



CBD SOLUTIONS FOR PAIN & ANXIETY



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1. Dispelling marketing myths & misinformation

Depending on where you hear about CBD oil, tinctures, preparations, lotions, and gummies, you're bound to learn very different facts. And the more you hear, the more confused you may become.

The CBD industry is rife with contradictions. People aren't intentionally lying to you. They're just mis-informed. (Well, not for the most part...) But the reality of the situation is that the "book" on CBD science is still being written. Researchers are still discovering new ways CBD affects our bodies.

2. The Difference between Hemp and Marijuana

Cannabis is a genus of flowering plants in the Cannabaceae family consisting of three primary species, Cannabis sativa, Cannabis indica, and Cannabis ruderalis, commonly referred to as Hemp. This latter species is low in THC. THC is the psychoactive component in the other two species commonly referred to as Marijuana. The appearance and physical features of the Cannabis ruderalis species (hemp) is somewhat different from its neighboring marijuana species.

Hemp is the term used to classify varieties of Cannabis that contain 0.3% or less THC content by dry weight. The legal definition of hemp was legitimized by the Agricultural Act of 2018. Hemp has generally been used for industrial use of the plants fibers and for medicinal concoctions throughout history. The history stems back more than 4,000 years. The historical records indicate that it has been cultivated extensively in Europe, the East, and South America all of that time.

Hemp is a fast growing crop with the capabilities to produce crucial resources such as food, rope, clothing, paper, and building materials. Hemp fibers are one of the strongest material fibers found in nature which is why they are preferred for so many types of textiles and building materials.

3. Historical Perspective

Until the late 1800's cannabis was the primary term used to classify the plant. The use of the term marijuana was coined in the U.S. later on to identify Cannabis species that contained more than 0.3% THC. Mexicans migrating through the U.S. border to seek refuge from the Mexican revolution brought and used the psychoactive Cannabis plant with them.

Negative perception intensified and by 1927 there were multiple anti-marijuana laws on the books of 11 states. The Marijuana Tax Act of 1937 effectively banned marijuana in the U.S. for the next 80 years, and the controlled substance act of 1970 made hemp an illegal substance. That is because a naturally harvested hemp plant that starts out having less than 0.3% THC usually comes off the field "hot", meaning that it has matured and now has more than 0.3% THC in it making it illegal to sell because it is now considered to be marijuana by virtue of the THC content in the plant. The Agricultural Act of 2018 reversed these laws allowing hemp plants that started out being legal to be harvested even though the THC content in them was more than 0.3% at the time of harvest.

The defining characteristic between hemp and marijuana is the chemical composition contained in each plant. Both plants produce high amounts of CBD, the non-intoxicating cannabis compound; however, THC is produced at very different levels. While hemp can contain no more than 0.3% THC by dry weight, marijuana can contain up to 30% THC content. A hemp plant that comes off the field containing more than 0.3% THC is processed the same way as any other hemp plant. The CBD rich oils that are extracted from the hot hemp plant have to be diluted out until the THC content is lower than 0.3% in order for the distillate to be legally sold as CBD full-spectrum distillate. Most full-spectrum CBD tinctures are CBD distillates that have been diluted out.

4 What's in a Hemp plant?

Hemp is harvested to produce wide variety of products included, but not limited to:

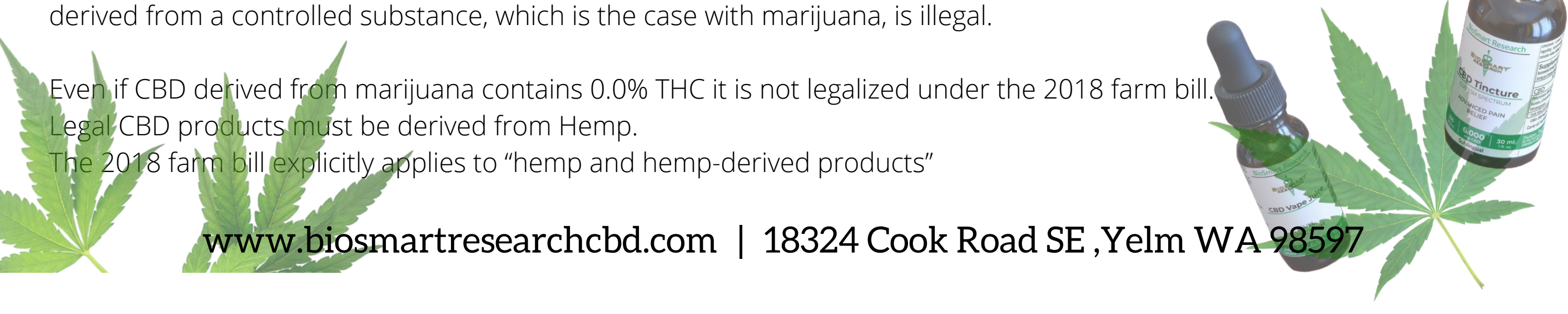
- Industrial products such as paper, clothing, building materials, and plastics
- Electronic components including high-grade capacitors and economical graphene production
- Food products including cooking oil, hemp flour, and hemp-seed based products including hemp-seed oil, not to be confused with CBD oil.
- Medicinal products produced from hemp derived CBD distillates such as CBD tinctures and CBD-infused topicals.

CBD can be extracted from either a hemp or marijuana plant. CBD extracted from each plant is exactly the same no matter which species of cannabis it is extracted from. Jeremy Riggle, PHD, a Chief Scientist at Mary's nutritionals says that "the CBD molecule and its associated pharmacology are the same, whether it was extracted from hemp or from marijuana. CBD is CBD, regardless of where it was originally derived from. Unfortunately, the law hasn't caught up with the reality yet. The law states that CBD derived from hemp is not regulated as a controlled substance and is federally legal, but CBD derived from a controlled substance, which is the case with marijuana, is illegal.

Even if CBD derived from marijuana contains 0.0% THC it is not legalized under the 2018 farm bill.

Legal CBD products must be derived from Hemp.

The 2018 farm bill explicitly applies to "hemp and hemp-derived products"





5. How is CBD extracted from Hemp?

There are several methods for extracting CBD from Hemp. Some are more environmentally friendly than others. The chief obstacle to overcome when extracting the CBD from the plant are the removal of:

- Fats, lipids, and unwanted proteins
- Heavy metals
- Pesticides
- THC – Delta 8 & 9 cannabinoids

Initial extraction of the oils containing the cannabinoids from the plant fibers can be accomplished using a variety of solvents such as:

- Ethanol, butane, propane, isopropyl, or other alcohol to extract the CBD....
- Olive Oil. The olive oil extraction process is the oldest method of extracting CBD. ...
- CO2 Extraction.
- We will discuss extraction technologies to increase purity and concentration next.

Full-Spectrum CBD oil without the THC (sometimes referred to as crude or distillate) actually contains dozens of other cannabinoids, not just CBD. Here is a brief list:

- THCA (tetrahydrocannabinolic acid)
- CBD (cannabidiol)
- CBDA (cannabidiolic acid)
- CBN (cannabinol)
- CBG (cannabigerol)
- CBC (cannabichromene)
- CBL (cannabicyclol)

Though there are dozens more, we usually refer to the entire list of cannabinoids as “full-spectrum CBD oil”

Once the full-spectrum oils have been extracted from the plant the next objective is to filter out all the undesired components including the THC. Everything, except the THC, is removed with conventional filtration medias and distillation techniques. Essential oil distillers are employed for this purpose followed by processing through what is called a “short-path” distillation process wherein the oil is heated and then condensed leaving behind the unwanted materials from the plant. Additional filtration may still be required if metal or pesticide residue is detected.

At this point in the process, you have a marketable CBD full-spectrum distillate if the THC content is below 0.3%. This is a virtually impossible milestone to achieve since the final product will most likely contain between 2-5% THC. Since the distillate was derived from hemp, if you can lower the THC level to 0.3% you now have a legal product. 99% of the time this is accomplished by simply diluting out the distillate 8-15 times by adding any food grade oil, ethanol for tinctures, or ingredients in food stuff to bring the THC level's within the legal guidelines. For example:

Most CBD distillates contain at least 2.5% THC when the distillation process is completed. In order to make a legal product the dilution factor is calculated as follows:

$$\begin{aligned} 100/2.5\% &= X/.3\% \\ 12 &= X \\ \text{Dilution factor} &= 100/12 = 8 \end{aligned}$$

This distillate started out being 96% CBD (includes all cannabinoids except THC) + 2.5% THC + 1.5% - other. To make a legal product, the distillate is diluted out 8 times. The final concentration of CBD in any product sold using this distillate from this plant will be: 96/8 = 12% CBD, 2.5/8 = 0.3% THC. So the concentration of CBD in this product cannot be over 12% in order to satisfy the 0.3% legal limit.

You may ask why they don't just take the THC out. The reason is because it's very costly and expensive. There is no simple process for taking THC out of a CBD distillate so marketing hype abounds to try and get the general public to accept these lower levels of CBD in the products they are buying, hoping that these products might work.

6. Full spectrum vs THC Free Isolate

This is where all the major controversies between growers and advanced processors arise.

7. How much CBD do I need?

In almost all of the clinical studies that have been conducted, the dosage levels are substantially higher than what is found in 90% of the CBD products found on the marketplace. The reasons for this have already been elaborated on above. Not all CBD products are created equal, and consumers should do their research. Ask questions—What type of CBD extract does the product contain: full spectrum, broad spectrum, or isolate? Where is the raw material sourced from? Does the producer use organic materials to farm and process the the CBD that is in the product? Does the supplier have a Certificate of Analysis showing test results for pesticides, heavy metals, residual Solvents, microbials, cannabinoid potency, and terpene profile, if any. Finally, it's worth noting that milligram content can make a difference, and with CBD, higher is generally better. You get what you pay for. Having chosen the type of product you're looking for, make sure that it provides enough of the active ingredients that you're looking for. Most of the time, first time experiences with CBD products prove to be disappointing. Let's examine the reasons why.

Therapeutic doses of CBD for any particular condition are usually over 50 grams per milliliter to 300 milligrams per milliliter depending on whether the application is topical or external. For instance, there's no known CBD dose for anxiety. Studies have found that doses of 300 mg to 600 mg reduce anxiety in people with social anxiety disorder. In order to obtain a dose like this example from a 1 oz. tincture bottle (30ml) containing 1500 mg of CBD which cost \$49, you would have to consume 1/5 of the bottle for each dose. Since there are only 5 doses in the bottle, the cost per dose would be \$10.00 if you were treating anxiety.

This example illustrates the necessity of finding a methodology for producing hemp CBD in higher concentrations than can be found in full-spectrum distillates that have been diluted out to satisfy the 0.3% requirement. This is where the pharmaceutical and nutraceutical companies come in to play. They extract just the active ingredients from the plant that are believed to contain the specific cannabinoids that are responsible for the therapeutic qualities of the product.

Full spectrum CBD oils are touted for their ability to create an entourage effect by utilizing all the cannabinoid constituents in the lant, not just CBD. If this were true, why would a pharmaceutical company extract just the one or two active ingredients from the plant, spend millions of dollars getting the derivative approved by the FDA and then put it on the market as a prescription drug to be used to treat a specific condition or disease? People who think CBD is snake oil haven't been clued in that cannabidiol (a single isolated cannabinoid) is now an FDA-approved drug used to treat several childhood seizure disorders. And with dozens of clinical trials coming down the pipeline, CBD derivatives will likely be approved to treat more health issues soon. These derivatives extracted from the Hemp plant are sometimes referred to as "Isolates" or "API" (Active Pharmaceutical Ingredients) These isolates are extracted using a much higher level of technology and sophistication than the distillation technology used to manufacture full-spectrum distillates. A good nutraceutical formulator will try to create a blended array of both active isolates and selected terpenes from the original plant to create a "customized entourage effect" that is specific to the condition you are trying to treat. This is what BioSmart Research is all about.

8. Advanced Extraction Processes.

High-performance liquid chromatography is a technique in analytical chemistry used to separate, identify, and quantify each component in a mixture. BioSmart Research uses high pressure Liquid Chromatography (HPLC) to separate out the individual cannabinoids in the Hemp plant. BioSmart's unique process uses only food grade ethanol (food grade distilled spirits = ethanol) BioSmart is both, a bonded CBD Processor, and Dealer in the State of Washington. HPLC works on the principle that some molecules take longer than others to pass through a chromatography column. This depends on the affinity of the molecule with the mobile phase (liquid or gas) and the stationary phase (solid or liquid). The molecules that have more affinity with the stationary phase take longer to pass through and vice versa.



9. Advantages of using Isolate formulas vs. full-spectrum oils.

All the terpenes in full-spectrum oils have been removed. They are "boiled off" during the distillation process. It is a known fact that the terpenes contribute to the delivery and effectiveness of CBD and how it interacts with the bodies cannabinoid system.

If you look at a full spectrum CBD oil (CBD distillate) before it is diluted out to satisfy the 0.3% legal requirement of THC, you will notice that the Certificate Analysis usually looks something like this: Typical 3rd Party Certified Lab analysis for a full-spectrum oil.

- Total THC: <0.3%
- Total CBD: 19.042 mg/unit
- Sum of Cannabinoids: 19.308 mg/unit
- Total Cannabinoids: 19.308 mg/unit Total THC/CBD
- is calculated using the following formulas to take into account the loss of acarboxyl group during the decarboxylation step:
- Total THC = Δ9THC + (THCa (0.877))
- Total CBD = CBD + (CBDa (0.877))

- Sum of Cannabinoids = Δ9THC + THCa + CBD + CBDa + CBG + CBGa + THCV + THCVa + CBC + CBCa + CBDV + CBDVa + Δ8THC + CBL + CBN
- Total Cannabinoids = (Δ9THC+0.877*THCa) +(CBD+0.877*CBDa) + (CBG+0.877*CBGa) + (THCV+0.877*THCVa) + (CBC+0.877*CBCa) + (CBDV+0.877*CBDVa) + Δ8THC + CBL + CBN

This analysis pertains strictly to the particular plant in the particular field that this oil was produced from and no matter what the brand, consistency is the one thing that full-spectrum oil cannot claim to have. Every batch is different and therefore, the results that each person gets will be different each time they order the product.

As you can see from the analysis, the CBD content is actually quite small. The question is, are any of these other cannabinoids that were included with the CBD considered to be active ingredients that contribute to the effectiveness of the product for treating any specific condition. Another obvious omission is the absence of any terpenes that might enhance the delivery of the CBD. We would venture to say that little or no benefit would be derived from taking the recommended dose of this product since is nearly 10 times less than the clinical or therapeutic doses recommended in the medical literature.

10. Contaminate Removal using CBD Isolate Formulations

The term “isolate” is just a convention that was coined for describing individual cannabinoids which, when re-combined according to based on clinical studies and evaluations, are considered most effective in treating specific health issues. By isolating the specific cannabinoids first and then re-combining them the following contaminants can be removed.

- Fats, lipids, and unwanted proteins (these are removed in an earlier process).
- Heavy metals
- Pesticides
- THC – Delta 8 & 9 cannabinoids

The fats, lipids, and unwanted proteins are not actually bad. These are sold off as by-products of the distillation process and used for a plethora of household items including cooking oils, soaps, adhesives, etc. The plant fibers follow a different path into the textile industry. With all of these contaminants removed and the individual cannabinoids isolated the re-formulation process begins.

BioSmart Formulations are based upon clinical research, scientific and professional abstracts published in the various medical journals and bio-chemistry publications, and our own collaboration with the University of Washington in Seattle.

BioSmart’s formulations are a result of the latest technology extraction breakthroughs combined with our formidable experience in bio-chemistry and cannabinoid research.

Examples of some of our most popular formulas:

Advanced Pain relief

- CBD Isolate
- CBG Isolate
- Limonene - terpene
- Linalool - terpene
- Wintergreen Oil - analgesic

Night-time Pain Relief

- CBD Isolate
- Myrcene - terpene
- Caryophyllene - terpene
- Terpinolene - terpend
- Wintergreen Oil - analgesic



As you can see, the two formulas are quite different. To create an effective CBD formula to treat a specific condition, you need to consider and understand the properties of both the terpenes and the flavonoids that were in the original plant. Most importantly, the formula is comprised of only these specific ingredients so the amount of CBD is 10-20 times higher than in a conventional full-spectrum formula. You get more of the active ingredients, and just the active ingredients. In addition, you get the advantage of a custom formulation than can be duplicated time and time again with accuracy. Full spectrum oils will never match the potency or ability target specific cannabinoid deficiencies in the human body. That is why isolate formulas work while full-spectrum oils are ineffective. Those are just the plain facts. Drugs, which are simply derivatives or isolates from the plant work because of the higher concentrations of the active ingredient. Now, with the advent of advanced technology, you get the advantages of this type of formula at a fraction of the cost of a prescription because no one can patent CBD. BioSmart sells affordable high-potency CBD formulas to treat pain and other conditions effectively.

BioSmart maintains & manufacturers a full range of 20 essential terpenes and flavonoids that are used to create our specialized formulas. Cannabinoid deficiencies occur for most of us. These deficiencies produce nerve pain associated with numerous environmental and lifestyle events. Factors such as accidents, stress, diseases, lifestyle habits, and consumption of carcinogenic substances, either voluntarily or involuntarily contribute to these deficiencies. Each person needs specific types of formulas to

11. Options for using CBD products

There are seven major dosing avenues available to the average consumer looking for an OTC (over the counter) CBD product.



- Oral
- Topical
- Vaping
- Powders
- Caplets
- Gel Caps
- Gummies

We will briefly describe the appropriateness of each for the specific type of relief being sought by the consumer. Although some people report almost immediate improvement of their symptoms when they first try CBD products, there's a good chance you're not going to "feel" anything at first. We have already explained most of the reasons for this but let us review some of our options.

Vaping

Vaping produces the fastest results for relieving anxiety and generalized internal pain throughout the body. Unless you are a smoker or marijuana user, you may not find this method of self –medicating to be your first choice. We will discuss briefly the options available and what you should be careful to avoid.

The three most used ingredients in vape juice production are Propylene glycol (PG), Vegetable Glycerin (VG) and Medium chain triglycerides (MCT). MCT is emerging as the preferred carrier. There are concerns regarding each product because not enough research has been done. There is a belief that vaping is safer than smoking because of the carcinogens produced during combustion. That said, that risk is not necessarily avoided by vaping.

Propylene glycol is a terrific solvent, but it produces formaldehyde and carbonyl compounds when overheated. Both these are suspected carcinogens. Vegetable glycerin is also a great additive to vape juice as it produces a better taste and thick vapor. But it has the same issues as PG in that it produces cancerous compounds when heated. Many prefer VG because of the plume and the flavor enhancement.

Medium Chain Triglycerides offer a fairly inert solvent for vape juice. There is a condition known as lipid pneumonia which can occur. This is where oil builds up in your lungs and effects your ability to breathe. This condition is temporary and treatable.

It can be argued that anything taken into your lungs is going to have potential risks involved. When compared with smoke a vape maybe less toxic, but this is not known. Of the ingredients commonly used to manufacture vape juice, we choose the one with the least predictable risks. If it can produce a carcinogen in the presence of heat, we will avoid that product. MCT is used to make our products. We use specially designed all-glass and ceramic vape cartridges specially designed for CBD vaping. These are totally inert materials that are both safe and hygienic.

Topicals

Topicals are used for treating specific skin conditions and joint pain. They are fast acting. If they are being applied to reduce pain, they can begin to take effect in as little as ten minutes, provided that the concentration of active ingredients is sufficient to have an effect on the condition.

Topical CBD preparations can be used for a host of skin conditions. CBD topicals can potentially provide relief for a variety of issues including:

- Joint or muscle pain.
- Dermatitis.
- Eczema.
- Psoriasis.
- Headaches/Migraines.
- Menstrual cramps.
- Foot or hand pain.
- Arthritis.
- Hemorrhoids

CBD topicals include sticks, lotions, balms, gels, or creams that are infused with some CBD component to produce skin-friendly products. The higher the concentration of CBD, the more medicinal and effective the CBD becomes. In topical form, CBD is most popularly used for managing pain and inflammation because it acts quickly and can be applied directly to the source of the pain.



CBD topicals penetrate the skin to provide targeted relief, without entering the bloodstream. This makes them a fantastic choice for anyone who is concerned about taking CBD internally and who wants to focus the treatment on specific problem areas rather than feel the effects throughout their body. People who have arthritis in their hands who use [CBD topicals] on their hands every day are going to have less pain, less inflammation. They're going to have less pain in their hands over time than people who use it to treat the pain as it happens."

Most all CBD topicals use a base such as shea butter, or oils like coconut, avocado, jojoba, or vitamin E. These ingredients are great for the skin, providing added benefit to the medicinal properties of CBD.



Lotions are usually water based. Creams are usually fat or oil base. Balms are thicker and usually contain a thicker base such as beeswax. Water-based lotions absorb more quickly into the skin, but oil-based CBD topicals are more easily absorbed and get into the skin deeper because of the fat content in the base. Gels are sometimes preferred because they are absorbed quickly and have no oily residue. Fat based preparations, however, deliver a deeper penetrating product and provide surface emollients and protectants that are usually more desirable overall.

BioSmart's unique CBD pain relief formula utilizes an optimal dose of Cannabidiol (CBD) isolate to deliver effective relief from pain. The product is made in both a 100mg/g and 150mg/g version for professional use. We use all-natural ingredients to provide a superior transdermal delivery of CBD directly to the site of pain and inflammation. For any instance where pain can be localized to a given area, BioSmart's Balm works to relieve that pain.

BioSmart also makes a pain relief stick that utilizes a high dose Cannabidiol (CBD) isolate to deliver effective relief from pain. We use all-natural ingredients to provide a superior transdermal delivery of CBD directly to the site of pain and inflammation. We have balanced the formula to provide a stick where the application to the site of pain can be accomplished directly without hand contact with product.

If you can't find a lotion or balm that you like, just add a concentrated CBD isolate to your favorite lotion or balm and make it better. BioSmart makes that too.



Tinctures

Tinctures are far less complicated to produce than topicals. There are vast differences in the way that tincture preparations are absorbed when taken internally.

For instance, a tincture consisting of an alcohol or alcohol and water base will not be absorbed as quickly or as effectively and completely as an oil based tincture. The type of oil used is also critical. BioSmart prefers organic fractionated coconut oil for its tincture preparations.

Tinctures take 2-3 hours to be completely absorbed through the small intestines. They are also partially absorbed if placed under the tongue and held there. When taking oral tinctures, drug interactions need to be taken into consideration. It is usually safer to administer smaller doses to begin with and then build up to the recommended dose that is prescribed by your physician or health care professional. If self-dosing, the dose should be gradually increased to make sure that no adverse side effects are experienced when taking CBD internally. There are no reported long term effects resulting from an adverse

symptom if the individual stops taking a CBD formula.

It is important to note that the therapeutic effects of the CBD are dependent upon the strength of the tincture. As we mentioned previously, the weaker the tincture, the larger the dose in order to obtain a sufficient amount of the active ingredients to have a therapeutic effect. Typically, a 300mg, 1 oz. bottle will provide about 6 doses if taken for therapeutic benefits. Though an overall sense of wellbeing may be experienced from taking smaller doses, pain management requires more significant amounts of CBD to have the desired effect.

Powders

Powders offer a convenient way to mix CBD isolate with water soluble herbs, aminos, minerals, vitamins, pro-biotics, and other nutritional supplements. Powders are cheaper to produce than Caplets, Soft gels, or Gummies so you usually get more CBD for every dollar spent. Most people prefer to take a regulated dose by simply taking a capsule or a metered tincture.

Caplets/Tablets

Caplets provide a convenient method for taking CBD isolate with water soluble nutritional support items. Caplets are just Powders that have been encapsulated or compressed into a tablet.

Soft Gels

Soft Gels provide a convenient way of taking liquid Full-Spectrum or isolate CBD in a Soft Gel. They provide a pre-metered dose for people on the run. They are a convenient item to carry. They are expensive to manufacture, so more of what you spend for the product is going to the cost of making the soft-gel.

Gummies

Gummies are pretty much just a “comfort food” laced with a bit of CBD. There is not enough therapeutic value in the content of Gummies containing CBD but they are convenient and some people do claim that it they do relieve stress and anxiety leaving them more calm.

12. Dosing requirements

The CBD industry is self-regulating. By that we really means that it's currently unregulated by the U.S. Food & Drug Administration. As a result, the information on CBD product labels can vary from brand to brand. This lack of consistency can make it hard for users who want to compare the CBD products of different brands.

But in most cases, the product label can still provide some very useful information. The purpose of this article is to help you understand the key elements of CBD product labels so you can make the buying and usage decisions that are right for you.



Generally speaking, a product with less than 15 mg/ml per dose is considered low-potency. A product with between 15-49 mg/ml per dose is regarded as standard potency, and a product with 50 mg/ml per dose or more is considered high-potency. You'll need to take more of a low-potency product compared to a high-potency one to achieve the same dosage level. Most of the clinical evidence for therapeutic levels of CBD are between 100- 200mg of CBD/ml per dose, once or twice a day. This is much higher than the dosage requirements suggested on most websites. It is very wise to consult a health care professional or doctor to determine what the clinical dosage would be for your particular condition before proceeding with a higher dose formula. If proper medical advice is not readily available to you, it is recommended that a much lower dose is used and gradually increased once it appears that there are no adverse reactions and the desired results are being obtained.

13. Calculating the potency of a particular CBD product

To calculate the potency of the CBD in a product, just divide the total number of milligrams of CBD in the bottle by the total amount of liquid in milliliters (ml). Both of these numbers can be commonly found on the product label or the company's website. This will tell you how many milligrams (mg) are in each milliliter (ml) If the clinical dosage requirement for your condition is suggested at between say 50 to 100 mg per dose, simply divide the total number of mg per dose by the total number of mg in the bottle. Then divide the total number of doses by the total number of milliliters in the bottle to determine how many ml are required to equal a suggested dose. For example: A 30 ml bottle (1 oz) containing 300 mg of CBD has 10 mg in each ml. If the suggested dose is 50mg twice a day then you would consume 100 ml per day to obtain a 100mg dose. Your 1 oz. (30ml) bottle will last 3 days. Now, if the bottle contains full-spectrum CBD, you are actually only getting a small fraction of actual CBD along with other cannabinoids. Also, you're not getting any of the terpenes or flavonoids that have all been evaporated off. If you are taking a bottle with a CBD isolate formula you are getting far more CBD (10-20) times as much as you would get in a full-spectrum formula. Now, if additional terpenes and flavonoids are added to the formula according to what the research suggests, the potency of the formula increases exponentially.

Depending on why you're taking it, you might not notice any changes until you've been supplementing daily for a few weeks. Higher potency isolate formulas can sometimes produce dramatic improvements starting with the very first dose. The best way to know if CBD oil – or any supplement you take — is “working” is by clearly defining why you're taking it before you start. By keeping a record of your symptoms over time, it'll be easier for you to judge if the supplement is a good fit for you.

14. CBD Side Effects

In an article published to the web by Genevieve R. Moore PhD, she states,

Any company that tells you CBD has no side effects is not looking out for you. In reality, like most everything else we consume, CBD is not right for everyone and it comes with potential side effects — particularly at very high doses.

One important point to keep in mind is that CBD can affect the way our bodies metabolize certain prescription medications – particularly those that come with a warning about eating grapefruit, such as warfarin, anti-epileptics, HIV antivirals, chemotherapy and others.

In clinical trials where children took very high doses of CBD (equivalent to an adult consuming an entire 1,000 mg bottle of Foria’s CBD Tonic every day for 3+ months), side effects included tiredness, reduced appetite, or digestive changes. However, these side effects nearly disappeared when the dose was halved to 500mg CBD per day — which is still a staggering amount of CBD to take.

So CBD can have side effects — but they’re not likely unless you’re gorging on pounds of gummies and edibles every day, or taking certain specific pharmaceuticals.

However, if you you’re experiencing side-effects — despite discussing with your doctor and using only reputable CBD sources — listen to your body, and experiment with lowering your dose.