

NatuR_X presents

CBD 101

What You Need To Know



**Will cannabis
cure cancer?**

**Is CBD safe when
I'm pregnant?**

**What's the right
dose?**

**Will I fail
a drug test?**

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and other important questions
in our user-friendly online courses.

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CBD is everywhere these days. Brands are incorporating it into pet food and shampoo, hamburgers and beer, erotic massage oils and sleep tinctures. You're seeing it in pharmacies, grocery stores, even gas stations. And with good reason: Emerging medical research and reams of anecdotal evidence suggest that CBD may help us sleep better, manage pain, ease anxiety, speed recovery, and treat a variety of ailments from depression to arthritis to Parkinson's. But while all CBD is derived from the humble hemp plant, not all CBD products are created equal. That's why we launched NatuRx, a magazine dedicated to educating readers about safe, effective, and legal use of cannabis in all of its forms. And that's why we're sharing a series of informational booklets about CBD (and its cousin, THC), starting with this guide to help you decide whether CBD is right for you.



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What is CBD?

CBD, or Cannabidiol, is a chemical from the marijuana plant which is showing promise in treating a wide variety of ailments. Learn how CBD works. By Elisabeth Kwak-Hefferan

CBD—or cannabidiol, as it’s known in scientific circles—is one of more than 80 chemicals (called cannabinoids) found in the marijuana plant. But unlike THC, the most famous of the cannabinoids, CBD does not have psychoactive properties (read: It won’t get you high). CBD can be derived from either the cannabis plant or hemp, and it comes in a variety of medicinal forms: flowers for smoking or vaping, edibles, tinctures, gel caps, topical oils, and more.

CBD has been generating a lot of buzz in the medical world for its promise in treating a wide variety of ailments, from epilepsy to anxiety to chronic pain to addiction—and even some health issues in dogs, cats, and horses. A number of studies have demonstrated its effectiveness for an impressive range of health problems, and larger clinical studies that further explore its potential are currently underway.

How CBD Works

CBD exerts its many effects by interacting with different parts of the brain and body—activating some neural receptors and inhibiting others in ways researchers are still working to fully understand. For example, studies have shown that CBD can activate the brain’s serotonin system, which has an anti-anxiety effect; others demonstrate that CBD can raise the levels of certain neurotransmitters that protect against seizures.

What is known: CBD doesn’t activate the same parts of the brain and body (specifically, the cannabinoid receptors CB1 and CB2) that THC does, which is why it doesn’t produce the same euphoric feelings.

“CBD is generally well tolerated with a good safety profile...to date, there is no evidence of recreational use of CBD or any public health related problems associated with the use of pure CBD.”



Who Can Benefit from CBD?

Research suggests that CBD has anti-seizure, anti-inflammatory, brain-protecting, painkilling, addiction-fighting qualities—among other promising uses. People who might benefit from therapeutic CBD include:

- Those dealing with sports injuries; joint, muscle, or back pain; or other chronic pain
- Veterans (or anyone else) with post-traumatic stress disorder, depression, and/or anxiety
- Patients with arthritis, glaucoma, or gout
- Kids with epilepsy
- Those suffering from neurodegenerative diseases like Alzheimer's, multiple sclerosis, and Parkinson's disease
- Cancer patients
- Those dealing with substance abuse and addiction issues



Is CBD Safe and Legal?

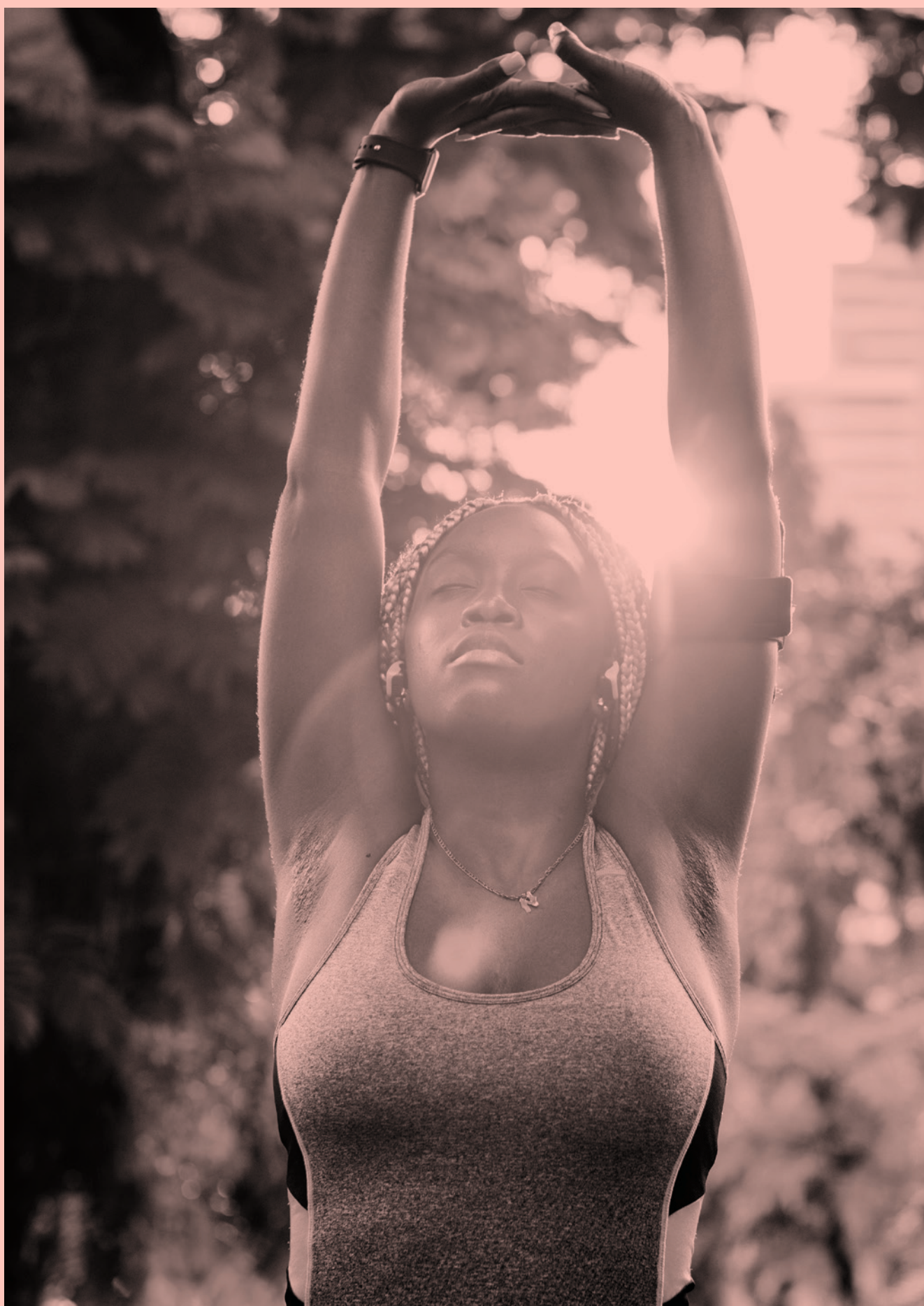
According to the National Institute on Drug Abuse, research shows CBD to be safe and without significant side effects. And as the World Health Organization reported in a 2018 preliminary paper,

“CBD is generally well tolerated with a good safety profile...to date, there is no evidence of recreational use of CBD or any public health related problems associated with the use of pure CBD.”

Note: Though it's safe on its own, CBD can interact with other drugs—talk to a doctor if you're taking other medication.

CBD's legal status is a bit fuzzier. Technically, the Drug Enforcement Administration classifies both marijuana and CBD as Schedule I illegal drugs. But under the 2014 Farm Bill, CBD derived from hemp grown for research (like ours) is exempt from that rule. And in reality, federal officials haven't been expending much effort prosecuting CBD users, regardless of where they're getting the substance. State laws on CBD vary quite a bit: States that have legalized recreational cannabis, such as Colorado and Washington, are also CBD-friendly. Other states with medicinal marijuana laws allow CBD, but with restrictions on THC content, intended use, or whether it's derived from cannabis or hemp.







FIRST HIT

R FAQ

Answers to 20 burning questions about cannabis.

by Bill Stieg

Indica, sativa—what’s the diff?

➡ **Less than you think.** Market-ers like the words because they offer simple guidance through the thicket of products out there. You know the dorm-room lore: Sativa lifts you up; indica calms you down. Once upon a time, that was true, but the consensus among botanists, growers, and scientists now is that the difference is overblown.

“The idea behind it isn’t made up,” says Tristan Watkins, Ph.D., chief scientific officer of Lucid Mood, a Colorado maker of vape pens. Cannabis indica is a compact plant, with dark, wide leaves, and a stronger aroma; Cannabis sativa is taller, with narrower leaves, and a

lighter color and smell.

Sativa became known as the party choice, with a heady, creative high. Indica was the homebody, leaving you happy “in da couch” because it has a higher ratio of CBD acting as a governor over the psychoactive THC. But with cross-breeding, practically everything is a hybrid now. You’ll see cultivars (the word “strains” makes botanists wince) advertised with percentages, like a “sativa-dom” that’s supposedly 70 percent sativa and 30 percent indica—perfect for a Radiohead concert, your budtender might say.

Problem is, there are countless chemicals in marijuana, cannabinoids (besides THC and CBD) and terpenes by the score, all of which

work together to produce different effects. How it was grown, how it’s ingested, your mood, your setting, all of this combines to produce a distinctive high. And your high is different than your buddy’s.

In short, it’s complicated. Don’t sneer at the cheerfully confident budtender at the dispensary. The sativa-indica distinction “is a great place to start,” says Watkins. “It’s an indication of how they may think or hope it will make you feel, but it’s a crapshoot.” It’ll take a few tries to find what you want. Keep a log (really!) of the labeling, percentages and effects. Remember the brand name, but don’t worry about the botanical name.





I get paranoid every time I go through an airport with edibles or vape pens in my suitcase. Should I be?

➤➤ **Here's the calming consensus:**

Relax. All of the industry experts we've talked to—frequent-flying purveyors and users of a variety of cannabis products—have had zero problems with TSA X-rays, gloved inspectors, or sniffing dogs. They avoid carrying skunky flower in their carry-on because why risk it?

But CBD products are legal, vape pens look like innocuous nicotine pens, edibles look like candy, and really, those dogs are sniffing for bombs, not weed. If you're really nervous, put it in your checked bag. Exception: International travel. Not that you'll get nabbed, but it ain't worth it. Leave it at home.



What is the entourage effect? Is it real?

➡ **Yes! But it's slippery** to explain. (Metaphor alert!) It's literally team chemistry—like the magical combination of NBA stars and role players that produces championships. You know about the highs of THC (Steph Curry) and the power of CBD (Kevin Durant), but what makes the team great are the other elements—scores of terpenes (Klay Thompson...oh, you get it) and cannabinoids that provide countless variations producing a range of effects. Sometimes it's unexpected synergy (congrats, Raptors).

As Chirag Sandana, founder of Spectrum Brands (that's Cobra Extracts), says, "it's not just one terpene, it's the ratio and combination of multiple terpenes that causes the effects." As Tristan Watkins of Lucid Mood puts it, "The idea is that you can deliver more than one compound that

hits more than one area of the brain. The effects that can be created can be unexpected or greater than their constituent parts. It's this idea of one plus one equals three."

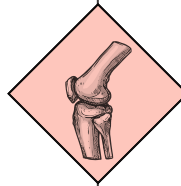
So it's chemistry and math! With so many compounds and molecules to be tried, "Those doors are just starting to open up now," Sandana says. "NIH is allowed to look at these things. We'll learn a lot more in these next few years."

I tweaked my knee in a basketball game. What cannabis product will get me back on the court?

➤➤ **Left knee?** Sativa salve. Right knee? Indica ointment. We're kidding! But listening to doctors and patients and researchers and sellers, you'd think anything is possible. What we do know: CBD is an anti-inflammatory and antioxidant, and THC is an analgesic (a pain reliever) that's far more powerful than aspirin or hydrocortisone in managing inflammation, says Joseph Rosado, M.D., director of a cannabis clinic in Florida. And if a cannabis product keeps you off opiates, all the better.

Using CBD and THC in concert reduces side effects and shows more benefits than THC alone, so look for products with a high CBD to THC ratio. A high-CBD, low-THC product could reduce pain while keeping you mentally sharp. If taking your mind off the pain is your goal, look for more THC. More specifically, look for the terpenes myrcene or caryophyllene, which are all-stars in managing pain.

So are you supposed to rub a CBD salve on your knee, use an under-the-tongue tincture, eat a gummy, or vape some oil? That's your



call, but a salve rubbed on the joint can work directly on the receptors in the area. CBD has worked on arthritic rats, big time. Why not you? Check with your doctor before trying anything. But you knew that. And when you start, remember: Low and slow. Start with a low dose, listen to your body, and work your way up as needed.

True or False? Cannabis is especially dangerous to teenagers' minds.

➤➤ **True**, with a study-based explanation. We—that is, experts we've consulted—are not saying that teenagers vaping weed are going to become addicted, move on to hard drugs, or develop psychosis. All are outcomes that have been asserted over the decades. But we/they must acknowledge that there's a lot we don't know about how external factors affect their developing brains (like Fortnite, for starters) and a lot about cannabis that still isn't understood (new cultivars, higher potency, those hundreds of dimly-understood chemical compounds, plus—yikes!—potential effects of dabbing concentrates). That adds up to a big lack of understanding.

Your best move: Ignore the hysteria but keep the science in mind. And right now that science says that brains aren't mature until age 25, and that chronic use of THC messes with neural pathways that are still being paved. That can affect learning, memory, and attention span, and weaken impulse control, according to several studies. So keep an eye on the kids. It can wait.

Will my prescriptions interact with CBD?

➡ **Probably.** So check with your doctor, OK? We're not doctors, but we will tell you this: CBD and all of



your prescription drugs are broken down by your body the same way: Enzymes attack and release the active ingredients into your bloodstream. The only problem: There are limited amounts of said enzymes, so adding CBD to your treatment regimens can be thrown out of whack. If the CBD gloms onto all the enzymes, your drug may not be metabolized at all. And if they aren't metabolized, they may build up in your body and ramp up side effects or even produce an overdose. Scary enough yet? The list of drugs competing with CBD for those enzymes includes antibiotics, antidepressants, and many painkillers. If you're on CBD, your doctor needs to hear about it, STAT.

My mother needs something for anxiety. But I don't want her getting any foggier. Is there a CBD product to help? And how do I talk her into it?

➡➡ **Lesson one:** Don't push it. "If mom's against it, you're not going to convince her," says Joseph Rosado, who treats many seniors in his cannabis clinic in Florida. That's why you want to work the non-intoxicating side of the ledger, which means a full-spectrum CBD oil that contains all of the cannabinoids known to ease anxiety, "and an itty-bitty amount of THC," between 0.3% and 7%. Just enough, in fact, to help CBD do its job, but not enough that mom will go loopy, or freak out.

"With people with no experience, we recommend sublingual oil or a capsule. Start with a low dose and titrate up" to what works best, Rosado says. (Sublingual means a dropper below the tongue.) Don't get scientific, advises Tristan Watkins, Ph.D., of Lucid Mood, who convinced his mother in Florida to try it. He showed her Sanjay Gupta's story on CNN about cannabis (Google it), which opened her eyes. Tell her: You don't have to

smoke; you won't get high; it's less sedating than wine; it's been studied and is legal!

"It's such low risk for potentially high reward," Watkins said. "If she doesn't like it, she can easily stop using it."

Will vaping cannabis turn my teeth brown?

➡ **Four out of five dentists** we checked with said you should be OK, with some precautions. The fifth one was out golfing. Dentists hate the vaping of tobacco, though not as much as the smoking of the stuff. Smoke contains tar and ash that definitely stains teeth. Vaporizing doesn't produce smoke, but the propylene glycol used as a thinning agent in cannabis oils (and nicotine products) isn't entirely harmless, says Andrew Junkin, DDS, a dentist in suburban Philadelphia. Flavorings and glycerin can make bacteria stick to teeth, increasing the risk of cavities and staining. If you're worried, a brush or rinse could help the enamel repair and reduce staining. Which is nice because you'll probably be smiling.

I'm having my hip replaced. What cannabis product will help with the post-op pain?

➡➡ **Listening to some doctors** and patients and sellers, you'd think anything is possible. What we do know: CBD is an anti-inflammatory and antioxidant, and THC is an analgesic (a pain reliever). And if a cannabis product keeps you off opiates, all the better. Using CBD and THC in concert reduces side effects and shows more benefits than THC alone, says Joseph Rosado, M.D., director of a cannabis clinic in Florida. More specifically, he says, look for the terpenes myrcene or

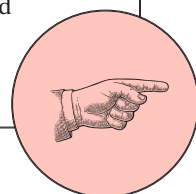
caryophyllene, which are all-stars in managing pain. Rosado says a high-CBD, low-THC product could reduce pain while keeping you mentally sharp. If taking your mind off the pain is your goal, look for more THC. Ralph Hawkins, a 61-year-old man from Georgia who had a knee replacement, says it took him just four days with a CBD tincture to wean himself off Percocet. "I'm totally convinced it had a big-time transitional effect," he says. You can also rub a a salve on the knee—it can work directly on nerve receptors there. So give it a shot, but check with your doctor first. And when you start, remember: Low and slow. Start with a low dose, listen to your body, and work your way up as needed.

Confession: I don't know how to inhale. So how do I do it?

➡➡ **President Clinton** wasn't the only one who faked inhaling. It's not a natural thing. As a beginner, try the mouth-to-lung technique. Pull the vapor into your mouth, as though sucking on a straw, and hold it briefly. Then slowly inhale the vapor into your lungs. It may not provide as quick a buzz as the direct method, but hey, you're a beginner. As time goes on, try the more direct method, where you inhale deeply from the get-go, inflating your lungs as you suck. As with anything, you'll want to practice.

Does cannabis lube improve sex? How?

➡ **We're pretty sure it does**, but wouldn't it be fun to find out for yourself? Based on some enjoyable reading of online testimonials, it's worth a shot. This is known: CBD and THC dilate blood vessels, which helps promote natural lubrica-





tion. Another anecdotal-but-logical plus: CBD can be relaxing, which helps with arousal. (It can take 30 minutes, though.)

And this is proven by sex researchers: Relaxation is crucial to female orgasm. Formal research into the effectiveness doesn't exist yet, but here's a survey result from an industry group: 96% of people are unaware of CBD's bedroom potential. You're already in the top 4%! And of those who actually used any CBD products for sex, nearly two in three said it was very or extremely effective. Now start researching!

Is there anywhere I shouldn't rub a salve?

➔ **Yes.** Your eyes and any open wounds. That's it. If you're asking with a wink and nudge, see the lube question above.

Is cannabis safe when pregnant or breastfeeding?

➔ **The simple answer is no.** Studies have shown that THC crosses the placenta and passes through breast milk, leading to a range of potential impairments in motor skills, problem solving, and visual development. There's less research on CBD, but the American College of Obstetrics and Gynecology advises against using it. This includes avoiding topical products, such as CBD-infused balms and cosmetics.

Will weed make me sterile?

➔ **Stow the peace pipe** and grab your jewels, fellas, because your little swimmers are delicate creatures. Studies have shown that smoking marijuana lowers sperm count. But as with everything cannabis related, there are crossing indications, which can lead to crossed eyes when you try to work it all out. So

while THC may lower your odds of getting your gal pregnant, other studies suggest that CBD may activate the endocannabinoid system in ways that invigorate your sperm. Either way, let the inhaler beware.

What are the rules in my sport?

➔ **The World Anti-Doping Agency** last year removed CBD from its list of banned substances, which opened the door for triathletes, cyclists, runners, and other athletes to use it – provided it's not banned by their regional bodies or race regulations. That means you're likely in the clear to use CBD before your local 5K or criterium. But watch out, college and pro athletes. The NCAA doesn't specifically outlaw CBD, but its THC testing threshold of 35 nanograms per milliliter could be problematic for frequent users. The NFL and NBA currently ban CBD, while MLB and NHL do not.



Does CBD help my immune system?

➔ **Unknown.** Some preliminary studies with mice suggest that CBD suppresses T cell function, weakening your response to illness and cancer. If you have existing immune conditions, consult your doctor before trying CBD.

Why does music sound so much better on cannabis?

➔ **It's a matter of timing.** And that's why jazz musicians (including Satchmo himself) may have enjoyed it so much. Preliminary brain research shows that cannabis can slow down your perception of time, encouraging your monkey brain to slow down a bit and enjoy every note. Cannabis also has

a heightening effect on the right-brain region, which handles auditory processing. And as if all that isn't enough, cannabis enhances short-term memory, so you're more "present" for the tunes.

Will my horse get high if I give him CBD?

➔ **No.** Unless the manufacturer has been reckless with the product and it contains inappropriate amounts of THC, Seabiscuit won't get the munchies or begin laughing uncontrollably. Nor will your dog or cat. Inspect any CBD pet product for a Certificate of Analysis (the COA is a BFD) validating a THC level under 0.3%. And if you're growing cannabis, make sure Seabiscuit's long neck can't extend over the garden fence, where the grass may definitely be greener, and psychoactive.

Will consuming CBD cause me to fail a drug test?

➔ **Assuming your product's** manufacturer knows what it's doing, most CBD products do not contain enough THC for it to be detected. By law, CBD should contain less than 0.3% THC, which means you'd have to consume more than 1,000 milligrams of CBD to get a positive drug test – the equivalent of wolfing down a few bottles of gummies. Most important: Check your product for a Certificate of Analysis (COA) showing that the manufacturer has verified THC levels through independent lab testing.

Is CBD addictive?

➔ **There is no evidence** to suggest that. However, reading a really smart magazine about cannabis may be habit forming.

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A Grown-Up's Guide to Cannabis

Wellness advice from the publisher of
Clean Eating, Better Nutrition, and Yoga Journal.

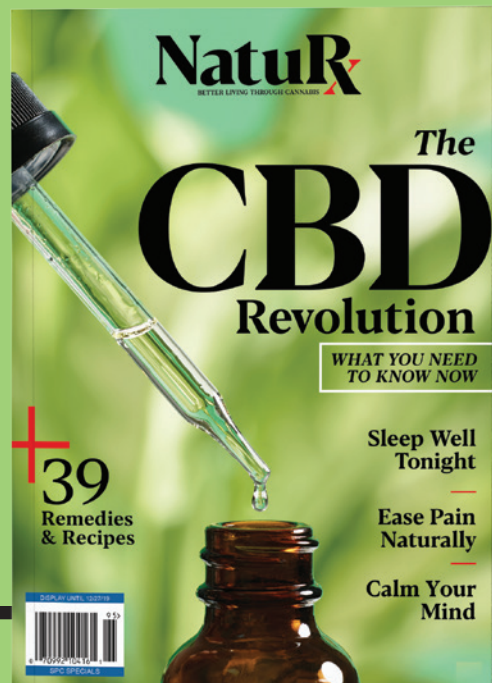
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How Much CBD is in That?

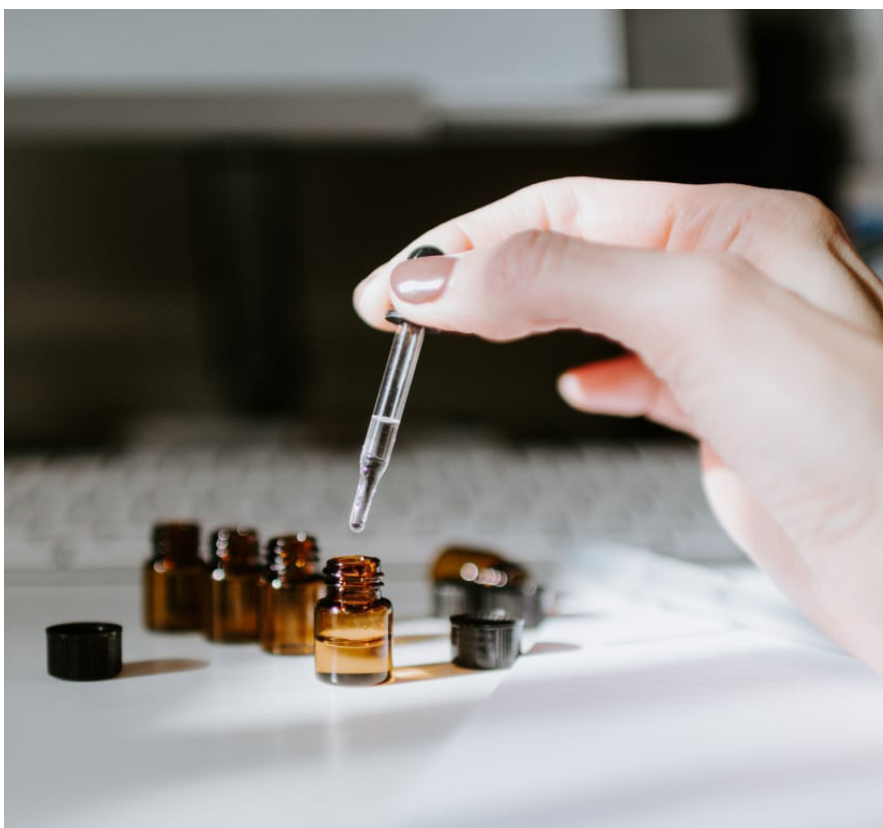
Nearly 70% of all cannabidiol products sold online lack accurate labeling—meaning they had either less or more CDB than indicated. Do you really know how potent your CBD is?

By David Howard

If you're even an occasional online shopper and you have sore knees or some other chronic pain, you've probably developed a Pavlovian instinct to look to Google for help. And these days, of course, there are scores of companies eager to sell you cannabidiol oil or other CBD products to provide relief.

The thing is, you don't want to buy from just anyone. A 2017 scientific paper in *The Journal of the American Medical Association* reported that nearly 70% of all cannabidiol products sold online lack accurate labeling—meaning they had either less or more CDB than indicated. Or that they contained THC. Other studies have raised the specter of problematic ingredients.

None of this should necessarily come as a surprise: Soaring public demand for CBD products has led to forecasts that the market will surpass \$2 billion in the next two years, and it's projected to hit \$24 billion by 2024. The supplement market has long seethed with morally compromised opportunists, and because of federal laws around



cannabis, the government provides no regulation or oversight, says Kyle Boyar, a field application scientist for Medical Genomics, a company using genetics to develop testing technologies for cannabis. “It’s been a problem for a long time,” says Boyar, who from 2012-2016 ran one of the nation’s first labs that tested the potency of cannabis.

TIPS FOR THE EDUCATED SHOPPER:

- Look for per-dose CBD quantities.
- Expect a Certificate of Analysis.
- Favor made-in-the-USA.
- Go organic.



“What you’re seeing now is that the floodgates are open because everybody is using CBD oil.”

The FDA is on the case, albeit at its usual glacial pace. Last May, it held public hearings on the question of standards and regulation and continues to gather public input. That could go on for a while. In the meantime, Boyar says, customers need to be educated shoppers: Look for products made from hemp grown in the United States and that list per-dose quantities of CBD. Look for rigorous third-party testing from a credible lab; specifically, inquire about the product’s certificate of analysis (COA), which shows how a product scored on tests checking for CDB and THC levels.

Two solid choices: Oregon’s Lazarus Naturals sells products to both retailers and consumers, and is serious enough that it has its own government-affairs director. NuLeaf Naturals, located in Denver, is another established and reputable source.

As for how much CBD to use? Dr. Amanda River, who prescribes medical marijuana via Natural Remedy MD in Norman, Oklahoma, says she typically recommends a starting dose of 0.5mg/kg (milligram per kilogram), divided into

2-3 doses through the day. “For some conditions, more may be necessary, but we always start low until we know what side effects or medication interactions may occur,” she says. If patients are taking other medications or high doses of CBD, it is best to consult with their doctor, River says.

Of course, finding your effective dose requires that your product actually carries the main ingredient. And that’s a great place to start. You can Google it.

How Potent is Weed These Days?

The stuff Nancy Reagan didn’t want you to smoke had a ratio of CBD to THC of about 1:1, meaning the calming CBD offset much of the effect of the paranoia-inducing THC. The THC percentage in 1980 was about 1.5%. In the ‘90s, it was 3 to 4%. Now? Try 12% THC, and that’s not all. CBD concentrations in weed have dropped by half since the mid-’90s, a paper in Biological Psychiatry found. The ratio of CBD to THC was about 14:1 when Jerry Garcia died in 1995; by 2014 it was 80:1. It’s high-octane and the brakes aren’t as good. Drive safely.

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