

# It's A Block Party: The Phytochemical Friends Of Cannabinoids Have Arrived

By Lauren Wilson

Tetrahydrocannabinol (THC). Cannabidiol (CBD). Today, most folks are familiar with these cannabinoids, at least by name. Given the continued growth of legal cannabis industries across states and the acceleration induced by the federal legalization of hemp, cannabinoids have permeated mainstream American consciousness and conversation.

Interestingly, though, it is a lesser-known cannabinoid, cannabitol (CBN), that is having its moment in the spotlight right now. CBN has arrived on the consumer scene in a big way, appearing alongside CBD in everything from tinctures to gummies to transdermal patches.

But THC, CBD, and CBN are just three of scores more. What about the many other cannabinoids that have been discovered in hemp and cannabis plants? And what about the other plant allies that are angling to join the phytochemical party?

## A Who's Who Of Alternative Health

Plant medicines, like those from the *Cannabis sativa L.* family, have been used by cultures around the world for many, many years. In recent decades, Western health and wellness trends have moved toward more natural forms of alternative care, including Ayurvedic medicine, traditional Chinese Medicine, and naturopathy, for example.

According to a 2018 Consumer Reports survey of 1,003 adults, one-third reported using alternative treatments in the past year, and 29% of these respondents did so at the recommendation of their doctors.[1] In fact, complementary and alternative medicine options are becoming commonplace at well-known medical centers and universities like the Mayo Clinic, the University of California San Francisco, and Johns Hopkins University.

Adaptogens, nootropics, psilocybin, ayahuasca, and ibogaine—these plant-based supplements and medicines (among more) have all made their way into the consumer

psyche and into clinical settings. Sure we've got the cannabinoids next door but, when we look at the broader trend toward plant-based medicines and more natural ways to support health and wellness, it's more like a block party.

## The Minor Cannabinoids Next Door

Historically, "minor" or "lesser" cannabinoids like cannabigerol (CBG) and CBN were defined as those found in smaller concentrations in the plant, as compared with THC and CBD. But with advancements in breeding and biotechnology, we are honing in on more efficient ways to move cannabinoids from the minor to the major.

"CBG was highly bred for last year, so this year we have a lot of CBG biomass. Now CBG is not even a minor cannabinoid anymore, it's a major cannabinoid," commented Andrea Holmes, PhD, co-founder of Precision Plant Molecules (PPM), a hemp extractor based in Nebraska.

PPM has taken the idea of biomimetics, or mimicking biological processes found in nature to solve human problems, to the next level with their own proprietary methodology. Cannamimetics™ imitates processes that happen naturally in cannabis and hemp plants to access minor cannabinoids like CBG, CBN, cannabichromene (CBC), tetrahydrocannabivarin (THCV), and cannabidivarin (CBDV), among others. With Cannamimetics, PPM is able to smooth out any natural variation that happens in the plants when producing cannabinoids to yield a reliably consistent final product.

Dr. Holmes, who is a professor of chemistry and the director of cannabis studies at Doane University, moved into cannabis science after a highly distinguished career in organic chemistry, where she worked on a variety of multi-application chemical detection methods that garnered millions of dollars of funding from the Department of Defense, the National Science Foundation, and the National Institutes of Health (NIH), among others.







She began her work in the cannabis industry with AgriScience Labs, a leading testing lab in Colorado, where she soon noticed a mystery cannabinoid that kept showing up time and time again in the cannabinoid profile testing they were doing for local growers. She kept her eyes and ears open, talked to other folks in the industry, and monitored chatter on the Internet. When high performance liquid chromatography (HPLC) testing standards came out for a novel cannabinoid called cannabicitran (CBT) (not to be confused with cannabitrinol), she knew she had solved the mystery.

CBT is so new that we know virtually nothing about it. In December of 2019, GVB Pharma, a Las Vegas-based hemp cannabinoid producer, claimed to have discovered CBT and said the company will be studying it further.[2] According to Dr. Holmes, recent literature reviews reveal little more than patent disclosures for nanoemulsion technology.

While we still know nothing of its therapeutic effects or potential applications, CBT just might very well be the next big thing. In an increasingly saturated marketplace, folding new and novel cannabinoids into formulations is a way for CBD brands and products to stand out.

This begs the question, what drives formulation choices for consumer products? Given the glut of new brands and businesses brought in by the green rush, these choices are often unclear.

“The answer is incredibly complex, and it’s very strange how formulators are making these decisions because we don’t have solid data on the entourage effect and what happens when you mix CBD with CBN, for example,” Dr. Holmes commented. “Everyone just follows what their neighbor is doing.”

As the CBD market matures and inevitably contracts, it is likely that we will see more formulation choices driven by research. In 2019, the National Center for Complementary and Integrative Health (NCCIH), announced close to \$3 million in funding to study how minor cannabinoids and terpenes affect pain.[3] These studies cover a broad range of inquiry, looking at how minor cannabinoids like CBN, CBC, CBG, and cannabielsoin (CBE) work in the body to produce their effects, along with examining their potency and efficacy.

### **Plant Allies From Our Own Backyard**

Amidst the pandemic, people are more motivated than ever before to support their mental and physical health as best they can. They are also becoming increasingly savvy about the connection between immunity and gut health.

Dr. Holmes thinks this is an area of research ripe for discovery: “The microbiome of the gut crosstalks with the endocannabinoid system; they are not independent systems. Now we can look at how to take prebiotics or probiotics and couple them with cannabinoids.”

Indeed, combining the active therapeutic ingredients from other plants (like prebiotics) with cannabinoids is another trend that is picking up speed.

“We need to look outside of the cannabis space. How can we combine other phytochemicals and ingredients that are really good for our health with cannabinoids?” she asks.

Kelly Dunn and Josh Sarvis of Dragonfly Earth Medicine are two such visionaries. Located in the pristine Kootenay region of southeastern British Columbia, Canada, their farm is a completely closed-loop and regenerative site guided by a granular, in fact molecular, appreciation for in the interconnectedness of human well-being and our external environment.





Their system begins with the soil. They appreciate that soil varies by region, as each region hosts a unique microbial community composed of specific bacteria and fungi that support particular plant, insect, and animal life—much like a vintner’s appreciation for terroir. By feeding and nurturing the living systems that exist in the soil, they strive to create a truly living medium that serves as the foundation of their farm’s ecosystem. A thriving ecosystem, in turn, supports human health.

The interconnectedness that exists between internal and external microbiomes guides the formulation of all Dragonfly’s products, which combine adaptogens, medicinal herbs, and mushrooms with the cannabinoids that come from their hemp and cannabis plants.

“Ms. Cannabis is bringing along all her plant buddies, all the other plant medicines that have been riding her coattails like adaptogenic herbs, mushrooms, and psychedelics. People are seeing that real medicine can come from plants,” says Dunn.

### **So, Who Are These Plant Buddies?**

Dragonfly uses adaptogenic and traditional herbs like ashwaganda, Chinese licorice, astragalus, alfalfa, nettles, and Fo-ti, to name but a few. Dunn and Sarvis are also pioneers in compounding cannabis and medicinal mushrooms.

They are able to forage medicinal mushrooms like Reishi, Lion’s Mane, and Chaga from undisturbed virgin forests near their farm. The two became interested in the healing properties of mushrooms from the renowned mycologist Paul Stamets while living in Eugene, Oregon.

“Starting with the cannabinoids that work with our intricate endocannabinoid system and its receptors, and then looking at all the other phytocannabinoids that are produced by the plant, you realize that herbalism is about diversity. We don’t believe in isolating cannabinoids or any compound. We really felt intuitively that putting together medicinal mushrooms with medicinal cannabis was probably going to be an amazing thing,” says Jarvis.

Dunn and Sarvis also believe that there are important synergies happening between the gut microbiome and these healing plants.

“Compounding in an intelligent way is a really beautiful and important way to touch on multi-symptomatic ailments that all have the same root, which is an out-of-balance microbiome,” commented Dunn. “I don’t think we can have a conversation about health, wellness, or maladies unless we talk about the microbiome.”

Over 20 years of working with the soil and farming their land has created a deep understanding of how to create sustainable practices that support and regenerate the ecosystem. Dunn and Sarvis have also developed the DEM Pure Certification® for regenerative farming practices. To date, over 75 farms in the US, Canada, and Europe have achieved certification.

While OGs like Kelly and Josh have been working with the synergistic relationship between plants for decades, newer players are catching on too. Companies like FOCL are setting themselves apart from countless other CBD companies by





focusing on complete transparency and the sourcing of their ingredients.

FOCL has planted their own 120-acre farm in the New Mexico Valley where they use certified genetically modified organism (GMO)-free hemp seeds. In a market awash with white-labeled CBD products, it was important for FOCL to grow their own hemp.

“When we started FOCL, it was extremely important to us that we use only the best ingredients in our wellness products. We chose to grow our own hemp in order to ensure quality and consistency from seed to sale. New Mexico is known for its rich/organic soil and we were fortunate enough to partner with a local family-owned farm,” said CEO Ken Lawson.

It was also important for FOCL to have their hemp processed in a GMP (Good Manufacturing Practices)-certified site. Since the CBD marketplace is still not officially regulated by the Food and Drug Administration (FDA), using GMP practices is still totally voluntary.

“The CBD industry is still very loosely regulated which leaves room for bad actors, poor quality control, etc. We are firm believers that it is our responsibility to self-regulate and follow the highest safety and testing standards,” added Lawson. “Using a GMP-certified facility for processing and manufacturing is just one way that we ensure our partners and vendors adhere to our strict internal guidelines.”

Their products are developed and formulated by a team of wellness experts, doctors, and formulation scientists, and all

ingredients go through yet another level of scrutiny by being TRU-ID®-certified, a third-party DNA testing program for natural food ingredients that guarantees safety and purity.

And, like Dragonfly Earth Medicine, FOCL’s formulations include adaptogens like *Rhodiola rosea*, *Bacopa monnieri*, and Lion’s Mane mushrooms. They also include other health and brain-boosting ingredients like L-theanine (from green tea) and Vitamin B6 for their daytime formulations, while adding ashwagandha, valerian root, and purple passion flower to their formulations for sleep. They have worked with chemists, doctors, and wellness experts to develop their formulations.

FOCL isn’t alone. Popular brands like Papa & Barkley, CAP Beauty, Yuyo Botanics, and Plant People are also adding nootropics, adaptogens, and other herbal supplements to their CBD formulations. While some companies like FOCL are going the extra mile in consulting with doctors and formulation specialists when developing new products, there hasn’t been much in the way of scientific study looking at the effects or possible side effects of combining other herbal supplements and medicines with CBD.

This means that folks interested in adding any new herbal supplement or plant medicine to their health and wellness toolkits should always do their homework; also, consulting with their doctor in case of possible interactions with prescription drugs they might be taking is also important.

### **Plants & The Future Of Integrative Medicine**

At the Advanced Integrative Medicine Science (AIMS)





Institute in Seattle, co-founders Leanna Standish, PhD and Sunil Aggarwal, MD/PhD have assembled a diverse team including oncologists, neuroscientists, naturopathic physicians, psychiatrists, psychedelic psychotherapists, physical therapists, and educators. Through their outpatient clinic and research efforts, the AIMS Institute is working to improve patient outcomes by taking a holistic approach that considers the full range of physical, emotional, mental, social, and environmental influences that affect a person's health.

“Conventional medicine frequently fails to deliver healing, especially in chronic and serious illness, and often produces unnecessary harms. Integrating more approaches means a higher likelihood of success with less chance of adverse events,” said Dr. Aggarwal.

Drs. Standish and Aggarwal are also deeply interested in how plant-based medicines like cannabis and ayahuasca can play a role in healing. They have incorporated cannabis into their practices of oncology, psychiatry, neurology, rehabilitation, pain, and palliative care. Their team is also hoping to add a cannabinoid-based option to their intravenous (IV) therapy programs. The data they are collecting and tracking is proving valuable for understanding how varying phytochemical profiles in different cultivars and different delivery methods are impacting patient outcomes.

In partnership with Amanda Hale, DO, Standish has also founded a small, female-owned public benefit company called Sacred Medicines.

“Our mission is to make ayahuasca-assisted therapies available and accessible to both patients and practitioners,” said Dr. Standish. Currently, she has approval from the FDA for ayahuasca as an Investigational New Drug. Phase I and II clinical trials, led by Dr. Aggarwal, will be conducted at the AIMS Institute.

Here in the US, it has taken decades and the work of many activists, educators, lawyers, doctors, and enthusiasts to move *Cannabis sativa L.* from the underground and into the public. The success that cannabis has had for medical use and its growing recognition benefits so many other plant medicines that are yearning to join the celebration: ayahuasca, ibogaine, psilocybin mushrooms, and peyote, to name but a few. It is through the combined efforts across industries, vocations, and sectors that plant medicines like CBD will continue to flourish.

*Lauren M. Wilson is a bestselling author and writer with a curious mind. She loves to digest big topics and share her knowledge in fun and approachable formats. Her latest book, The CBD Solution: Wellness, is in stores now. Find her online at [laurenmwilson.com](http://laurenmwilson.com).*

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