanetworkopen.2020.21067](https://doi.org/10.1001/jamanetworkopen.2020.21067)

Open Access: This is an open access article distributed under the terms of the [CC-BY License](https://creativecommons.org/licenses/by/4.0/). © 2020 Compton WM et al. *JAMA Network Open*.

Corresponding Author: Wilson M. Compton, MD, MPE, National Institute on Drug Abuse, National Institutes of Health, US Department of Health and Human Services, 6001 Executive Blvd, MSC 9581, Bethesda, MD 20892 (wcompton@nida.nih.gov).

Author Affiliations: National Institute on Drug Abuse, National Institutes of Health Department of Health and Human Services, Bethesda, Maryland.

Conflict of Interest Disclosures: Dr Compton reported ownership of stock in General Electric, 3M, and Pfizer, Inc, unrelated to the submitted work. No other disclosures were reported.

Disclaimer: The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the National Institute on Drug Abuse of the National Institutes of Health or the US Department of Health and Human Services.

REFERENCES

1. Williamson EM, Liu X, Izzo AA. Trends in use, pharmacology, and clinical applications of emerging herbal nutraceuticals. *Br J Pharmacol*. 2020;177(6):1227-1240. doi:[10.1111/bph.14943](https://doi.org/10.1111/bph.14943)
2. Leas EC, Hendrickson EM, Nobles AL, et al. Self-reported cannabidiol (CBD) use for conditions with proven therapies. *JAMA Netw Open*. 2020;3(10):e2020977. doi:[10.1001/jamanetworkopen.2020.20977](https://doi.org/10.1001/jamanetworkopen.2020.20977)
3. Steenson S, Chambers L. Cannabidiol: a budding industry! *Nutr Bull*. 2019;44(3):228-240. doi:[10.1111/nbu.12395](https://doi.org/10.1111/nbu.12395)
4. Blessing EM, Steenkamp MM, Manzanares J, Marmar CR. Cannabidiol as a potential treatment for anxiety disorders. *Neurotherapeutics*. 2015;12(4):825-836. doi:[10.1007/s13311-015-0387-1](https://doi.org/10.1007/s13311-015-0387-1)
5. Hurd YL, Yoon M, Manini AF, et al. Early phase in the development of cannabidiol as a treatment for addiction: opioid relapse takes initial center stage. *Neurotherapeutics*. 2015;12(4):807-815. doi:[10.1007/s13311-015-0373-7](https://doi.org/10.1007/s13311-015-0373-7)
6. Brown JD, Winterstein AG. Potential adverse drug events and drug-drug interactions with medical and consumer cannabidiol (CBD) use. *J Clin Med*. 2019;8(7):989. doi:[10.3390/jcm8070989](https://doi.org/10.3390/jcm8070989)
7. US Dept of Health and Human Services. Cannabis and cannabis-derived compounds: quality considerations for clinical research: guidance for industry. Posted July 2020. Accessed August 11, 2020. <https://www.fda.gov/media/140319/download>
8. Kaiser Permanente. What you need to know about CBD. Accessed August 11, 2020. https://thrive.kaiserpermanente.org/thrive-together/live-well/what-you-need-to-know-CBD?wt.tsrc=email_pih&cat=l