



white paper

# CANNABIDIOL (“CBD”) PRODUCTS AND DRUG TESTING

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Cannabidiol (“CBD”) has become the new hot product in many states across the U.S. CBD is being credited with helping a host of medical problems, from epileptic seizures to sleeplessness, inflammation and anxiety. But CBD continues to remain unregulated across the nation, resulting in varying origins and effects on users depending on the CBD product used. With CBD use becoming more common among a growing number of job applicants, employers are now wondering what impact, if any, CBD use will have on drug testing.

## Q1) WHAT IS CBD?

Cannabidiol (“CBD”) is one of the more than 80 cannabinoids found in the marijuana plant.<sup>1</sup> Marijuana contains both tetrahydrocannabinol (“THC”) and CBD, but unlike THC, CBD is not psychoactive. In other words, CBD use will not produce euphoria or intoxication.<sup>2,3,4</sup> This is because it acts via different receptors. The euphoric effects of THC are caused by activation of CB1 receptors,

which CBD has a very low affinity for. Hence, when CBD binds to this receptor, it produces little to no effect.<sup>1</sup>

Marijuana and hemp are both derived from Cannabis Sativa plant. Marijuana can additionally be derived from Cannabis Indica or Cannabis Ruderalis. Marijuana typically contains very high amounts of THC and only

1 Borgelt et al. The pharmacologic and clinical effects of medical cannabis. *Pharmacotherapy (Review)* 33(2): 195-209 (2013).

2 Martin-Santos et al. Acute effects of a single, oral dose of delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD) administration in healthy volunteers. *Curr Pharm Des.* 2012; 18(32): 4966-79

3 Fusar-Poli et al. Distinct effects of delta-9-tetrahydrocannabinol and Cannabidiol on Neural Activation During Emotional Processing. *Arch Gen Psychiatry.* 2009; 66(1): 95-105

4 Winton-Brown et al. Modulation of Auditory and Visual Processing by delta 9-tetrahydrocannabinol and Cannabidiol: an fMRI study. *Neyripsycho pharmacology.* 2011 Jun; 36(7): 1340-8.

a low amount of CBD. Hemp, on the other hand, has a very high amount of CBD, and only a low amount of THC.

In the U.S., the legal definition of “industrial hemp,” per Section 7606 of the Agricultural Appropriations Act of 2014, is “the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis.” Thus, hemp is cultivated to not contain

more than 0.3 percent of THC on a dry-weight basis.

Most of the CBD products are derived from hemp. CBD products are available as CBD oil, gel, creams, salves, capsules, etc. They are claimed to have benefits such as anti-seizure, neuroprotective, analgesic, anti-inflammatory and anti-anxiety,<sup>5</sup> to name a few. Of note, FDA has not approved any of these claims.



## Q2) CAN CBD PRODUCE A POSITIVE DRUG TEST RESULT FOR THC?

It depends, but CBD use can never be a valid medical explanation for a THC positive drug test as per DOT guidelines.

THCA (11-nor-delta-9-tetrahydrocannabinol) a metabolite of THC (Tetrahydrocannabinol) is the target for initial and confirmatory urine drug tests for marijuana.<sup>6</sup> The test does not detect CBD.

Given the low levels of THC in industrial hemp sold in the U.S., CBD oil derived from such hemp would be expected not to produce a positive drug test result for THC. However,

when used over time, the small amount of THC can add up and trigger a positive test. Furthermore, due to lack of FDA and regulatory oversight of these products, several contain THC even when they claim to have zero THC, and many times containing more THC than they claim.

Studies done on these products found that 70-80% of them were mislabeled.<sup>7,8</sup>

<sup>5</sup> Nora D. Volkow. *The Biology and Potential Therapeutic Effects of Cannabidiol*. NIDA (National Institute on Drug Abuse) Jun 24, 2015

<sup>6</sup> Robert B. Swotinsky. *The Medical Review Officer's Manual*, 5th edition, 14: 245

<sup>7</sup> <https://www.pennmedicine.org/news/news-releases/2017/november/penn-study-shows-nearly-70-percent-of-cannabidiol-extracts-sold-online-are-mislabeled>

<sup>8</sup> <https://www.hopkinsmedicine.org/news/newsroom/news-releases/study-shows-widespread-mislabeled-cbd-content-occurs-for-over-the-counter-products>

Of note, CBD oil can also be derived from marijuana, in which case it can also produce a positive drug test for THC. Some CBD products containing high levels of THC are still available in other countries and can likely be obtained in the U.S. (e.g., through the internet).

For example, as per the Substance Abuse and Mental Health Services Administration, “a product named Charlotte’s Web Oil is being advertised in Colorado for similar symptoms (spasticity). That product appears to be a marijuana extract enriched with higher ratios of CBD to THC. The product might give a positive THCA test result. The DEA has reiterated their position on the extracts of marijuana such as CBD or

Charlotte’s Web Oil. CBD is currently being illegally produced and marketed in the United States in violation of the CSA and the Federal Food, Drug, and Cosmetic Act. Because this extract is a derivative of marijuana, it falls within the definition of marijuana under federal law and is listed as Schedule I”<sup>9</sup>

Thus, even though the drug test is not detecting CBD but only THC and THCA, CBD products can cause a positive drug test if it contains THC. And as noted before, a majority of CBD products contain varying amounts of THC even if they claim to have no THC, and are commonly mislabeled.



## CONCLUSION

To summarize, marijuana contains both CBD and THC. Hemp also contains both CBD and THC (albeit very low amounts in industrial hemp, of less than 0.3 percent). Most CBD products in the U.S. are derived from industrial hemp though some could be derived from marijuana.

The amount of THC contained in a CBD product, and subsequently whether or not the CBD product produces a

positive result for THC, depends on the product’s origin, the source the CBD was derived from (either marijuana or hemp), and the amount of THC it contains. Nonetheless, as per DOT, an applicant’s CBD use can never be a valid medical explanation for a THC positive drug test. Thus, it is prudent to avoid these products if one is anticipating a drug test. ■

<sup>9</sup> Medical Review Officer Guidance Manual for Federal Workplace Drug Testing Programs, U.S. DEPT. OF HEALTH & HUMAN SERVICES, SAMHSA 55 (rev. March 2018), available at [https://www.samhsa.gov/sites/default/files/workplace/mro\\_guidance\\_manual\\_508\\_final\\_march\\_2018.pdf](https://www.samhsa.gov/sites/default/files/workplace/mro_guidance_manual_508_final_march_2018.pdf).