

Epsilon Essentials

"Extraction Basics"

2014 Edition, Vol. 1



The progression of cannabis from flower to extract.

A vegetating cannabis plant starts to flower later in its life, at which point it begins to express a large number of chemical constituents into structures called "trichomes." The cannabis plant has a few types of trichomes and at the tip of the structure is the glandular head (which often resembles a mushroom head or doorknob). Cannabinoids in their acidic forms begin to store up inside these trichomes alongside aromatic hydrocarbons, which I'll refer to herein as terpenes and/or terpenoids. Terpenes also develop on the surface of the leaves/stems. When the cannabis is mature and harvested, the flowers are hung and cured properly to retain minimal moisture. When various methods are utilized (dry-sifting, ice-water collection, etc) to extract the trichomes from the cannabis material, the resulting collection resembles packed brown sugar, often with a caramelized appearance. The dry cured flower or collected block resin can be further processed to yield tincture and/or resinous oil of cannabis. When properly extracted, tincture of cannabis is vibrant gold-dark amber in color with red tones and essential oil of cannabis resembles hardened amber with gold and/or red accents.



"Less is More...Do No Harm"—simple words from the sands of time...simple words that represent our policy on using cannabis therapeutically with every patient we treat.

Welcome to Volume 1 of the Epsilon Essentials Guides.

Epsilon will share with you the reader, methods for using cannabis and compounds that work well alongside cannabis, for therapeutic success. These methods produce nutritional supplements that provide intensive therapeutic potential; everything you make using the **Epsilon Guide** is 100% safe for ingestion and involves no caustic ingredients. As time progresses and as you become familiar with the subsequent volumes of the Epsilon Essential guides, you will learn to treat yourself (the patient) or act as caregiver for another, by applying the Epsilon Approach.

What is the Epsilon Approach? *Epsilon*, in a word, is the Greek value for "5." **The Epsilon Approach** contains 5 foundations for success...5 core elements combined into one. Those 5 elements are: customized Tincture of Cannabis (ToC), customized Essentials of Cannabis (EoC), customized Supplemental Extract of Cannabis (SoC), Genetic Compatibility Testing/Formulation with Cannabis/Botanicals, and Synergistic Application of Botanicals and Therapies. This volume (Vol 1) covers the basics of creating: ToC, EoC, and one example of SoC. ENJOY!!!

Definitions of Terms Found in this Guide

Elysium is the official “NAME” for Epsilon’s acidic cannabinoid tincture/oil...representing an unadulterated product that delivers therapeutic benefit without compromise of health and/or negative side-effects. Elysium, or The Elysian Fields, represents the conception of afterlife in Greek mythology. Referred to as a place where “life is easiest for mankind,” where humans live “untouched by sorrow.” This concept of an afterlife represents the kind of success that Epsilon desires for every patient we work with...providing patients with such clarity, such peace of mind/body/soul, that they might do more than simply live; they will thrive. “The good receive a life free from toil, not scraping with the strength of their arms the earth, nor the water of the sea, for the sake of a poor sustenance.” - Pindar, *Odes*

Botanical Extraction is the process of obtaining essential chemical compounds from plants, herbs, flowers, rhizomes/roots; using an extractive medium and/or method. Methods for extraction vary, from infusion, to decoction, maceration, digestion, expression, percolation, and more. The *Epsilon Essential* method to produce ToC, EoC, and SoC; is a strategic process that combines multiple approaches.

Cannabinoids (phytocannabinoids) are the carbon-based compounds that are produced by the cannabis plant and primarily associated with the therapeutic properties of the plant. In the plant’s raw state, the primary cannabinoids present are “acidic” in nature. These acidic cannabinoids are not known to cause psychoactivity. When those acidic cannabinoids are decarboxylated (definition below), they become “active” cannabinoids. Most cannabinoids have a structure with a “5-carbon side-chain” attached, except for the “varins” (THCV, CBDV, CBCV, CBGV, CBNV, etc) which have a “3-carbon side-chain.” When you hear the terms “acidic” and “active” with reference to cannabis, consider the following examples. Acidic cannabinoids: CBGA, THCA, CBCA, THCVA, CBDA, etc. Examples of active cannabinoids: CBG, THC, CBC, THCV, CBD, CBN, etc. The “varin” group of cannabinoids is commonly found in the composition of cannabis varieties from Central and South Asia and South Africa, making them the only group of cannabinoids that are not common to cannabis the world-round. Phytocannabinoids are produced by numerous non-cannabis botanicals like Echinacea, clove, and more...which means that some of the therapeutic benefits of cannabis are not limited to cannabis!

Decarboxylation is the process by which acidic cannabinoids become active cannabinoids. This process causes the “carboxyl group” of the acidic cannabinoid to release. Before turning gaseous, the carboxyl group is released as carbon dioxide and water vapor. This process is achieved through intense heat or long term (lower) heat at consistent exposure. The decarboxylation temperature of THCA is considered to start around 170-180°C (338-356°F)...very high temps. Without decarboxylation, cannabis is not going to produce psychoactivity. Consider though in some cases; certain indoor grow lighting or open air and long sustained intense sunlight exposure in outdoor grows...is known to force decarboxylation on a very small level in certain parts of the cannabis plant structure. When applied with respect, decarboxylation is an amazing tool for creating therapeutic success in treatment.

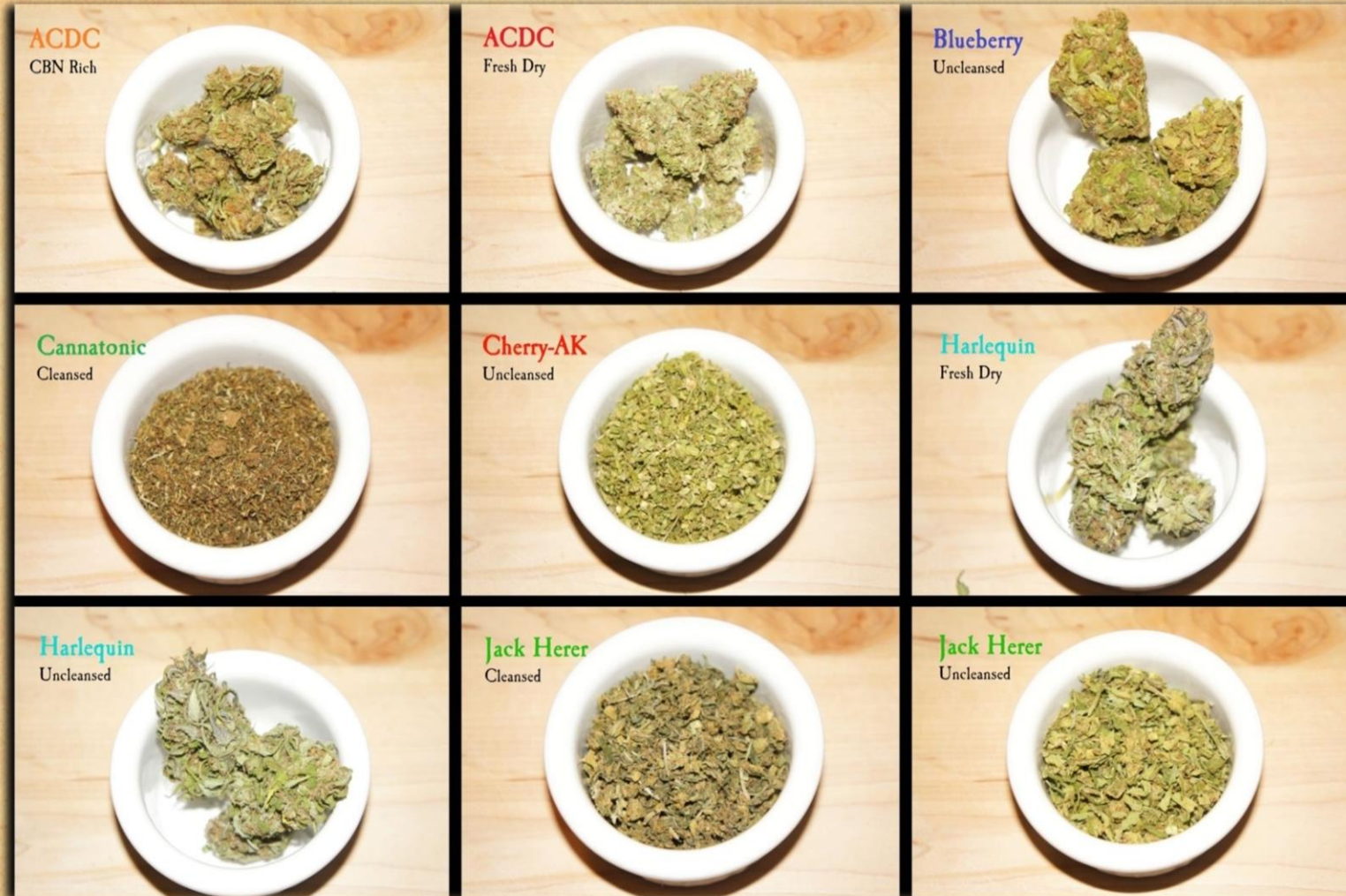
Terpenes are a large and varied class of hydrocarbons, often called aromatic hydrocarbons. They make up the largest group of chemical constituents on the planet, found in both the plant kingdom in addition to some living organisms. They're associated with the aroma and taste of almost everything in nature. The term terpene may be used to include terpenoids, which are terpenes that have been chemically modified, through oxidation for example. Terpenes, as well as terpenoids, are the primary constituents of essential oil of many types of plants and flowers and are the major components of various resins. Terpenes are major biosynthetic building blocks within nearly every living creature. For example, steroids are derivatives of certain triterpenes. Terpenes provide a number of valued functions for the living organisms that produce them, in addition to being building blocks for other molecules.

USP is the United States Pharmacopeia. USP establishes written (documentary) and physical (reference) standards for medicines, food ingredients, dietary supplement products and ingredients. These standards are used by regulatory agencies and manufacturers to help to ensure that these products are of the appropriate identity, as well as strength, quality, purity, and consistency.

Sanitation is the promotion of hygiene and prevention of illness via measures that remove obvious waste, dirt, and disease. Sanitation *must* precede sterilization to run a completely sterile process.

Sterilization is the complete elimination or destruction of all living microorganisms via certain methods. As it applies to this process, sterilization comes from two steps: 1) boiling of all equipment in water for >15minutes and 2) surface sterilization with isopropyl alcohol. The first step eliminates the majority of microbial life, while the second step can eliminate bacterial/fungal life that is not reduced from step 1.

Simply Cannabis...



Examples of dried cannabis in whole flower and hand crumbled flower form (the latter being dry-screened free of stems and non-therapeutic matter). You'll notice variance in color, composition, and general consistency; this is all normal. All of these examples are satisfactory for processing via the Epsilon method. Each sample was properly cured and subsequently stored in dark, sterile sealed, cool conditions. Depending upon the preparation, cannabis might be placed in a freezer prior to use. For the sake of simplifying your attempt at this extract method, make sure you're using high grade cannabis flower, preferably organic outdoor grown, inspected for mold/mildew, cured thoroughly dry, and broken down with *clean* hands. **Store this prepared cannabis in the freezer**, then gather your tools...

Are you prepared to create something special?

Not quite. First, let's review the rules and terms.

The Rules...

Simply stated, what you are learning to do is take botanical material and obtain a therapeutic extract for supplemental purposes. Call it what you will...organic chemistry, etc...but make it simple for the sake of understanding; you're making a **nutritional supplement** that delivers therapeutic benefits.

Epsilon assumes no responsibility for individuals making their own supplement extracts, whether based on this guide or consultation; your choice to make the extract is exactly that...your choice. Choose wisely. Where applicable, when you live in a region where medical cannabis is not legal by state rights, the decision to obtain cannabis for personal use may carry severe legal penalties. In states where medical cannabis is legal by state rights, please be aware that your state might explicitly outlaw "extraction" of any sort; please review your state's "MMJ" specifications and restrictions of use.

The Terms...

Epsilon provides this guide to you, the reader, at no cost...all that is expected in return is respect for the time and effort that's necessary to achieve high-caliber results on a consistent basis. Your first attempt may not deliver the same results as you see pictured in this guide or described by others, and that is normal. Epsilon Essentials have been produced and customized for 177 separate cases since 2006 and the non-cannabis botanical extractions date back to 2000; you might say that with experience, come amazing results. I intend to help you all through this journey, health permitting. If you don't get it right the first time, we will not give up until you do.

When in doubt, do not pout. If you have any doubts as to the ability for this process to work, share your thoughts. If you have questions, concerns, thoughts, considerations, or simply wish to share your experiences regarding this process; please share.

Should you believe that certain steps of this process are unnecessary or should you decide to add your own steps, out of pure respect...please discuss your thoughts directly with me via the group or email. This process is the increasingly refined version of an amazing organic botanical extraction method that I created over a decade ago, one that was once adopted by some of the nation's most respected chefs and restaurants. This process stands alone, but does not discriminate. It can be utilized for thousands of botanicals and produce superb results every time.

Be aware that this process is "food-grade" and as such, it requires a commitment to sanitary and sterile handling. Please understand that I've provided a photographic guide that gives you an idea of the simplest way this should be prepared, so take time to review every picture in detail.

Checklist...Do you have?

-Your Equipment and Tools?

You need stainless steel bowls (multiples of each size), stainless steel produce washing screen-tubs, stainless steel filtration "hats"/sieves, stainless steel pans (lovingly referred to as "half pans, quarter pans, third pans"), stainless steel "mise en place" cups (very small prep bowls), stainless steel measuring cups, glass storage containers (mason jars, gasket lid jars), glass baking dishes, nylon mesh filtration bags (100+, 90, 70, 40, & 25 micron...those sizes are acceptable to start), nylon mesh pressing screens (25 micron), nylon oil filter bags (10 micron), weighing scales, heat proof silicone spatula, sanitary brush, large stock pot for boiling water sterilization. Safety is a must, so get your safety gloves, safety goggles, disposable face masks. You need sanitation/sterilization supplies like Star San®, isopropyl alcohol, and organic surfactant soaps without chemical additives.

You also need supplies that have not been pictured as of yet...2oz and 3ml sterile feeding syringes, 1 & 3ml plastic droppers, long stainless steel drink stirrer, long glass drink stirrer, *Boston round amber glass* tincture bottles with dropper tops (1/2oz, 1oz, 2oz, 4oz), amber glass jars for oil storage (pictured below). Additionally, as you become more familiar with the process, I will be offering up more advanced techniques and materials/tools.

-Your Ingredients?

If you're making a cannabis extract, you need cannabis! Assuming you read the previous page, then you obtained high quality organic outdoor cannabis flower. If it's not organic, make sure that the grower was NOT using pesticides and/or chemicals of any sort and make sure that the flower was properly cured and cared for after harvest. You need organic alcohol and you should obtain it from a proper source...which I'll list below. Finally, if you plan to make the "SoC" or supplemental extract of cannabis, you'll need pure MCT oil. For the purpose of clarity, be sure to have on hand the following...

- A- Cannabis (Cured/Dried, broken down by hand, etc): 1oz weight *after* removal of stems/seeds.
- B- Organic Alcohol: no less than 1 gallon or 128 fluid oz...you won't be using that much for one run of this process though!
- C- C- MCT Oil: no less than 32 fluid oz...again, you won't be using it all at once.

For this guide, there are two formulations shown, proportions as follows...

#1) *Elysium* ToC (tincture of cannabis), containing 2oz weight (57g) of frozen dry cannabis flower with 16oz volume of organic alcohol. (This amount can be altered up or down as needed to manipulate dosing, but it's a great starting point)

#2) *Elysium* EoC (essentials of cannabis), containing 2.65oz weight (75g) of frozen dry cannabis flower with 20oz volume of organic alcohol.

Supply Sources

You can obtain the nylon filtration bags on EBay® or bubblebag.com, Amazon has 25 and 10 micron oil filter bags. The bulk of tools and equipment can be obtained from a restaurant supply, but I've found IKEA® products work best. Storage jars and tincture bottles should be obtained from a bottle supply like sunburstbottle.com. MCT oil can be obtained at health food stores, Vitamin Shoppe®, GNC®, etc. The organic alcohol is obtained from organicalcohol.com (grape is the finest quality they offer, corn and wheat carry little to no scent, and cane is very rich and sweet in aroma...great for tincture palatability). As for the cannabis...if you ask me for a supply, I cannot help you there. Use common sense when obtaining your components!





"Every great chef has a greater collection of tools and tricks..."



Pictured above are various pieces of equipment and tools needed to create a safe and sterile extract: glass storage jars, mesh strainers/sieves, stainless steel 1/3rd bins, nylon mesh filtration bags, gloves, high heat silicone spatula, brush, scale, etc. Glass, stainless steel, high-temp silicone; all these items can be sanitized and sterilized with ease. Sterilization in a large boiling pot of water is ideal when preparing your tools/equipment/storage containers. Surface sanitizers like Star San and surface sterilizers like isopropyl alcohol both come in handy. Be sure to use gloves when handling USP alcohol, isopropyl alcohol, acid surface sanitizers, etc. Your workspace must be clean and ready for extraction, as should your person. Strange as it sounds...be freshly showered, clean clothed, and have your workspace sanitized/sterilized/prepped...then, get to work!



"Do not compromise on the quality of your tools. Take great care of them."



A stainless steel measuring cup and selection of bowls will come in handy throughout this process; be certain to have multiples on hand. The nylon mesh pressing screens and bag pictured on the bottom left are instrumental in this process. You can clearly see how extraction of yellow turmeric has permanently stained the pink-lined screen; this is normal and expected. Due to the sturdy construction of these screens/bags and their nylon composition, they can be sanitized and sterilized with ease. Be sure to obtain multiple glass baking dishes with very level bottoms. *Once you've gathered your materials and equipment, you're ready to move onto the first step!*



-USP Alcohol
-Certified Organic

Choosing the proper solvent...is not hard. Cannabis is a nutrition source and as such, should only come in contact with a food-grade solvent. Alchemical Solutions is an amazing provider of certified organic USP grade alcohol. This grading standard means that you're purchasing a "sterile" alcohol, which is incredibly important. More important is the fact that Alchemical offers "neutral" caliber spirits, the highest ethanol purity available. Alchemical offers 4 varieties, all at 190 proof USP neutral, in: wheat, corn, grape, cane.

How expensive is this stuff? Extremely...but consider the ultimate cost to pay for cutting corners is one that money can never repair. Using this alcohol constitutes a dedication to extreme quality. While USP organic alcohol will extract the desirable constituents of the plant, it will also cause chlorophyll to leach heavily during the process, especially when heat is involved. Fortunately, this process shows you the ways to remove the unwanted elements, via winterization and multi-filtration. As a supporter of Alchemical since the creation of ToC/EoC in 2006, Epsilon is proud to send business their way...you will be thoroughly impressed!

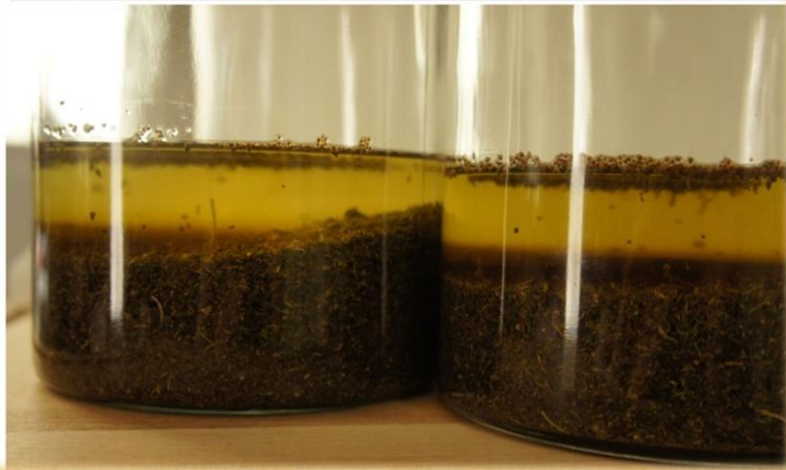
www.organicalcohol.com

"Drugs will always be important, and are often essential for the preservation of health...as a rule, health does not come out of a bottle, no matter how well-advertised its contents may be...an elegant pharmaceutical wrapped in cellophane is not a substitute for the correction of improper habits and diet...exercise and rest. Cannabis...is given in medicine in the form of an extract or of a tincture, and is used for neuralgia, menorrhagia, pruritus, and other conditions."

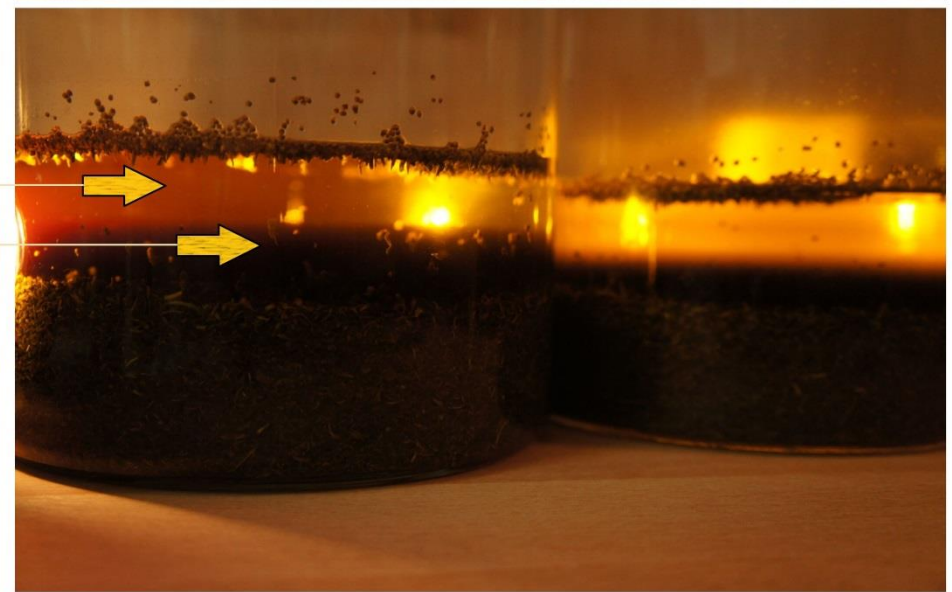
-Victor Robinson, Ph.C., M.D. *The Modern Home Physician*, 1934

The Process Begins...

(This is a photographic guide, however, not all these photos will look exactly like what you end up with...don't fret!)



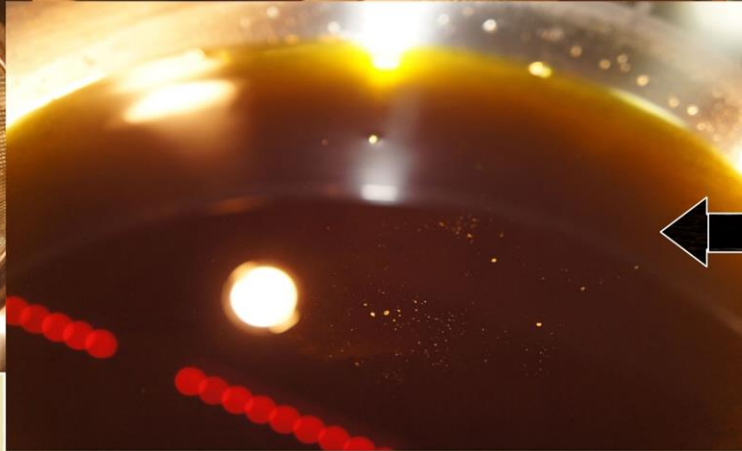
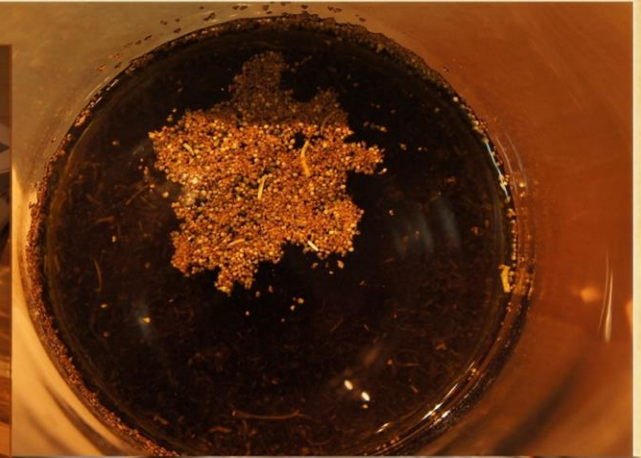
1. Measure your organic alcohol ahead of time and place in freezer until chilled. Measure your frozen dry crumbled cannabis flower by weight and combined with your measured volume of "frozen" organic alcohol; combine in a large jar with gasket-style sealing lid or screw top lid.



2. Allow this combination to sit for 5, up to 30 minutes, stored in cool and dark area. Depending upon the freshness of your flower, 5 minutes may extract major “green” coloration, but it will be enough time for you to extract the therapeutic compounds as well. 30 minutes is a safe max soak for those of you who wish to be “safer” than sorry! This step can be done at room temperature, keeping the glass jar outside of the freezer the entire way. You might notice an amazing thing happen through this step, an obvious separation of layers into multiple colors, lighter towards the surface. This represents the separation of chemical constituents from bottom to top; chlorophyll/non-therapeutics, cannabinoids, terpenes, etc.



Straining...be especially well prepared for this step!



3. Prepare your straining equipment; stainless steel bowls, stainless steel fine mesh strainer, silicone spatula, stainless steel large measuring cup, and new clean glass jar (same style as one you are transferring from (as pictured top/center).
4. Pour your finished extraction (arrow 1 above) through the stainless steel mesh strainer (arrow 2 above), above your stainless steel bowl (arrow 3 above).
5. Allow the material to leach liquid into the collection bowl. Press on the material with a spatula (arrow 3 above) so that the liquid is thoroughly separated.
6. Transfer your strained liquid into the measuring cup...this step makes for easier and cleaner handling through the next step...



7. For this step, you can use a 25micron nylon filter bag or hash pressing screen; place the nylon over the mouth of a clean glass jar and press it down a few inches.
8. Pour the reserved liquid from step 6 through the nylon, be cautious not to over-pour, as it must strain the second stage of residual matter.



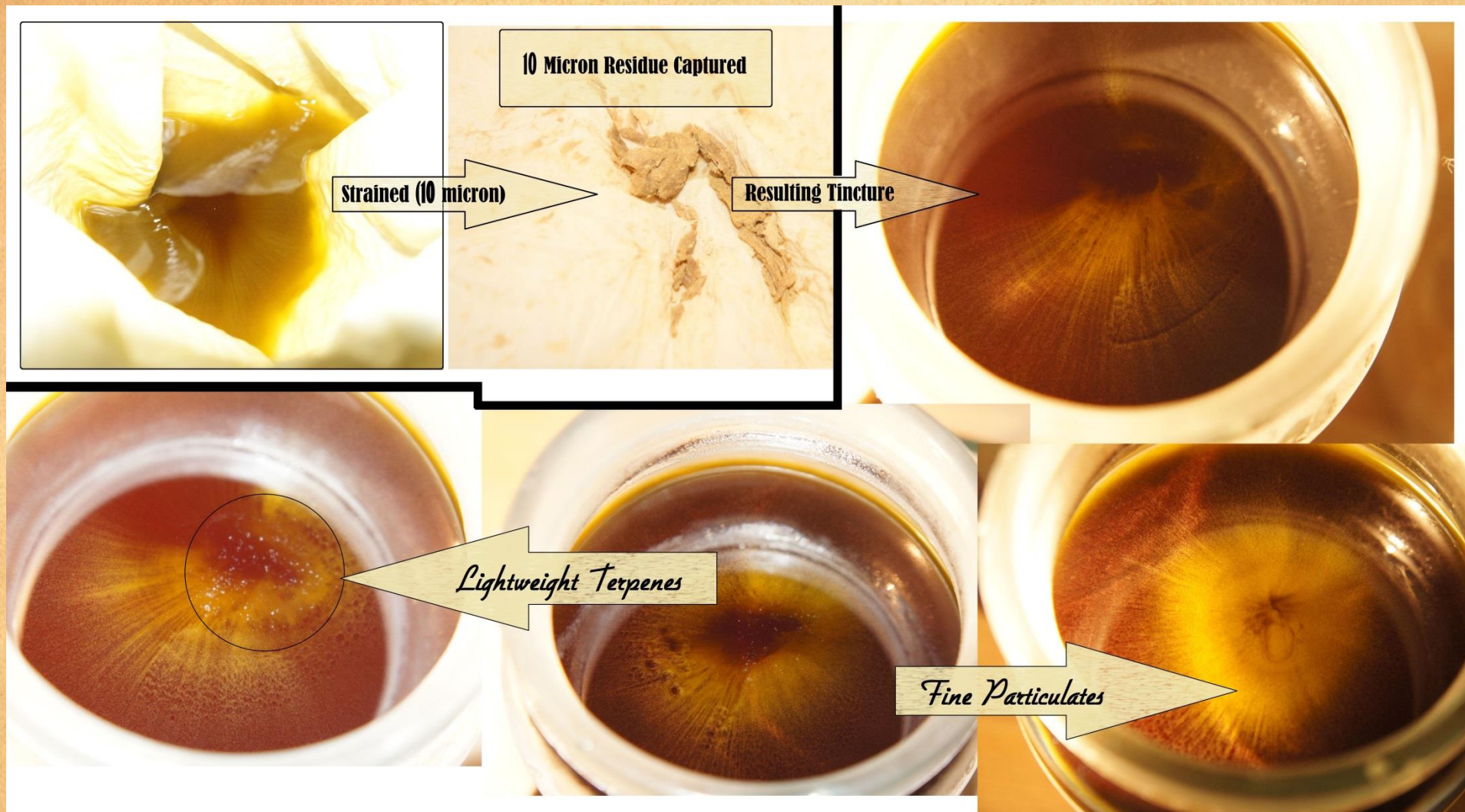
9. The liquid you have at this point *appears* amazing in quality and in the MMJ industry, would pass for a legitimate tincture. It does NOT pass the Epsilon standard of approval, nor should it for you! This liquid must be winterized; a process that helps cleanse further non-therapeutic matter out of the batch through cold temps and filtration. Place the sealed jar in a freezer for no less than 24hours.



10. You'll notice in the above photo, the cloudy-green sludge settled at the bottom of the jar. Do yourself a fun favor and take this jar out of the freezer for a few minutes after its been in overnight; pay attention to all the movement inside, look at the particulates racing to the surface as the temperature fluxes. Winterizing is a common practice in production of high-caliber tinctures from all botanical sources and Epsilon has used it for over a decade to create transparent tincture that is both palatable and therapeutic. You may notice your glass jar frost over, and then defrost during its time in the freezer (as shown above from left to right); this is absolutely normal.
11. Prepare your next straining setup before removing the tincture. You'll need another large jar with your 10 micron nylon screen secured atop (as shown in the picture above). It helps to use a tie around the nylon screen to hold it tight to the sides of the mouth.



12. Straining directly from the "winterization" step must be done quickly to ensure that the residue particulates are caught in the filter. It's important to realize that the liquid might pass slowly through the nylon filter, so to avoid temperature shifts, I advise having a very open space available *inside your freezer*, where you can place this jar and complete the 3rd and final straining. With the 10 micron screen placed inside the mouth of a new sterilized glass jar that's securely tied, pour your "frozen" liquid into the jar. Do this in thirds, placing the pour jar back into the freezer between pours, allowing the liquid to strain (as shown in the bottom row above).



13. As you can see above, the liquid that passes through the nylon filter is vibrant in color with gold and amber tones, while the liquid that catches in the filter is cloudy (very important), muddy green in color, and slimy/sludge-like in consistency. When dried, this captured residue (pictured above center) will crumble between your fingers into a fine dust and has no relevant therapeutic value. You will notice certain reflective collections on the surface of the liquid that resemble an oil slick on top of water...these are lightweight terpenes. Although you're seeing lots of particulates in the liquid above, these are desirable constituents.



Choosing the proper storage is very important...

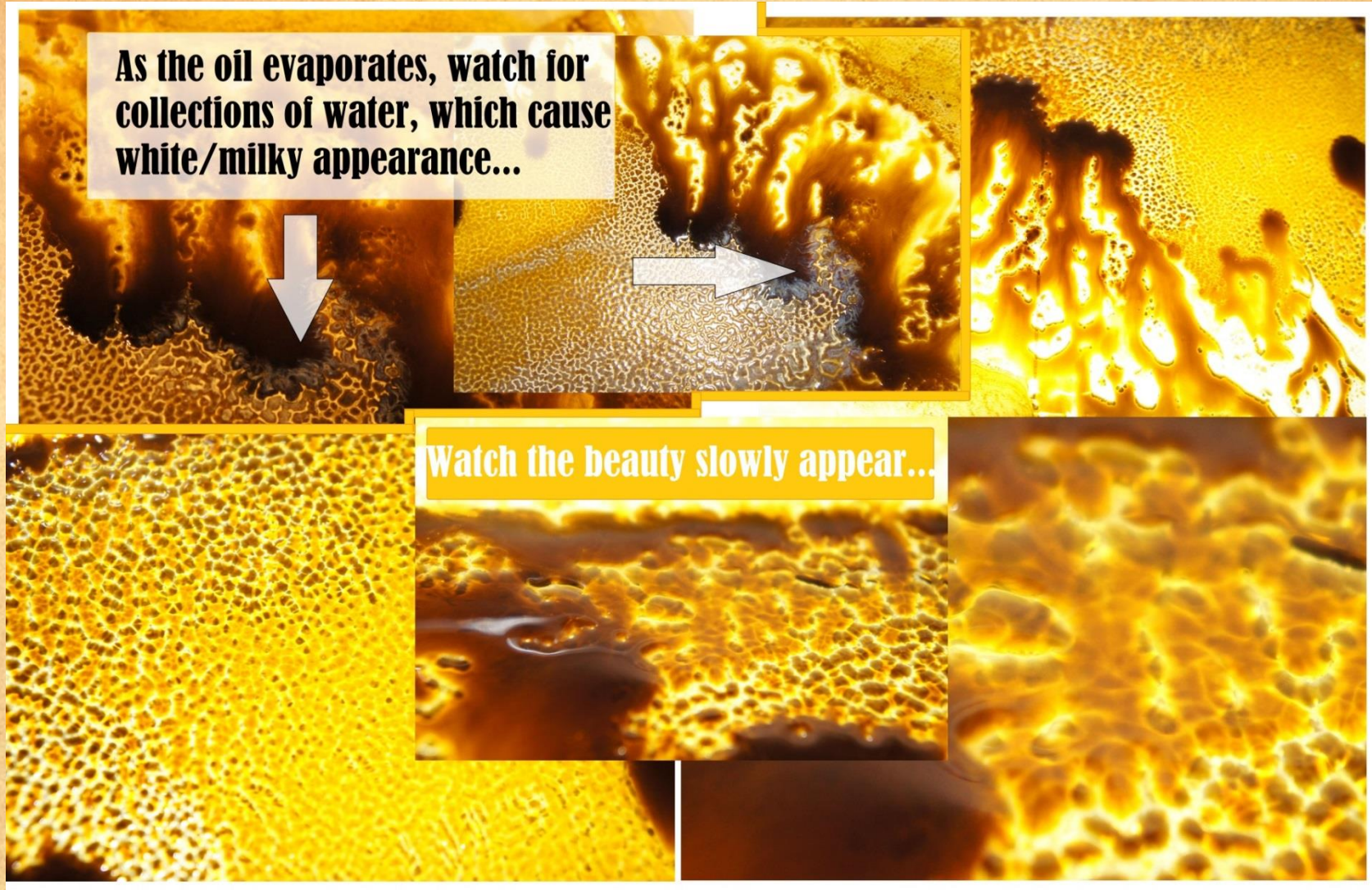
14. Now that you've made it this far, it's likely you're witnessing something truly beautiful develop from your hard work! Please keep in mind that the 3 step filtration process you just executed is going to produce more consistency, transparency, and sheer quality from this supplement, than compared to the majority of options available for you to purchase/donate for. *Epsilon's* process takes the botanical material (cannabis, etc) through upwards of 10 stages of filtration, from dry-sifting to cleansing/purification, and through the entire extraction.
15. **Choose proper storage for your finished tincture!!** Place the ToC in amber glass bottles, label with batch info (strain type, date bottled, alcohol type/info), and store in the freezer.

To understand potency, you must TRY the tincture...no exceptions! If you are going to have the supplement tested, you must obtain HPLC (high performance liquid chromatograph) analysis only, as it can show you both acidic and active cannabinoid content.

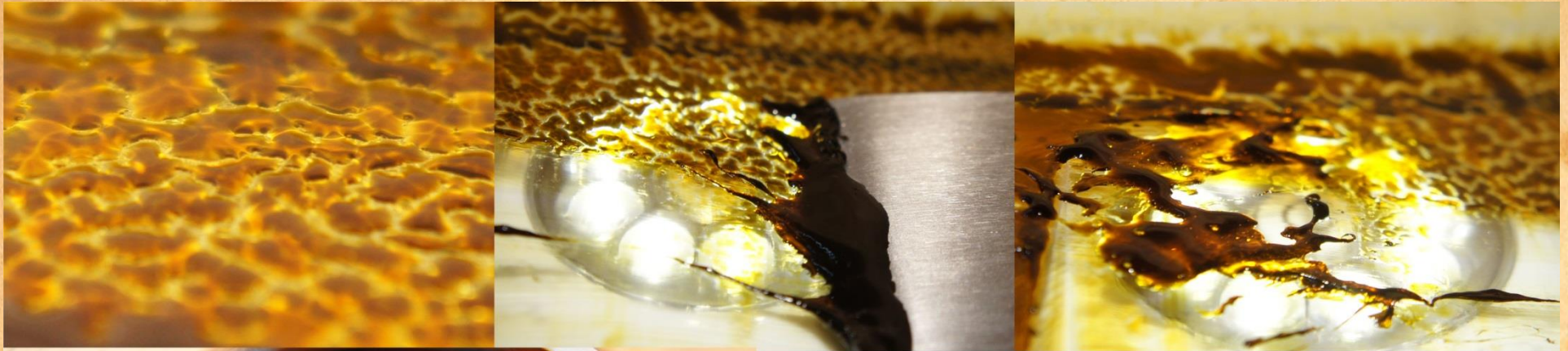
You Made the Tincture... Now Make the Oil!



16. **(First step of the EoC process)** Obtaining the essential extract from your completed tincture is relatively simple, but requires time. You must pour your tincture into a sterile glass baking dish, and then secure a HEPA quality filter on top (use tape or weigh the filter down). I built a custom enclosure for this process...you just need a simple approach. This step ensures that the alcohol evaporates, leaving a resinous oil of cannabis. I recommend you place this dish on your refrigerator shelf with the filter on top, so as to keep the process in a cool environment with limited air flow. This may take a few days. *Alternatively*, you can keep this dish on a clean tabletop in a clean/dark/dry room. Have a small (and wiped clean, with ISO alcohol) space fan situated next to the dish, facing up and away from the dish; this forces the vapor to draw up and away, increasing the evaporation rate.
17. Be sure to move the tray around at least once a day, turning it 180° so that the batch evaporates somewhat evenly. Be sure to move this cautiously, as the liquid shifts. (In future guides, I will be explaining this step and others for people looking to try more advanced approaches).



18. Notice above, the slightly milky appearance of certain areas...this is the result of *water* accumulates/pools up in certain areas, causing an *emulsified* appearance. Think about how on their own, oil and water, have very transparent/clear appearances...when combined and mixed, they can create cloudy liquid. When you see water pooling (it may have a slightly reddish/brown tint), be sure to pour it out of the dish, then return the dish to finish evaporating to the appearance/consistency you see on the lower three pictures (above).



Once cured, the oil is collected and stored in a dark jar...



19. Once you've completely allowed the oil dish to evaporate, you'll be left over with an extremely resinous EoC (essential extract of cannabis). Have an amber glass jar weighed (to establish your tare weight) and ready to be filled. Using a few stainless steel pastry scrapers or bread blades, scrape up the oil and transfer it to a brown amber glass jar. Weigh the filled jar and subtract the empty jar weight; this provides the accurate weight of your oil...your "total oil weight."
20. Seal the jar tightly, label with batch info (same as that of ToC), store in cool/dark area (refrigerator is great).



This is the Supplemental Oil of Cannabis Stage, where the essential is made to tincture...



21. **(First step of the SoC process)** Prepare your equipment as shown above: scales, disposable pipettes, measured feeding syringes, small stainless steel “mise en place” bowls, glass stirrer and/or stainless steel stirrer, sterile glass jar, *EoC*, and MCT oil.
22. Place the sterile empty glass jar on top of the scale and “tare” the weight to “zero.” Using a stainless steel or glass stirrer, pull some pieces of the resinous *EoC* from your amber jar and measure into the empty jar on the scale.
23. You will also add MCT oil to the jar with the *EoC* inside. Use the following guideline to start.
 - For every 1gram of *EoC*, add 30ml of MCT oil. This gives approximately 33.3mg of *EoC* for every 1ml of total emulsified liquid (but will not exceed that dose, due to the offset of total volume from combining these two components).



24. You can stir these two “oils” together every 5 minutes until it reaches an emulsified state, as pictured in the center above. For those of you unfamiliar with MCT, it stands for “medium chain triglyceride” oil, derived from coconut oil. MCT oil allows for faster passage of the SoC through the “blood-brain barrier” and enhanced bioavailability, whether via the GI tract, by mouth, or used topically. Store this tincture in the refrigerator, label with batch info (same as *ToC and EoC*), and use as needed.

You’ve made it this far...you deserve a break! If you can make ELYSIUM supplements, you can make much more.
Do your best to master this simple approach, then be prepared...your journey is just beginning.
This guide is simply a preview of what’s to come.

Dosing: Is there such a thing?



-Be sure to remember that cannabis is a nutrition source *first* and foremost; as such, consumption of cannabis extracts is the exact same thing as taking nutritional supplements.

-All of the dosing guidelines that have been established for medical cannabis therapies resulted from two sources...

1] The anecdotal source...where observation in one patient allows for recommended dosing for the next patient, based on similarities between the patients and the supplement too. This can be a complex approach, due to the fact that *no* two patients ever respond exactly alike to cannabis, therefore, observations are truly only relevant to that individual. Additionally, assuming that since one or more patients respond a certain way to a supplement, does not justify a “blanket dosing approach” that a new patient *must* follow.

2] The conventional medicine source. Large pharmaceutical manufacturers that work with cannabis, in addition to medical universities and contracted clinical trial facilities; all these operations have one thing in common...lack of transparency. Ask yourself this question: what is the ultimate goal of a pharmaceutical company? Moreover, what is the ultimate goal of a pharmaceutical-sponsored collegiate study of cannabis? The answer...money. Obviously, these companies must keep their profit “in the black” to maintain a hold in their industry, so they will go to just about any means to do so. The collegiate studies are almost always sponsored by either pharmaceutical giants *or* by the NIDA; organizations that are NOT pro-whole-plant cannabis. Do not be misled, even the pharmaceutical companies that promote the use of whole-plant cannabis, only do so to profit off synthetic and isolate cannabinoid therapies.

Bottom line, if conventional medicine was all about making people WELL, then RX drugs and the studies associated with them would be created with the purpose of delivering successful results, no excuse. With that said, be certain that you understand that most of these conventional medicine sources for dosing guidelines were founded from studies of *synthetic* and/or *isolate* cannabinoids or from studies where critical information was left out from public view. Those are not reliable standards for dosing.

So how do you determine dosing?

-Simply put, you treat an individual *as* an individual. Approach EVERY new case with extreme caution and always assume that “less is more.”

-You *must* remember that cannabis is not just about cannabinoids, it contains numerous types of constituents that are responsible for the various ways that those cannabinoids will act and how the body will react. It’s something that Ethan Russo labeled “the entourage effect” and it can be explained as the manner by which certain cannabis compounds affect the actions of other cannabis compounds within the human body. The combined action of all these compounds is something called *synergy*. Synergy is the interaction of elements that when combined produce a total effect that is greater than the sum of the individual elements. For example, on its own, THC may create unpleasant psycho-cerebral effects, but when combined with compounds like beta-caryophyllene, myrcene, vanilloids, and more; THC can create completely comfortable uplifting effects. With that in mind, consider that even if you followed a strict dosing guideline for ONE cannabinoid present in your supplement, there’s 430+ potential other compounds in that same supplement...how do you intend to successfully manage specific dosing for each compound?

-By making a recommendation for dosing, Epsilon assumes the role of a doctor...which we are not. It is vital that you become familiar with these supplements *personally* if you are a caregiver. Use them on yourself! If you are uncomfortable using it on yourself, how do you think your patient will feel? The best advice to start...follow a schedule (every 3-4hrs) and always start your dose at the smallest amount possible, working up each day in minor increments. Become familiar with it slowly.



Are You Active??

-The process you just learned about creates supplements that contain primarily *acidic cannabinoids* (i.e. THCA, CBDA, CBCA, CBGA, THCVA, etc)...or, what you might call “non-psychoactive” cannabinoids.

But what if you're dealing with a condition that requires *active cannabinoids*?

- The next volume of the Epsilon Essentials Guides will describe this in a bit more detail, but for now, you can try a few tricks.

-You have two options for this process, both of which will convert the acidic cannabinoid content into active cannabinoid content.

Option 1 Decarboxylate (see definitions) your dry cannabis material. This is best executed with a time/temperature controllable food dehydrator. While the average dehydrator does not reach the high temperatures needed for complete decarboxylation, you'll be in *far* more control and will not compromise the spectrum of valuable compounds that exist in the flower. Whenever you heat cannabis, always keep track of the time and temperature that you're exposing it to and keep written notes along the way. The problem with heating dry flower is that heat and air exposure may not be consistent through the material, therefore, portions might be more active than others. Of course, the material will be combined, so as to come up with an average active concentration for the entire batch.

I recommend placing the hand-crumbled (seed/stalk/stem removed) material onto parchment paper on a dehydrator tray. Process the material in “cycles,” so that you are applying a certain temperature for a specific time, then move to the next temp for that same time frame. When we do lab analysis of samples that have been decarboxylated via this heat cycling method, there is a great deal of accuracy, showing steady increase in the *active cannabinoid* content with each increase in the heat cycle. Start your cycles around 130-140°F, then work up in increments of 10-15°. Keep in mind that the *amount* of cannabis you are heating will require less temperature and less time, the less you're working with! For one ounce of material, you should have success with ten (10) minute heat cycle intervals.

Option 2 Heating the liquid mixture, your tincture, to activate the compounds within. This is accomplished via heat-cycling as well, but delivers far more consistency, since all the compounds are suspended in liquid. A double-boil setup is vital for this approach. Using a large oval crockpot filled part-way with water, you can set a tincture filled mason jar (with lid screwed on lightly) into the water bath. Place a candy-thermometer into the water bath to observe the temperature. This approach requires experience and practice, but when executed well, is unparalleled in home-based process. By maintaining the water bath temperature in the range of 150-170°F, the temperature of the tincture will be maintained a bit higher. Follow the heat cycle approach...but allow more time in each exposure cycle.



Meet the Author

Hello and thank you for taking the time to review this first volume of the Epsilon Essentials Guide series. My name is David Mapes and I am the founder/director of Epsilon Apothecaries (and Epsilon Inc). Aside from my role with Epsilon, I am a caregiver, a patient, a provider, a father, and husband. You might say that I'm quite a complex guy...but the truth is, I'm quite simple. In late 2004, I suffered an injury that led to 15 major surgical operations and caused irreversible neurological damage...taking me away from my full time career as a professional chef and throwing me into the vicious cycle that is conventional medicine.

In 2006, after years of getting no safe treatment alternatives for my ailments from modern medicine, I developed the operation named Epsilon. This operation was initially designed strictly for R&D purposes to create safe therapeutics products from cannabis...and I was the very first test pilot.

In the beginning, I found plenty of challenges that existed primarily due to the complexity of individual responses to a variety of cannabis. Once I came to a deeper understanding of the plant and researched it on multiple levels, I found tremendous success in EVERY case I've worked. My history in the culinary arts already had me researching the therapeutic actions of terpenes long before I came around to using cannabis therapeutically, so I used that knowledge to develop a new take on cannabis...one that, to this day, remains exclusive to the Epsilon operation. That "take" on cannabis grew into so much more, as now it's the reason for our superb success rate in treatment.

"Sometimes the questions are complicated and the answers are simple" –Dr Seuss

It's simple: grow a plant that has tremendous positive impact on the environment and humankind alike, use that plant therapeutically, and observe the positive results. Since 2006, Epsilon has successfully fought and defeated 11 cases of stage III and IV cancer, in addition to formulating for over 177 different chronic conditions in individual case studies, treating each to success. Epsilon adopts a multidisciplinary approach to care, meaning that our patients receive numerous angles in care that work together...synergy as medicine. I encourage you, the reader, to explore more with Epsilon and see how our research might already be paving the way for a healthier future for you and your loved ones.

–David Mapes



Resources and Thanks...

www.cannabinoidsociety.org

www.ccic.net

www.ncbi.nlm.nih.gov/pmc/articles/PMC3165946/

www.epsilonresearch.org

www.therapyinabottle.org



Tremendous thanks to the Epsilon Team! Rebecca Holley (owner, Therapy in a Bottle), Brendan Kelley, Pat Monk RN...you've all been instrumental in keeping my motivational "candle" lit! Great things await.

Many thanks go out to my newfound friends from around the globe. Mark and Denise, you've given me new reasons to believe in myself and my potential; for that, I am deeply grateful. Ray, you're a true champion in my book...challenging the definition of terminal and proving to yourself and me that you have a whole lot of love to share with the world. Mario, what can I say? You obviously see something in me that I have not come to realize yet, but what I see in you makes me feel so incredibly fortunate that I get to do what I do each day. You've all supported Epsilon through the tough times and deserve a chance to be part of the future for this grassroots underdog operation...

Coming Soon

Epsilon will be unveiling an incredible campaign soon that you will all play an integral role in. By supporting our research, you are supporting a future where mankind not only respects the entire cannabis plant, but begins to *understand* this incredible plant. Be sure to stay tuned...stay informed...ask questions...support a cause!!

VISIT US AT www.epsilonresearch.org