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Cannabidiol (CBD)

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Reflects what's currently known.

CBD & Dogs: A Primer (Part 1)

By [The Bark](#), October 2018



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For both people and animals, medicine tends to trend high-tech. One of the most promising new veterinary drug therapies, however, incorporates ingredients derived from cannabis, a plant that's been in use by humans for thousands of years.

This primer covers the basics of veterinary cannabidiol (CBD) **and reflects what's currently known.**

New findings are released every day, it seems, so if you're interested, we advise staying on top of developments by bookmarking a few reliable websites.

If your vet is open to discussing it—for legal and licensing reasons, not all are—we strongly advise starting there.

What is CBD?

Cannabidiol (CBD) **is one of at least 60 known plant-based cannabinoids,** naturally occurring active chemical compounds **that act on the brain and body.**

It's derived from cannabis, a complex plant in the Cannabaceae family, and **has no psychoactive effects** —it provides "the benefits without the buzz," as one writer put it.

CBD is the plant's second most abundant cannabinoid; first place goes to **THC, or tetrahydrocannabinol, which generates marijuana's distinctive high.**

It's extracted and processed as either an isolate (on its own) or as a full-spectrum oil, one of a group of related cannabinoids that often includes cannabigerol (CBG), cannabichromene (CBC), cannabidivarin (CBDV), tetrahydrocannabivarin (THCV), terpenes and flavonoids.

Over millennia, humans have domesticated, developed and cultivated multiple strains of cannabis and used them for a variety of purposes.

Today, generally speaking, the two you'll hear the most about are hemp, which is legally defined as cannabis plants ...

That contain **less than 0.3% of the psychoactive THC** (this is the one used for dogs), and marijuana (strictly speaking, a product rather than a plant type), **which has more than 0.3% THC** (this is the one smoked by people as a drug).

Many CBD products for dogs are normally sourced **from hemp**.

The science.

Every animal with a spinal column has an endocannabinoid system (ECS), which scientists estimate evolved more than 600 million years ago and has been carried forward across the millennia.

This ancient system—discovered through the work of several researchers between roughly 1965 and 1995—is named for *Cannabis sativa* L., the plant species that most dramatically affects it. Its basic functions have been summarized as to “relax, eat, sleep, forget and protect.”

To do this, the ECS maintains the body's internal balance through a network of activators and receptors that most notably affect the central nervous system and the immune system.

Cannabinoids are the ECS's messengers, and their effects depend on the receptors to which they bind.

This is a very specific process; a receptor will only accept the particular compound for which it exists, and is unaffected by others.

Research shows that cannabinoid receptors are similar across species, functioning much the same way in dogs as they do in people,

Know this! >> Although dogs have far more receptors in their brains than any other animal tested (including humans).

Robert J. Silver, DVM and veterinary herbalist of Boulder, Colo., suggested another way to understand this system: “Receptors are like locks, and cannabinoids are like keys.

They fit together perfectly.

Once the cannabinoid connects to the receptor and turns that lock, a series of actions occur in the cell membrane; these actions are responsible for some of the cannabinoid’s effects.”

Full-spectrum extracts.

Whole-plant or full-spectrum extracts are considered to be the most therapeutically effective.

In this form, CBD works in conjunction with other cannabinoids to produce what’s called the entourage effect: the result of numerous types of cannabinoids, each with a specific function, working together.

You’ll sometimes see **THC in the mix as well**; aside from its recreational aspects, it has its own set of medicinal properties and can be particularly effective against severe pain.

Is CBD safe? Does it work? How does it work?

Separate fact from fiction.

These are just a few of the questions that can only be reliably answered **by evidence-based scientific research**, which is now taking place in the U.S. and around the world, and is the best way to separate fact from fiction.

More work has been done to discover CBD’s effects on people than on animals—for example, at least 132 original studies have focused on

CBD's human-safety profile—but that tide seems to be turning. Take, for example, the following:

- In 2016, *Dr. Stephanie McGrath*, neurologist and assistant professor at Colorado State University's College of Veterinary Medicine & Biomedical Sciences, completed a preliminary pharmacokinetic (what happens to a drug in the body) and safety study on CBD.

Following this study, Dr. McGrath began two pilot studies involving owner-enrolled dogs with poorly controlled epilepsy and painful osteoarthritis.

These have now ended and results on the epilepsy study are scheduled for publication in the *Canadian Veterinary Journal* later this year.

One of its big-picture findings: 89 percent of dogs who received CBD had a reduction in the frequency of seizures.

(McGrath and her team are now starting work on a larger epilepsy-focused project.)

- The results of a study led by *Dr. Joe Wakshlag*, associate professor and section chief of nutrition at Cornell, currently under review for publication, also contribute to the knowledge bank.

According to the abstract, its objectives were **to “determine the basic oral pharmacokinetics, determine safety and assess efficacy of CBD oil in managing pain in dogs with osteoarthritis.”**

The Canine Brief Pain Inventory and Hudson activity scores reportedly showed a clinically significant reduction in pain and an increase in activity with CBD treatment.

- *Dr. Dawn Boothe*, director of clinical pharmacology at Auburn University College of Veterinary Medicine, is studying CBD as a **treatment for epilepsy in dogs and is also developing an assay to measure cannabinoid toxicity and efficacy.**

- *Dr. Jamie Peyton*, chief of small animal integrative medicine at University of California, Davis, Veterinary Medical Teaching Hospital,

led a late 2017/early 2018 study on the current use of cannabis with companion animals. By anonymously filling out an online questionnaire, participants provided the study with data that can be used to inform future research (the study is now closed).

A research roadblock.

CBD could prove to be a life-improving medication for dogs, but without the backing of clinical research to establish its effectiveness and dosing, it's hard to know for sure.

That research is hindered by cannabis's federal Schedule 1 drug classification, which puts traditional academic research institutions in a legally ambiguous position.

It also makes funding harder to come by; much of the work currently underway is sponsored by companies who produce CBD products.

In the future, we'll look into questions of CBD and the law, delve into the role veterinarians can play in your decisions and provide a glossary of terms to help guide you through this evolving landscape.

For now, check out [The Bark's informative CBD & Dogs section](#).

A Eureka Moment

As described in an article on Labroots, "Scientists discovered the brain's opiate receptor in 1973, but it was not until 1988 in a government-funded study at the St. Louis University School of Medicine that *Allyn Howlett and William Devane* determined that the mammalian brain has receptor sites that respond to compounds found in cannabis.

These receptors ... turned out to be the most abundant type of neurotransmitter receptor in the brain."

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CBD & Dogs: A Primer (Part 2)

Are CBD products legal for pet owners?

By [The Bark](#), November 2018



[Brought to you by Innovet Pet Products](#)

Are CBD and products incorporating it legal?

It depends.

Products containing CBD extracted from, as the DEA says, “a variety of *Cannabis sativa* L. which contains **less than 0.3% tetrahydrocannabinol (THC)**”—known as **industrial hemp** to distinguish it from marijuana—can be sold in all 50 states of USA.

However, if the CBD has been extracted from varieties with more than 0.3% THC, or includes low levels of the psychoactive cannabinoid, the products can only be sold in states in which marijuana is legal for medical use, and cannot be shipped across state lines.

Most, if not all, of these products are sold in marijuana dispensaries.

It’s a fluid situation, one that companies and their attorneys are working hard to clarify.

Currently, the legal safety net relies on the Agricultural Act of 2014 (known as the “Farm Bill”), which legitimized research and pilot programs in states where hemp was already legal.

More recently, in an internal memo dated May 22, 2018, the DEA acknowledged that products excluded from the definition of marijuana in the Controlled Substances Act (i.e., hemp) “may be sold and distributed throughout the United States without restriction.”

Adding to the puzzle, the U.S. Food and Drug Administration also has a say in CBD-related matters, including the language used on product labels. For example—although animal supplements are not legally defined—the FDA says that CBD cannot be sold as a supplement, and that products containing it can’t be called food.

However, in a landmark federal-level shift, it recently approved the drug Epidiolex, with naturally derived CBD as its active ingredient, for treatment of two types of epilepsy in humans.

Although it hasn’t been tested with dogs, it may have potential off-label veterinary application. Epidiolex cleared its last hurdle on September 27, 2018, when the DEA announced that it had been categorized as a Schedule V drug, the least restrictive of the Controlled Substances Act categories.

The Veterinarian’s Role in CBD Treatment.

Even in states – and elsewhere - where medical marijuana is legal for human use, veterinarians are prohibited from administering, prescribing, dispensing or, in some cases, even discussing hemp-based CBD with their patients.

For example, in both California and Colorado, medical and recreational use of marijuana is legal.

But the California Veterinary Medical Association takes the position that, unless the state explicitly allows the use of CBD or medical marijuana for animals, veterinarians must follow federal law.

Vets who ignore this put themselves at risk of losing their license.

Colorado veterinarians are not allowed to prescribe these products, but can discuss them and their use with their clients "as part of a companion animal's therapeutic regimen ... consistent with a valid Veterinarian-Client-Patient Relationship."

When legalization of marijuana for medical applications was initially under discussion, medical doctors and doctors of osteopathy *{Doctor of Osteopathic Medicine (DO or D.O. is a professional doctoral degree for physicians and surgeons offered by medical schools in the United States. ... DO physicians are licensed to practice the full scope of medicine and surgery in 65 countries, and in all 50 US states)}* were at the table, but the input of doctors of veterinary medicine wasn't solicited;

perhaps those involved didn't anticipate that cannabis could benefit animals. So, as state legislatures developed and passed laws legalizing medical marijuana, they applied to human use only.

By early 2018, bills addressing this issue were on the docket in California and New York.

California's AB-2215 was passed by the State Assembly in August and signed by Governor Jerry Brown in September.

Now, veterinarians may discuss the use of cannabis for medicinal purposes with their clients without the threat of being disciplined or losing their licenses.

In New York, A10104, which would allow veterinarians to provide their patients with access to medical marijuana, is currently in limbo, with no vote scheduled.

While veterinarians can't confidently discuss cannabis products with their clients, many are called upon to treat dogs who have overdosed on it, usually by getting into their owners' stash of THC-rich edibles. In most cases, the risk comes from the food, not the cannabis, although too much THC can produce a condition called static ataxia, as well as have other consequences.

It's more than a little ironic that the only people who can't dispense CBD products to their clients are those who have the most informed capacity to do so.

However, an increasing number of veterinarians are actively educating themselves on CBD's therapeutic possibilities, as well as talking to and learning from clients who are already experimenting with it.

What Can CBD Be Used For in Dogs?

Research is confirming CBD's effectiveness in reducing or eliminating epileptic seizures, but until more work is done to support the growing body of anecdotal evidence, it's difficult to say exactly what CBD can be effectively used to treat.

Based on what has been reported, however, it can be helpful in relieving both acute and chronic canine pain and inflammation, anxiety, stress, noise phobia, vomiting, and chronic skin and gastrointestinal problems.

There are suggestions that it may also have an anticancer property. CBD's side effects, which are few, include sleepiness and an overactive appetite.

CBD Products and Pet Insurance.

Some pet insurance companies will reimburse for the cost of CBD products, although timing, terms, conditions and the amount varies. Check with your company for details.

Glossery.

Cannabinoids:

Active chemicals responsible for, among other things, the medicinal effects of cannabis; found primarily in the plants' flowering tops, they are a class of chemical compounds that act on the brain and body's many cannabinoid receptors.

They may be naturally derived from the cannabis plant or a manufactured synthetic.

CBD: Cannabidiol, a non-psychoactive constituent of cannabis; considered to have a wider range of medical benefits than THC.

Cultivar: Plant variety that has been produced by selective breeding.

DEA: Drug Enforcement Agency

Dose: Quantity used at one time or in fractional amounts given over a period of time. Dose-response curve: Diminished response at higher doses.

Edibles: Treat-like products with various levels of CBD that are designed to be consumed by the dog; usually slower-acting.

Endocannabinoid system: Series of receptors in the brain and body configured to accept cannabinoids, especially THC and CBD.

Entourage effect: Synergy between cannabis's many chemical compounds (including cannabinoids, terpenes and flavonoids); aka "whole plant" medicine.

FDA: Food and Drug Administration

Hemp: Strains of cannabis cultivated to have 0.3 percent or less THC on a dry-weight basis. Some varieties are grown for fiber, others for medicinal use. The former tend to be tall and bamboo-like, with few leaves; the latter look much like THC-rich cannabis varieties.

Isolate: Purified CBD that has been separated (isolated) from other cannabinoids.

Marijuana: A product of all parts of the plant *Cannabis sativa* L. with a THC content greater than 0.3 percent on a dry-weight basis.

Phytocannabinoid: Cannabinoids that occur naturally in the cannabis plant.

Potency: Amount required to produce a specific effect.

Receptor: A structure on the surface or inside of a cell that selectively receives and binds a specific substance to it.

THC: Tetrahydrocannabinol; one of dozens of chemical compounds found in the cannabis plant, and its main psychoactive constituent.

Some veterinary CBD products incorporate modest levels of THC for its pain-relieving effect.

Tincture: Though typically, tinctures are made by dissolving a medicinal in alcohol, CBD tinctures are generally infusions in an olive- or coconut-oil base, which is more palatable. CBD delivered this way tends to work more quickly.

Topicals: CBD-infused creams intended to be applied to the skin.

In our upcoming and final examination of CBD and dogs, we'll take a look at the available options and delivery systems, plus note key points to look for on labeling. For now, check out [The Bark's informative CBD & Dogs Primer](#).

THIRD-PARTY TESTING

Why it matters: A research letter published in the *Journal of the American Medical Association* noted that of 75 human-use medical cannabis edibles tested, 17% were accurately labeled, 23% indicated they had less THC than they actually did, and 60% indicated they had more; 44 products had detectable levels of CBD, but only 13 included it on the labels.

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