



# STRIKING

CANNABIDIOL, OR CBD, IS A COMPOUND IN CANNABIS THAT EVERYONE'S BUZZING ABOUT. IS IT REALLY THE ANXIETY AND PAIN-RELIEF MIRACLE THE WORLD HAS BEEN WAITING FOR? *PREVENTION* REPORTS.

BY MERYL DAVIDS LANDAU

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# Oil

Several weeks after a hysterectomy last spring, Bo Roth was suffering from exhaustion and pain that kept her on the couch much of the day. The 58-year-old Seattle speech coach didn't want to take opioid painkillers, but Tylenol wasn't helping enough. Roth was intrigued when women in her online chat group enthused about a cannabis-derived oil called cannabidiol (CBD) that they said

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relieved pain without making them high. So Roth, who hadn't smoked weed since college but lived in a state where cannabis was legal, walked into a dispensary and bought a CBD tincture. "Within a few hours of placing the drops in my mouth, the malaise and achiness that had plagued me for weeks lifted and became much more manageable," she says. She took the drops several times a day and in a few weeks was back to her regular life.

If you haven't been bombarded with CBD marketing or raves about it from friends, get ready. This extract—which comes from either marijuana or its industrial cousin, hemp—is popping up everywhere. There are CBD capsules, tinctures, and liquids for vaping plus CBD-infused lotions, beauty products, snacks, coffee, and even vaginal suppositories. Already some 1,000 brands of CBD products are available in stores—and online in states that don't have lenient cannabis laws. This is a tiny fraction of what's to come: The CBD market is poised to exceed \$1 billion by 2020, per the Chicago-based research firm Brightfield Group.

The reason so many people are interested in cannabis products that don't make them high, proponents say, is that CBD helps with everything from pain and nausea to rheumatoid arthritis, cancer, Crohn's disease, and dementia. CBD is anti-inflammatory, anti-anxiety, antibacterial, immunosuppressive, and more, says Joseph Cohen, D.O., a cannabis doctor in Boulder, CO.

Such broad claims might sound like a snake oil sales pitch, but preliminary

research does suggest that the compound may have wide-ranging effects on the body. So is CBD the wonder product its advocates claim it is? Is it safe? And though it's available everywhere, is it even legal? The answers are more complex than you might imagine.

## ● HOW CBD MAY WORK

Along with its better-known counterpart, THC (delta-9-tetrahydrocannabinol, the chemical that produces the marijuana high), CBD is one of more



than 400 compounds found in the oils of cannabis plant species, which include marijuana and hemp. Unlike THC, CBD will not lead you to examine your hands as if you've never seen them before. But this doesn't mean it's not at all psychoactive, as many assert, says Jahan Marcu, Ph.D., director of experimental pharmacology and behavior at the International Research Center on Cannabis and Mental Health in New York City: "CBD does change cognition. It affects mood, which is why people take it for anxiety. And some find that it makes them more alert."



In addition to acting on the brain, CBD influences many body processes. That's due to the endocannabinoid system (ECS), which was discovered in the 1990s, after scientists started investigating why pot produces a high. Although much less well-known than the cardiovascular, reproductive, and respiratory systems, the ECS is critical. "The ECS helps us eat, sleep, relax, forget what we don't need to remember, and protect our bodies from harm," Marcu says. There are more ECS receptors in the brain than there are for opioids or serotonin, plus others in the intestines, liver, pancreas, ovaries, bone cells, and elsewhere.

Our bodies are thought to produce endocannabinoids by the billions every day. "We always thought the 'runner's high' was due to the release of dopamine and endorphins. But now we know the euphoria is also from an endocannabinoid called anandamide," its name derived from the Sanskrit word for bliss, says Joseph Maroon, M.D., clinical professor and vice chairman of neurosurgery at the University of Pittsburgh Medical Center. We produce these natural chemicals all day, but they fade quickly because enzymes pop up to destroy them. That's where CBD comes in: By blocking these enzymes, CBD allows the beneficial compounds to linger. This is why Amanda Oliver, 31, a career consultant in Charleston, SC, pops a CBD gummy bear each night before bed. "I used to lie there

◀ Cultivators tend to cannabis plants in California.

## WHEN BUYING CBD...

### >> CHOOSE PRODUCTS MADE WITH AMERICAN HEMP

Although CBD oils aren't regulated by the FDA, purchasing products stateside from one of the nine states where recreational and medical cannabis use is legal will likely result in a higher-quality product than buying one made with hemp-derived CBD oil imported from abroad, says Martin Lee, director of Project CBD, a nonprofit that promotes medical research into CBD.

### >> LOOK FOR "FULL-SPECTRUM" OR "BROAD-SPECTRUM"

These terms mean that all or most of the components that can be extracted from the hemp plant are concentrated in the oil. The wider the range of components included, versus just CBD, the greater the potential medicinal benefit of the product, says Lee.

### >> NOTE THE AMOUNT OF CBD AND THC PER DOSE

There's no definite amount that's appropriate for everyone, but the ratio of CBD to THC will indicate how psychoactive the product is and if it's legal in your state. The more CBD compared with THC, the less of a high, and vice versa. "Managing psychoactivity is key to successful cannabis therapy," says Lee. "Amounts should be made clear on the label and lab-certified so people know what's helping them and what's not." —*Alexis Reliford*

tossing and turning as my mind raced from work projects to whether I had set the home alarm," Oliver says. One piece of candy with 15 mg of CBD is enough to shut off her brain and facilitate sleep. She also swears by the CBD oil she takes at the height of her period, which she says quells her debilitating cramps.

## ● HUMAN GUINEA PIGS

Success stories like Oliver's are everywhere, but there's not a lot of data to back up those results. That's because CBD comes from cannabis and, like nearly all other parts of the plant, is categorized by the Drug Enforcement Agency (DEA) as a Schedule 1 drug—the most restrictive classification. (Others on that list: heroin, Ecstasy, and peyote.) This classification, which cannabis advocates have tried for years to change, keeps cannabis-derived products, including CBD, from being properly studied in the U.S.

That leaves those touting CBD's effectiveness pointing primarily to research in mice and petri dishes. There, CBD (sometimes combined with small amounts of THC) has shown promise for helping pain, neurological conditions like anxiety and PTSD, and the immune system—and therefore potentially arthritis, diabetes, multiple sclerosis, cancer, and more.

Most human studies of CBD have been done on people who have seizures, and the FDA recently approved the first CBD-based drug, Epidiolex, for

rare forms of epilepsy. Clinical trials for other conditions are promising, but tiny. In one Brazilian study published in 2011 of people with generalized social anxiety disorder, for example, taking a 600-mg dose of CBD (higher than a typical dose from a tincture) lessened discomfort more than a placebo, but only a dozen people were given the pill.

Without much research, doctors in states where cannabis is legal are learning through trial and error. Cohen says thousands of his patients swear that CBD helps their inflammation, pain, and anxiety. He himself started taking 50 mg a day in the hope that it might prevent later dementia—and his migraines immediately disappeared.

Scott Shannon, M.D., assistant clinical professor at the University of Colorado, recently sifted through patient charts from his four-doctor practice to document CBD's effects on anxiety. His study, as yet unpublished, found "a fairly rapid decrease in anxiety scores that appears to persist for months," he says. But he says he can't discount a placebo effect, especially since "there's a lot of hype right now."

And without high-quality trials, experts don't know how much is best for a given purpose. The staff at Roth's dispensary told her, "Try some once or twice a day and see what happens." (Half a dropper's worth was a good amount

for her.) One thing scientists feel confident about is that CBD is not dangerous. It won't damage vital organs even at doses as high as 5,000 mg a day, Marcu says, and nobody has died from simply overdosing on a cannabis product.

Cohen has found that chronic conditions including autoimmune diseases and pain syndromes can be helped with a 6-mg under-the-tongue tincture (the fastest delivery system) or a 25-mg capsule taken twice a day.

Dosages for topical products like lotions are especially hard to determine—there's no clarity on how much CBD gets into the system through the skin.

But dosage is important, because CBD can have side effects—the most common are tiredness, diarrhea, and changes

in appetite and weight—so it's best not to take more than you need. As CBD becomes more prevalent, says J. Michael Bostwick, M.D., a psychiatrist at Mayo Clinic in Rochester, MN, "I'm reasonably certain new kinds of side effects will emerge."

Lisa Hamilton, a jeweler and doula in Brooklyn, NY, knows about the side effects. She recently tried CBD for the shoulder pain that plagued her five years after an accident. Her doctor certified that she was in chronic pain, which under New York State law allowed her to buy from a state

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dispensary. One Friday, she swallowed two 10-mg capsules, the amount recommended at the dispensary, then took another two on Saturday. “By Sunday, it felt like I’d gotten hit by a truck. Every muscle and joint ached,” Hamilton says. She cut back to one pill a day the following week, but still felt hungover. She stopped after that.

Another concern is about medications with which CBD might interact. This won’t be an issue with most drugs, says Sunil Kumar Aggarwal, M.D., Ph.D., a palliative medicine physician and scientist who studies cannabis and integrates it into his Seattle medical practice. The exceptions are blood thinners, IV antibiotics, and other drugs whose exact dosing is crucial and must be monitored closely, he says. (Of course, if you have a health problem, talk to your doctor before using CBD, and never take it instead of seeing your physician for a serious condition.)

## ● THE LEGAL QUESTION

Under federal law, cannabis (from which both CBD and marijuana are derived) is illegal everywhere, although the laws against it aren’t generally enforced in states that have legalized marijuana. Some manufacturers claim that CBD culled from legally imported industrial hemp, which has little to no THC, is fine to ship across the U.S., but many experts disagree, noting that because hemp comes from the same species as marijuana, *cannabis sativa*, all CBD falls under the DEA’s

Schedule 1 designation. “This creative interpretation of the law runs afoul of reality,” says the Brookings Institution, a Washington, DC, think tank.

To make matters more confusing, nine states (including California, Washington, and Colorado) let residents buy cannabis-based products with or without THC. Nearly two dozen other “medical marijuana states” allow the sale of cannabis, including capsules, tinctures, and other items containing CBD or THC, at licensed dispensaries to people whose doctors have certified that they have an approved condition (the list varies by state but includes chronic pain, PTSD, cancer, autism, Crohn’s disease, and multiple sclerosis). Sixteen more states legalized CBD for certain diseases. But because all these products are illegal according to the federal government, cannabis advocates are cautious. “By and large, the federal government is looking the other way,” says Paul Armentano, deputy director of the Washington, DC–based National Organization for the Reform of Marijuana Laws (NORML), but until federal laws are changed, “this administration or a future one could crack down on people who produce, manufacture, or use CBD, and the law would be on its side.”

## ● SO, SHOULD YOU TRY IT?

The answer depends on where you live and your appetite for the unproven. Despite the promise of CBD, the industry is currently “the Wild West,” Armentano says. If you live in a state



◀ CBD from a lab affects you differently than the THC in marijuana.

may not be what you are getting. A 2017 study in *JAMA* found that of the 84 CBD products researchers bought online, 43% had more CBD than indicated, while 26% had less, and some had unexpected THC. “There’s a 75% chance of getting a product where the CBD is mislabeled,” says Marcu, one of the study’s coauthors.

Quality is a particular concern, because cannabis plants easily soak up heavy metals from pesticides and other contaminants, Marcu says. If you are buying online,

where CBD is legal for your condition, it’s best to buy it from a state-regulated dispensary. But even there, oversight is uneven. “I feel safe being a cannabis consumer in Colorado, since the state tracks everything from seed to sale, but I didn’t the first few years after cannabis became legal,” when the rules were still taking shape, says Robyn Griggs Lawrence, the Boulder author of *The Cannabis Kitchen Cookbook*, which features recipes for cannabis edibles.

Buying online is less reliable still because there’s no regulation or standardization. What you see on the label

look for a company that documents how it tests its products. (If the website doesn’t indicate this, call and ask.) “Buying from a reputable manufacturer is crucial, because it matters how the plant is cultivated and processed,” Dr. Maroon says. One clue that a company is cutting corners: too low a cost. Good CBD is pricey—a bottle of high-quality capsules is sold in Cohen’s office for \$140. But for many, it’s worth the money. Roth spent \$60 on her tiny bottle. But when her energy returned the day she started taking CBD, she decided that was a small price to pay.