



Cannabidiol (CBD) Primer

Cannabidiol (CBD) Primer: Essential Information for Healthcare Providers and Consumers

Some patients may be interested in trying a CBD product to determine if it would help alleviate their symptoms or improve their quality of life, and these patients may have questions about the therapeutic use of CBD, as well as how to judge the quality of CBD products. Here are some peer-reviewed answers.....

The range of health conditions for which CBD has been (or is being) assessed is quite diverse. Currently, clinical trials are evaluating CBD's analgesic, neuroprotective, antiepileptic, anxiolytic, antipsychotic, anti-inflammatory, antitumor, anti-hypoxia/ischemia, and several other properties. (1)

CBD impacts one's health by interacting with the endocannabinoid system. What is the endocannabinoid system?

The endocannabinoid system (ECS) is an internal homeostatic system present in all humans. The ECS plays a critical role in the nervous system and regulates multiple physiological processes including digestion, mood, coordination, sensory integration, and other processes. The ECS also influences immunomodulation, cardiovascular functions, fertility, tumor surveillance, bone physiology, appetite, the hypothalamic-pituitary-adrenal axis, neural development, and intraocular pressure. (2-9)

Clinical trials are evaluating the use of CBD for the treatment of various musculoskeletal conditions. What are some of the musculoskeletal conditions being studied?

The specific musculoskeletal health conditions for which CBD is being evaluated include fibromyalgia, TMJ and myofascial pain, mild to moderate muscle pain, aromatase inhibitor-associated musculoskeletal symptoms (AIMSS), and joint arthritis. (1)

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Clinical trials are evaluating the use of CBD for the treatment of various psychological conditions. What are some of the psychological conditions being studied?

The specific psychological health conditions for which CBD is being evaluated include schizophrenia and bipolar disorder, adjunct treatment in early psychosis, anxiety and insomnia, treatment-resistant depression, PTSD (CBD+THC), ADHD (CBD+THC), and panic disorder. Also, use disorders, including cannabis use disorder, alcohol use disorder, and opioid use disorder are being studied. (1)

What are some of the proposed ways in which CBD may potentially help athletes feel better?

According to some studies, the consumption of CBD may improve sleep, reduce anxiety and depression, decrease inflammation, reduce muscle pain and soreness, and enhance recovery. (10, 11)

What are the primary reasons consumers use topical CBD?

"A recent national survey estimated that 64 million Americans had tried CBD products, and 21% of those surveyed reported having used a topical CBD product. As with other hemp-derived products, consumers of topical CBD products report primarily using for therapeutic purposes, most often with the intent to manage pain (e.g., joint stiffness, tendonitis, or muscle soreness) or dermatological conditions (e.g., acne, dermatitis, eczema), but these products are also sometimes used for cosmetic purposes (e.g., anti-aging)." (12)

Whether or not you, as a healthcare provider, endorse the use of CBD, is there any guidance related to quality standards of CBD products purchased online, at a retail store, or at a doctor's office that you can offer?

According to a "Clinician's Guide to Cannabidiol and Hemp Oils" published in an edition of the Mayo Clinic Proceedings, "As with other herbal supplements, ensure that the product has been extracted by carbon dioxide with no solvents, is certified by the US Department of Agriculture as organic, and has been tested for pesticides/herbicides, which have been found in some products." (13) The Mayo Clinic and other healthcare establishments have requirements for collaboration with manufacturers of dietary supplements, and the basis of some of these standards can be applied to the purchase of CBD products. These standards include the following points: (13, 14)

- Does it meet the standards of Current Good Manufacturing Practices (CGMP) certification from the US Food and Drug Administration, European Union (EU), Australian (AUS), or Canadian (CFIA) organic certification?
- Does the company have an independent adverse event reporting program?
- Is the product certified organic or ecofarmed?
- Have their products been laboratory tested by batch to confirm tetrahydrocannabinol levels are <0.3% and the product contains no pesticides or heavy metals?



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Professor Raphael Mechoulam
Faculty of Medicine, The Hebrew University of Jerusalem, Member, Israel Academy of Science

CBD manufacturers may provide a "Certificate of Analysis" (CoA). What is a CoA? What information is typically included in a CoA?

"The Certificate of Analysis (CoA) is a crucial Good Manufacturing Practice (GMP) document for a batch of drug substances or products in development or production. It contains essential quality information and a summary of specifications and testing results." (14) For example, a CoA reports the presence of excipients, presence of mold, presence of heavy metals, potency and impurity content data, drug substances, production/expiry dates, and testing methods or results, along with other information. (15)

How do you know if a Certificate of Analysis (CoA) is real?

One way to establish the authenticity of a CoA is to contact the issuing lab. If a lab is not listed on the CoA, then the CoA is not valid. (16)

Some CBD manufacturers claim that their products are manufactured in an NSF (National Sanitation Foundation) compliant facility. What does "NSF compliant" mean?

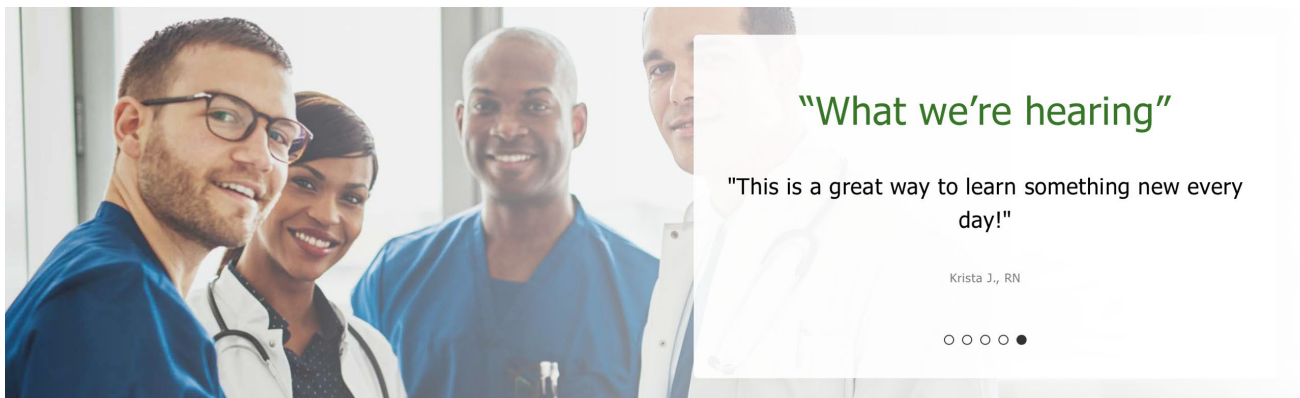
"Businesses, regulators, and consumers look to the NSF for the development of public health standards and services that help protect the world's food, water, consumer products, and environment." (17) The NSF performs "extensive product testing and material analyses [as well as] unannounced plant inspections... every aspect of a product's development is thoroughly evaluated before it can earn our certification." (17)

Are the CBD products that are purchased online labelled accurately?

In 2017, a study evaluating the accuracy of the labels of CBD extracts that had been purchased online was performed. The study looked at the CBD content and other cannabinoid content of 84 CBD products (manufactured by 31 US companies). In approximately 43% of products, the CBD content was under-reported, in 26% of the products, the CBD content was over-reported, and in 31% of the CBD products, the CBD content was accurately reported. Of note, THC was detected in approximately 21% of the samples, but the labels did not indicate that THC was in the product. Furthermore, the amount of THC in the products could potentially cause intoxication or impairment. (18)

The overdose of opioids or benzodiazepines may lead to respiratory depression. Does CBD lead to respiratory depression?

The consumption of CBD has not been associated with respiratory depression. (19) Importantly, the quality and purity of CBD products can vary widely, and these contaminants and/or the mislabeling can introduce risks, including respiratory depression. The source of the CBD product is crucial to your safety.



Opioids and benzodiazepines can be addictive. Is CBD addictive? Does the abrupt discontinuation of CBD use lead to a withdrawal syndrome?

In a 2020 study evaluating abuse liability of CBD, it was found that CBD is not addictive and the “abrupt withdrawal of CBD after 4 weeks of use (750 mg twice daily taken orally) did not result in any symptoms of physical withdrawal.” (20)

CBD oil products may be sold as full spectrum, broad spectrum, CBD isolate, and whole plant CBD. What is the difference among the four types?

Full spectrum CBD extract contains CBD and other cannabinoids (including up to 0.3% THC), terpenes, and essential oils. Unlike full spectrum CBD, **broad-spectrum CBD** does not contain THC, but it does contain the other components found in full spectrum CBD. **CBD isolate** is typically sold as 99+% pure CBD. **Whole plant CBD** is similar to full spectrum CBD, as it contains a variety of cannabinoids, terpenes, and essential oils; however, whole plant CBD also contains fats, waxes, and other fibrous materials. (21)

Does ingesting CBD with lipids aid the absorption of CBD?

Yes. According to clinical studies evaluating the metabolism of a CBD product, consuming CBD with lipids may increase the absorption of CBD. (22)

About TheAnswerPage Team.....

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TheAnswerPage creates tailored medical cannabis educational programs for Departments of Public Health, state medical societies, hospitals, and medical schools. TheAnswerPage is the only education company where the Founding Editor-in-Chief and Editor-in-Chief trained and served together with distinction at Harvard Medical School and their affiliated teaching hospitals, and have both been the recipients of numerous awards including the “Medical Professional of the Year Award” presented by the Americans for Safe Access (ASA) and the “Special Award for Medical Cannabis Education” bestowed by the International Association of Cannabinoid Medicine (IACM) in Cologne, Germany.

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