

Extractions and Infusions

Course Designed and Created by:

Dan Bryant

Robert DiVincenzo

Ladystoner P.

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Learning Objectives

- Preparing the work space
- Several methods of extractions
 - Solvent
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- Safety precautions for each methods
- Necessary equipment for each method
- Important information about solvents
- Types of different end results
- Processes for all types of equipment
- Uses for the different end results
- Curing process

Introduction

By: Dan Bryant

Cannabis extracts are a wonderful way to enjoy the benefits of cannabis without directly combusting raw cannabis plant matter. Extracts provide cannabis consumers with a more concentrated and discreet means of consumption, are ideal for many different applications, and come in a variety of mediums. In this section we will be discussing several types of extractions, manufacturing techniques, safety issues, and some general background information.

Before we begin looking at these extraction techniques there are a few basic ideas to keep in mind when performing any kind of concentration extraction.

- Always keep your work space as clean as possible.
- Never work with flammable, and or explosive solvents indoors without proper, and certified safety protocols in place. Amateur attempts at extractions should NEVER be attempt.
- The equipment necessary to perform most extractions indoors are expensive and require training to use properly.
- Never touch extracts with your bare hands. Always be mindful of preventing contamination to your final product.
- Familiarize yourself thoroughly with any solvent you are using. This course is designed to get you familiar with these techniques. Before attempting any on your own you should read the Material Safety Data Sheets completely and be aware of any and all dangers a solvent may present.
- Familiarize yourself with any equipment you use. Improper use of extraction equipment can result in serious injury, death, and destruction to property.

Solvent Extractions

By: Dan Bryant

BHO (Butane Hash Oil)

Butane is one of, if not the most popular solvent to use for cannabis concentrate production today. Butane is a non-polar solvent, this is crucial as the trichomes of the cannabis plant are also non-polar. In chemistry we like to use the simple phrase, "Like dissolves like", this is an easy way to remember how

solvents will interact with their respective solutes. Using this idea, we can understand that cannabis trichomes, including the psychoactive cannabinoids contained within the trichomes, will dissolve in butane.

Butane Hash Oil, or **BHO**, can vary in consistency and concentration in relation to production technique and quality of the raw cannabis product used, tending to vary from an oily/waxy to almost glass like consistency. The most common being an ear-wax like "**budder**", a taffy-like "**pull and snap**", and glass-like "**shatter**". Budder will be thick and waxy, with colors ranging anywhere from dark green to light amber depending on the amount of plant matter left in the extraction, type of cannabis used, and solvent. Pull and snap, and shatter will have similar color spectrums ranging from an almost clear amber to dark browns, the difference between pull and snap and shatter is that shatter will have no viscosity and can break apart easily like glass.

A common myth in the extraction world is that shatter is the highest quality BHO extraction with wax being the lowest, this is entirely not true and is a matter of personal preference. Quality extracts will be free of solvents and plant material, and will have retained as many terpenes and flavonoids as possible (the elements of the extraction/cannabis that give it flavor). The preferred consistency of BHO tends to be a personal choice. Ultimately as long as the solvent has been totally purged, and there is no remaining plant material in the extract, the BHO extraction can be considered "high grade".

There are several important precautions to take when working with butane. First and foremost, butane should NEVER be handled or used for production in an indoor environment without specialized equipment. Butane is stored under high pressure and is extremely flammable. BHO extractions should always be done away from open flames, sparks, and other heat sources. The **flash point** of butane, or the lowest temperature at which it will vaporize and become combustible when mixed with air, is -76 degrees Fahrenheit. This means that at average room temperature butane gas will combust if ignited. When the

necessary precautions are taken, risk of injury when working with butane can be minimized, however it cannot be stressed enough that serious injury or death can occur when these precautions are not followed.

There are several important pieces of equipment needed to extract safely and effectively. A basic BHO extraction and **purge** should never be done using very rudimentary tools, this are generally considered "open blasting" which is extremely dangerous. For this extraction guideline we will be talking specifically about BHO extraction using a **closed loop system**, or a system where solvents do not exit the extraction system and can be recycled for later use.

NIC ADVISES STUDENTS AND ANYONE ELSE TO NEVER ATTEMPT "OPEN BLASTING"

Equipment you will need:

- Ground raw cannabis plant matter
- Closed-loop extraction system
- Parchment paper
- Vacuum-oven for purging
- Tools for scraping
- High-Purity Butane

The process for extraction is fairly straight forward, however it should be followed in the proper order to ensure safety and quality. Extraction using closed loop systems should be done as follows:

- 1) Insert ground raw cannabis product into product canister.
- 2) Close all valves and make sure product canister is closed.

Note: steps for actual extraction may vary depending on your extraction setup, particular instructions for how to operate closed loop system should be followed according to manufacturer.

- 3) Soak cannabis for up to 10 minutes with liquid butane
- 4) Recover used butane
- 5) Run processes again if desired. Doing multiple washes can possibly increase yield.
- 6) Place parchment paper on tray for vacuum oven, then pour extracted material onto parchment paper. **DO NOT TOUCH EXTRACT.**
- 7) Place parchment paper into vacuum oven
- 8) Let product sit in oven for roughly 24 hours, flip extract "slab" every 12 hours until desired consistency is reached
- 9) Once fully purged you can then scrape off the extract for packaging or consumption.

After you have a full extraction you may choose to **winterize**, or "De-Wax", the extract. This process helps to remove any possible remaining solvent or plant waxes. This allows for cleaner vaporization, and will be less rough on your lungs when inhaled. This process is fairly simple.

To winterize you will need:

- Two glass containers such as mason jars with lids
- A filter such as an un-bleached coffee filter
- High-proof alcohol that is not denatured
- Thermometer, preferably infrared temp-gun
- Vacuum oven
- Freezer
- Funnel
- Pyrex dish
- Parchment paper

To winterize you will follow these steps:

- 1) Pour alcohol into mason jar and heat to 85 degrees Fahrenheit, do not overheat the alcohol to avoid breaking down terpenes
- 2) Pour BHO into alcohol, place lid on jar, and gently swirl the mixture until the mixture becomes homogenous.
- 3) Place jar in freezer with second empty jar next to it for a minimum of 24 hours. (you will start to observe plant fats coagulating in the mixture)
- 4) -Note: Step 4 should preferably done in freezer as you will want to maintain the low temperature you have achieved.
- 5) Using your funnel and filter pour alcohol/BHO mixture into your second mason jar, be sure solids are remaining in the filter and not pouring into second jar.
- 6) **Pour your mixture into Pyrex dish for evaporating. Keep dish at room temperature in a sterile environment to avoid contamination**
- 7) Once mixture has reduced down from a liquid to a goo-like state transfer mixture to parchment paper and put in vacuum oven for a final purge.

N-Propane

Extracting using propane is relatively the same process as using butane. We use the same closed loop system and purge techniques, just using a different solvent. We can use propane for our extractions since it is non-polar just like butane, remember the phrase "like dissolves like".

Propane is stored as a liquid under high pressure, be sure to take care when handling high-pressure cylinders. Like butane, propane is extremely flammable, therefore the same safety precautions should be followed. Propane has a flash point of -155 degrees Fahrenheit, this means that it is more easily ignited than butane and requires even more attention to ensure your safety. Do not work with propane indoors, and make sure there are no open flames, sparks, or other ignition sources anywhere near your work site.

For this process you will need:

- Ground raw cannabis plant matter
- Closed-loop extraction system
- Parchment paper
- Vacuum-oven for purging
- Tools for scraping
- High-Purity N-Propane

Extraction using closed loop systems should be done as follows:

- 1) Insert ground raw cannabis product into product canister.
- 2) Close all valves and make sure product canister is closed.

Note: steps for operating extractor may vary depending on your extraction setup, particular instructions for how to operate closed loop system should be followed according to manufacturer

- 3) Soak cannabis for up to 10 minutes with liquid propane
- 4) Recover used propane
- 5) Run processes again if desired. Doing multiple washes can possibly increase yield.
- 6) Place parchment paper on tray for vacuum oven, then pour extracted material onto parchment paper. DO NOT TOUCH EXTRACT.
- 7) Place parchment paper into vacuum oven
- 8) Let product sit in oven for roughly 24 hours, flip extract "slab" every 12 hours until desired consistency is reached
- 9) Once fully purged you can then scrape off the extract for packaging or consumption

10) Winterize propane extraction if desired.

Propane Hash Oil extracts will share similar characteristics in consistency and form as BHO. PHO varies from a light amber to dark color depending on how much plant bi-product remains in the extraction, PHO tends to be a lighter color than BHO extracts in relation to which cannabinoids react with propane versus butane. A quality extraction should be free of any remaining solvent or plant material.

Ethyl-Alcohol (Ethanol) QWET

Using alcohol to extract cannabis is a great way to create a very basic concentrate product. The materials needed are easy to obtain, relatively cheap, and the process doesn't require a large amount of experience. This process is commonly referred to as **QWET**, or Quick Wash Ethanol.

Ethyl-Alcohol, or ethanol, is the type of alcohol commonly found in alcoholic beverages. Ethyl-Alcohol has a flash point of about 65 degrees Fahrenheit, you may notice that this is considerably higher than that of butane or propane, making it a somewhat safer solvent to work with in terms of flammability. However the same care should be taken to avoid any open flames, sparks, or other sources of ignition. Ethyl-Alcohol evaporates easily, this is one of the desirable characteristics for its use in extraction, you should note that the vapor produced by ethyl-alcohol is flammable and can often burn with a near-invisible flame.

To create an ethyl-alcohol extraction you will need the following materials:

- High-Proof alcohol, recommended 190 proof
- Two Mason jars with lids
- Suction-Filtration device
- Thermometer, preferably infrared
- A pot, heating device such as a hotplate, and container suitable for double boiling. (water can be used for double boil, however it is recommended that you use an oil as it easier to obtain a consistent temperature)
- A pipette or eye dropper for collection of extracted oils

- Lightly ground raw cannabis, do not over grind
- Unbleached coffee filter

The extraction process for QWET is fairly simple and should be done as follows:

- 1) Remove as much water from cannabis. This can be done by baking cannabis on a cookie sheet in an oven at 200 degrees Fahrenheit until it crumbles easily. If desired you can also put the cannabis in a freezer to freeze any remaining water.
- 2) Combine ethyl-alcohol and plant matter in mason jar so that alcohol is a 1/2 inch to an inch above the plant material.
- 3) Gently swirl the mixture to ensure that all plant matter has been soaked with the ethyl-alcohol.
- 4) Let plant matter soak for 3-5 minutes.
- 5) Strain mixture through un-bleached coffee filter into second mason jar
- 6) Repeat steps 2 through 4
- 7) Filter extraction through suction-filtration device
- 8) Heat double-boil oil/water bath to 250 degrees Fahrenheit, using thermometer to maintain consistent temperature
- 9) Pour extraction into container and place in double-boil bath
- 10) Reduce extract down until bubbling slows and stops
- 11) Use pipette or eye dropper to remove extract from container and store in a sealed container
- 12) Your final extract will be an oil-like substance with a fairly thick viscosity, and should be dark in color. A quality extraction should be free of any solvents or plant matter.

NAPHTHA

Using Naptha as a solvent for cannabis extraction was popularized by the well known medical cannabis figure, Rick Simpson. Rick Simpson is generally credited for creating a medical cannabis concentrate that is asserted to cure certain cancers. This oil is often referred to as "Rick Simpson Oil", or "Phoenix Tears". Rick Simpson advocates for the use of Naptha as the primary solvent in making this particular type of cannabis concentrate.

Naptha is a clear liquid solvent and is very volatile, Naptha should be handled and stored with extreme caution. Naptha has a flash point of roughly -7 degrees Fahrenheit, this means it can easily be ignited at room temperature. Naptha fumes can be very harmful if inhaled, monitor yourself for any

symptoms of over-exposure while extracting, if you experience any symptoms stop your extraction safely and seek medical attention. Naptha is extremely flammable, vapors should be kept away from open flames, sparks, and other heat sources that could possibly cause ignition. Naptha extractions should never be conducted indoors. Naptha can also be skin irritant, be careful not to make direct contact with the solvent when conducting your extraction.

The production of this extract only requires a few basic tools and pieces of equipment. To conduct this extraction you will need the following:

- Two 5 Gallon buckets with lids
- A long rod-like device for stirring/crushing such as a broom handle.
- Large funnel
- Unbleached filters
- Rice cooker, without lid
- Pyrex dish
- Hot plate
- Raw cannabis plant materiel
- High purity Naptha
- Large Fan
- Thermometer, preferably infrared
- 15-20 drops of water

To conduct your Naptha extraction, follow these steps:

- 1) Cut a hole in one 5 gallon bucket lid large enough to stick the tip of your funnel through and add your filter to your funnel for later use in your extraction
- 2) Place your raw cannabis in one 5 gallon bucket and add enough Naptha to lightly soak the cannabis materiel
- 3) Use your rod to crush the cannabis materiel down so that it is in a malleable form
- 4) Add more Naptha to your mixture until the cannabis materiel is completely covered, stir gently for 30 seconds to ensure a full soak
- 5) Let mixture soak for 3-5 minutes

- 6) Pour your mixture through the filter into your second 5 gallon bucket, be sure to remove lid from bucket after filtering to avoid trapping vapors inside. Remember ventilating vapors is very important to avoid risk of combustion
- 7) Return cannabis material to original bucket for second wash
- 8) Add fresh Naptha to create a second mixture and swirl gently with rod
- 9) Let second wash soak for 3-5 minutes
- 10) Filter second wash into 2nd bucket to combine with first wash
- 11) Pour extract into rice cooker allowing room in rice cooker for possible boiling, turn on fan and point towards rice cooker to help ventilate fumes.
- 12) Set rice cooker to high and boil off Naptha. Use your thermometer to monitor the temperature of your extract, avoid letting the temperature rise over 250 degrees Fahrenheit. Do not let temperature rise over 300 degrees Fahrenheit maximum or you may begin to vaporize your cannabinoids.

Note: Naptha vapors are heavier than air, be sure to monitor ventilation both in, and around rice cooker to avoid accumulation of vapors

- 13) As your extract reduces and concentrates add any remaining mixture to the rice cooker until the entire mixture has been reduced most of the way down
- 14) When mixture is close to be reduced, add 15-20 drops of water to mixture to allow remaining solvent to be evaporated
- 15) Pour your concentrated extraction into Pyrex dish for further refinement
- 16) Heat concentration on hotplate at a low temperature until any bubbling ceases, this is to allow any remaining solvent to be purged. Check temperature occasionally to avoid overheating
- 17) Collect and store your extraction

Rick Simpson oil tends to have a very thick viscosity and a very dark green to black color. This extraction is often stored in liquid syringes to make dispensing them easier. A quality extraction should be free of any solvents or plant matter.

Isopropyl Alcohol QWISO

The **QWISO**, or Quick Wash Isopropyl, extraction process is very similar to the QWET extraction, however in this process we use isopropyl alcohol instead of ethyl-alcohol. A key difference between these two types of alcohols is that while ethanol can be safe for human consumption, isopropyl alcohol is very dangerous to consume and should never be ingested.

Isopropyl alcohol can most commonly be found in pharmacies, however these types of Isopropyl tend to be a lower concentration. It is recommended that you obtain the highest concentration of isopropyl alcohol available, around 99%. Isopropyl alcohol has a flash point of about 55 degrees Fahrenheit, about 10 degrees lower than ethyl-alcohol. Isopropyl alcohol is highly flammable, and as with all our solvents should be kept away from open flames, sparks, and other sources of ignition. Isopropyl alcohol can burn with a nearly invisible flame, and vapors may create explosive mixtures when exposed to open air.

To create an isopropyl alcohol extraction you will need the following materials:

- 99% Isopropyl Alcohol
- Two Mason jars with lids
- Suction-Filtration device
- Thermometer, preferably infrared
- A pot, heating device such as a hotplate, and container suitable for double boiling. (water can be used for double boil, however it is recommended that you use an oil as it easier to obtain a consistent temperature)
- Tools for scraping final extract
- Lightly ground raw cannabis, do not over grind
- Unbleached coffee filter

The extraction process for QWISO is very similar to QWET and should be done as follows:

- 1) Remove as much water as possible from the cannabis. This can be done by baking cannabis on a cookie sheet in an oven at 200 degrees Fahrenheit until it crumbles easily. If desired you can also put the cannabis in a freezer to freeze any remaining water.
- 2) Combine isopropyl alcohol and plant matter in mason jar so that alcohol is a 1/2 inch to an inch above the plant materiel.
- 3) Gently swirl the mixture to ensure that all plant matter has been soaked with the ethyl-alcohol.
- 4) Let plant matter soak for 3-5 minutes.
- 5) Strain mixture through un-bleached coffee filter into second mason jar
- 6) Repeat steps 2 through 4
- 7) Filter extraction through suction-filtration device
- 8) Heat double-boil oil/water bath to 250 degrees Fahrenheit, using thermometer to maintain consistent temperature
- 9) Pour extraction into container and place in double-boil bath
- 10) Reduce extract down until bubbling slows and stops

- 11) Your extraction should reduce into a thick, goo-like consistency that should range in color from a light to dark brown. A quality extraction should be free of any remaining solvent or plant material. Collect and store this extract carefully to avoid contaminating the product.

Solventless Extractions By: Robert DiVincenzo

Ice Water Extraction (Bubblehash)

Safety/ Precautions

Ice water extractions are one of the safest methods for making hash. There are no dangerous chemicals or flammable materials. To ensure safe and clean hash work in a sterile, dry room keeping your workspace clean and sanitized. All tools should be cleaned and dried between uses to ensure no mold, mildew, or microbial life forms. After the extraction is completed, it is recommended to send a sample to be tested, ensuring it is truly clear of contaminants.

Materials

Choosing your materials is the first step to creating top quality concentrates. Extract engineers have a preference for what they like, either **dry trim** or **fresh frozen**. Dry trim is brittle and crispy; the dryer the better, before cannabinoids begin to break down. Fresh frozen, or flash frozen, is plant material that is picked and immediately frozen, similar to frozen vegetables. Deep-freezing for a minimum of 24 hours is recommended, as it allows for future ideal gland separation and collection. High grade ice water extraction is strain dependent; some strains' resin profiles are "wetter" or greasier than others and far more desirable. These strains are classified as "**full melt**" or "clear dome".

Equipment

The right tools not only make the process easier, but also ensure desired results. There are many different tools and price points to choose from and can be a significant investment. To prepare you will need the items in the list below. When planning to make hash on a regular basis, create a supply list and be sure to keep stock of what is most necessary.

- Trim or flower
- At least two 5 Gallon Buckets
- Cold Water and Ice
 - Filtered water is ideal
 - When possible the ice should also be filtered
- Wooden spoon or mechanized agitator OR
- Washing Machine
 - This is a machine that agitates the material.
- Zipper Bag - 220 - 25 Micron
 - A fully mesh bag that holds all raw materials and goes into a washing machine.
- Bubble Extraction Bag
 - A set of 4-8 bags with mesh bottoms of different size filters made to fit in either a 1 gallon or 5 gallon bucket
 - The inner bag will sift the largest filter and the outer bag will have the smallest filter.
 - Easily organized by color coding and numbering.
- Towels, Paper towels, Parchment paper
- Clean flat cardboard boxes, similar to a pizza box

Place the plant matter in the zipper bag and place the bubble extraction bags in the correct order, largest to smallest, inside a properly sized bucket. The zipper bag then goes into the agitation phase. There are two primary methods for this, hand agitator or washing machine. Though it may seem easier to use a power tool attachment, it will chop up plant matter, allowing more to pass through to the final product, making it dark green or brown. The goal is to gently separate trichome from plant matter without rupturing them.

The washing machine only needs an electrical outlet, it can be filled with any hose or container. Filtered water is the best option, but tap water may be used. It may be beneficial to add a hose extension to the

drain tube on the washer or when making a drain for your bucket, making it a bit long. The ice water is referred to as a **carrier**, arguably this is a solvent.

When you have filtered all your water, each bag will have some amount of material that does not strain, this is your extracted material. Use a spoon to scrape the filtered material out of the bag and place on parchment paper. Parchment may be the best option because it doesn't allow the resin to stick to the surface. Without pressure, place a paper towel over the drying hash. Often, clean flat cardboard boxes, such as unused pizza boxes, are used to hold the drying hash material.

For the last steps you will need a sieve or microplane (grater) to create a consistent texture in the final product and allow more surface area for better drying.

Setting / Environment

The proper environment for preparing hash can be your best friend or worst enemy. If at all possible, working inside a walk in freezer will produce the best results. The space should be cool and dry, but most importantly, clean. Access to a water source or having a space with easy access to several gallons of filtered water and clean ice will cut down on wasted time. Some experts even use snow in the winter with their water to keep the temperatures as low as possible.

Process/Techniques

Prepare your buckets and extraction bags by washing and rinsing them thoroughly. The raw materials should be whole buds or sugar leaves, grinding the starting material will rupture the trichome heads ruining the final product. Place all the prepared raw material into the zipper bag with extra ice. Fill the washing machine or optimized bucket 75% full with filtered ice water and ice; about three gallons of water to every gallon of ice.

It is ideal to have a reverse osmosis filter on the water supply. There are many options from very large (millions of gallons) to systems that fit under a kitchen sink. Affixing this to the water source will ensure clean water at all times.

Zipper bags should be filled with between three and eight ounces in a five gallon bucket or washing machine per run, ensure there is enough room for the bag to move around. The zipper bag must be completely closed, if it ruptures or opens while washing plant material will ruin the extraction. There will be a zipper, a knot and a zipper flap, check that all closures are properly set before putting the bag in the machine. Keeping the bags clean is the key to maintaining proper function.

The agitator breaks trichomes from the plant matter and they wash into the ice water. With either method, make sure the water is just above freezing, if desired, use extra ice. Once the plant matter has been agitated for about 15 minutes (it may be less when agitating by hand), remove the bag of plant matter and drain the trichome filled water from the container into the prepared bucket of extraction bags. After draining the ice water from the machine, run an agitation cycle with extremely hot water. When it the cycle is nearly complete, add 3-5 ounces of isopropyl alcohol. After draining the machine a second time, run one last cycle with only hot water. It is recommended to turn each bag inside out while running hot water and alcohol to dissolve residual resin, use a mesh brush to remove any leftover resin glands.

Over time if you don't clean the bags, the microns will become clogged and very hard to drain.

After pouring all the ice water into the stacked extraction bags, it is recommended to use a high pressure spray bottle with a pump and nozzle. This will help push the particulate through the mesh. Shake the bag down in a pushing motion to help the water through the mesh so the hash can be collected. Once all the water has drained from the bag, turn it inside out and scrape the residue from the bottom. It is recommended to label your drying sheet or parchment paper by marking the micron size in the corners.

Using the zipper bag as your drying sheet will allow for air to pass around the hash. With your lower grades, 45-25 micron, the residue can be further refined, increasing the quality of lower grade hash.

After about 20 minutes on the drying sheet, sieve the residue onto a new piece of parchment paper inside a flat cardboard box that is clearly marked with the micron number. Only complete one micron level at a time. Allow the hash to dry for 8-15 days, ensuring the hash is fully dried before beginning the curing phase. An ideal tool for collecting the hash from the parchment paper is a scraper, similar to those one might use to apply window decals or tints to a car, if that isn't an option a clean ID or credit card will work. Move the hash into the center of the parchment slowly so as to not scatter the resin.

Your quality will be determined by the melting factor; this is how well the hash bubbles or how smooth it vaporizes on a rig. The consistency should be grainy, similar to brown sugar; it can be any hue, from yellows and blondes to deep oranges and browns.

Rosin

Safety/ Precautions

Rosin, commonly referred to as "Rosin Tech" is an extremely safe and easy way to make solventless hash, all you really need is heat and pressure. The original process comes from ancient Greece where it was used to create oil from pine pitch for inks, varnishes, adhesives and much more. The most dangerous aspect is ensuring you don't get burned. This process can also be used to transform subpar hash into incredible hash.

Materials

There are a few different starting materials to use; flower and kief. Flower rosin can be tricky due to yield, but is worth the time if you have enough starting material. Your buds should be well trimmed and properly cured, though you may press wet flower as well, if frozen a few hours before processing. Keep in

mind, the yield will be slightly lower with fresh flower and you may run into present moisture content, which could result in a sizzle.

Previously extracted and collected resin glands (such as **kief**, often found at the bottom of a grinder, or any kief collection method) are the better material to press when it comes to yield. Lower grade hash, like Moroccan or Nepalese hash, are another ideal material to rosin. Experienced extractors say you can press wet bubble hash right out of your bubble extraction bags without drying it; primarily for flavor and terpene profiles.

Equipment

You will need only a few different tools to do this efficiently; any machine that can take a lot of pressure and is either heated or can be heated. Typically people are using flat-iron hair straighteners, though t shirt presses work also. It is essential to control the heat, no more than 300 degrees, to **milk** the resin glands from the plant matter; around 200-225 degrees for bubble rosin. The oil will release onto the parchment paper, but is easily collected. You may buy a heat gun for the most accurate temperature; ensuring the proper consistency with each press. A vice grip or a craft clamp are ideal tools to create pressure. A jeweler's microscope or magnifying glass allows you to find and remove any leftover particulate from the oil.

The parchment paper should be cut into four inch squares folded on the sides, creating an open pocket. Leaving one side open will allow any steam to escape during pressing and makes for a larger surface area for the rosin to collect upon. When collecting and cleaning rosin, always start with disposable gloves to avoid a mess. Dental kits, tweezers, or specialty variety tools, often called dabbers, will remove particulate easily. Once removed, it is best to use a clean tool to collect the oil. Some technicians use a 25 micron screen bag around the material and inside the parchment paper as a strainer, separating the plant particulate.

Process A-Z

Remember, when pressing flower for rosin, smaller presses return higher yields. Place your flower directly into the parchment pocket. Ideal temperatures for Rosin Tech vary, usually between 275 and 300 degrees for optimal heat exposure. Setting temperatures too high will result in a loss of terpenes and cannabinoids while also imparting a burnt flavor to your finished product. High temperatures also contribute to a less stable rosin. Too low of a temperature, on the other hand, will give a minimal to nonexistent yield. Use a temperature gauge on the tool you are using for control, otherwise use a heat gun instead of a hi/lo setting.

When pressing bubble hash or kief, pressing a half-gram at a time is suggested. You should monitor your temperatures, as already extracted resin glands can be more susceptible to vaporization. Set temperatures between 200 and 225 degrees for this technique, though temperatures below 180 will preserve more terpenes. Remember, proper temperature control assures high quality rosin and will ultimately preserve the terpene profile of the strain.

Pressing times vary depending on starting material; Flower rosin should be pressed for about 10 seconds, while dry sift or bubble rosin should be pressed for eight seconds with as much pressure as you can apply. If you are using a pressing machine, set the pressure to maximum, if using a hand press, such as a hair straightener, use at least your entire body weight. Some pressing machines may need to be modified to bring the plates closer together; reaching 700-800 pounds per square inch. Lower temps can be pressed for longer than 10 seconds at a time. A sizzling sound signals that it is done.

Most rosin technicians agree, unbleached parchment is ideal for any method. To simplify, you can purchase "rosin bags" online to start. You will want to fill the rosin bag with approximately half a gram. You can roll the micron bag into a funnel, or fold it into a square to create a good surface area for the rosin to seep from onto the parchment.

It is recommended to use a tool or dabber that has a rectangular edge. With that edge you can press it on a piece of the rosin and begin to roll it back and forth. Using this gentle rolling motion, you will collect the sticky rosin on the end of your tool without any loss. By Letting the rosin sit for a minimum of an hour, you may be able to peel all of your rosin from the sheet at once.

Refinement

It is common practice to put all of the collected rosin into a mason jar, which is sealed, then into a vacuum oven that is made to remove solvent. This process removes moisture and turns sticky rosin into a wax puck. Purge this at lower temperatures for maximum efficiency and terpene preservation. Monitor the time and check consistency every half hour until it's the desired consistency.

Goals

The overall goal for rosin tech is to have a translucent finished product. A hard candy or 'shatter' consistency is a sign of high-grade rosin. Another common result is "sap" (a runny, or syrupy consistency), this consistency often has more terpenes than shatter. The third consistency is a "budder", "wax" consistency; this is accomplished by adding heat and agitation from your dabber.

Colors to look out for are ambers, reds, and browns. This is a lower-grade rosin and may not have the best flavor profile. This could be attributed to older material or excessive temperatures burning the rosin. Rosin that is almost clear or looks like glass, yellows, orange, brick orange, or ruby red will have the best flavor and potency.

Dry Sift

Safety / Precautions

Dry Sift is a perfect solventless extraction technique to practice in any environment without fear of an accident. Using only micron screens and agitation to separate trichome heads, you can collect and clean the cured trichomes, turning them into full melt hashish.

Dry Sift is a true connoisseur grade hash, requiring patience and focus. It is highly recommended to take the necessary time, don't cut corners. The dry sift purification process consists of tedious resin collection and cleaning to reach a quality final product. You will be able to tell when your dry sift is purified by the way it melts. Make sure to keep your workstation as clean as possible, any particulate in your hash it will create more work in the end.

Equipment

There are a variety of tools you will need in order to make full melt dry sift. One kief box or framed micron (mu) screens that are specifically made to extract resin glands and a microscope. The layers of micron screen (140 mu, 100 mu, and 70 mu) act as a filtration system for resin glands. These screens are labeled lines per inch (L.P.I.) to determine the size of the screen.

A hand grinder is essential for dry sift, the material should be finely ground if using bud, not when using trim. You will want to deep freeze your material for proper resin gland separation during the agitation process. Experts suggest using a microscope or jeweler's scope after every **carding** session. Carding is to push the resin glands through the screen in a back and forth scraping motion with a flat edge, or card. This technique cleans and purifies the resin glands, isolating them away from contaminants that will not melt. Magnification will make it easier to determine how well you've cleaned your dry sift. The goal for this process is to reach 90%+ **pure heads**.

Process/Techniques/Preparation/ Material

Keep your material as cold as possible; the material should be dry and well cured, which will result in better yields than fresh frozen materials. Use a hand grinder to finely break up your material, the goal is to preserve the resin glands. Grind to a nearly powdery consistency, then place the material back in the freezer for a few hours before you begin your process.

Layering your screens from largest to smallest, begin agitating your material on the 140 mu screen, or top screen. Agitate for three and five minutes; this lighter agitation for the first pull will provide a much finer product. After the first sift, save your material for later use in ice water extraction. Inspect your first run; then repeat the process with the 100 mu and 70 mu screens for 30 minutes each, further refining the product. After cleaning the 70 mu screen, the result is a full melt dry sift. Inspect the trichomes for purity and, if necessary, repeat the process. Dry Sift can be further refined via Rosin Tech.

Consistencies/Color/Goal

Experts say that there are just a few color varieties that you want to keep an eye out for. Light blondes and yellows are known to make high-grade dry sifts. When making dry sift rosin you will want to see light yellows, orange and even some ambers. Dark browns and greens require additional carding, though many find this to be ideal for marijuana infused products.

Infusion Methods By: Ladystoner P.

Introduction

Crossover: When is an extract is also an infusion?

Processing extractions and infusions are similar in that both are combined with an organic solvent to remove the resin glands from the plant material. However, when processing an extraction extra steps are taken to remove the organic solvent.

Bonding cannabinoids to a delivery system

Cannabinoids are volatile compounds that easily bond with organic solvents such as oil, alcohols, and hydrocarbons.

Flower vs. Extracts/Infusions

Cannabis Sativa L. contains 483 compounds that are unique to this plant, whenever processing the plant to create an extract or infusion, some compounds are bound to be lost. Researchers are just learning the benefits of this plant, to date only six cannabinoids have been studied extensively. It is difficult to know which compound or combination of compounds contain the most beneficial properties.

Activation/Decentralization

THC and CBD are produced through a biosynthetic process in which THC-A (tetrahydrocannabinol acid) is converted to THC; and CBD-A (cannabidiol acid) is converted to CBD. Most of this conversion occurs during the curing phase of flower material, in which the plant material is dried, and stored inside glass jars.

Glycerin

About the solvent

Glycerin is a simple sugar alcohol, which makes it a good candidate for dissolving resin glands. Tinctures made of glycerin can be cold-processed or heated to allow faster solubility. Glycerin is a **bacteriostatic agent** or Bstatic abbreviated, a biological or chemical agent that stops bacteria from reproducing, while not necessarily eliminating the bacteria.

Cold-Processing Glycerin

Equipment

The necessary equipment needed to properly cold process glycerin tincture is as follows: sterilized canning jar and lid, cheesecloth, strainer, dried herbal materials, USP grade vegetable glycerin.

Process

Step 1: Grind the herbal material, this increases the surface area, and allows the glycerin to penetrate more easily.

Step 2: Place the ground herbal material into the sterilized jar.

Step 3: Add vegetable glycerin and cover with the lid.

Step 4: Shake the material, and store in a cool, dark location for two weeks to one month.

Step 5: Using the strainer and cheesecloth, pour the mixture through, and straining out the herbal material.

Heat-Processing Glycerin

Equipment

In a heat-processed application, the equipment needed would be: crock-pot, sterilized tincture bottles with sterilized dropper tops, dried herbal materials, USP grade vegetable glycerin.

Step 1: Grind the herbal material.

Step 2: Place herbal material into the crock pot on the warm setting.

Step 3: Add vegetable glycerin, and steep for 3-4 hours. Allow the glycerin to cool before proceeding.

Step 4: Using the strainer and cheesecloth, pour the mixture through, straining out the herbal material, and fill the tincture bottles and replace lids.

Uses

Glycerin is a good vegan alternative for a patient that is looking for a medicine that is strongly anti-inflammatory, encourages appetite, is anti-tumor, combats insomnia, and is antispasmodic.

Alcohol

About Alcohol

Tinctures made of alcohol, should ALWAYS be cold processed, as vapors from strong alcohols can be very flammable. Grain alcohol, vodka, and rum are the most popular choices for making tinctures. The higher the alcohol content the more effective in dissolving the resin glands.

Equipment

Equipment needed for this process: sterilized canning jar with lid, dried herbal material, cheesecloth, strainer, grain alcohol or high proof vodka or rum.

Process

Step 1: Grind the herbal material.

Step 2: Place the ground herbal material into the sterilized jar, and cover with the lid.

Step 3: Shake the material, and store in a cool, dark location for four weeks.

Step 4: Using the strainer and cheesecloth, pour the mixture through, and straining out the herbal material.

Uses

Alcohol tinctures are a very quick and potent method for medicating. Sublingually the onset of effects can be felt almost immediately. Cautions should be taken when using alcohol tinctures: Do NOT operate a vehicle or heavy machinery while under the influence. If you are sensitive to the effects of alcohol, this method of medicating should be avoided.

Cannabis Infused Butter

About Butter

THC is lipid soluble, meaning it will dissolve and bond to a fat molecule, for this reason butter is a very good option. Butter can burn easily, so it is best to use a water bath method.

Equipment

For this process, you will need: crock pot, dried herbal material, butter, water, cheesecloth, strainer, glass bowl, folded paper towels.

Process

Step 1: Grind the herbal material.

Step 2: Place the herbal material, water, and butter into the crock pot.

Step 3: Turn the crock pot on to the warm setting, and let steep 3-4 hours.

Step 4: Using the strainer and cheesecloth, pour the mixture through, and straining out the herbal material.

Step 5: Place the bowl containing the butter and water in the refrigerator overnight.

Step 6: After the mixture has cooled the butter will congeal at the top of the bowl, remove the butter and place on top of folded paper towels to remove any water from the bottom of the butter.

Cannabis Infused Oil

About Oil

For a vegan alternative, vegetable oil, olive oil, or coconut oil are all good options. Because oils have higher burning temperatures it is not necessary to use the water bath method, but rather a simple heating process.

Equipment

You will need the following equipment: crock pot, dried herbal material, vegetable, olive, or coconut oil, cheesecloth, strainer, sterilized jar and lid.

Process

Step 1: Grind the herbal material.

Step 2: Place the herbal material and oil into the crock pot.

Step 3: Turn the crock pot on to the warm setting, and let steep 3-4 hours.

Step 4: Using the strainer and cheesecloth, pour the mixture through, and strain out the herbal material.

Uses

Cannabis Infused butters and oils can be used in a variety of ways, including both sweet and savory recipes. The best recipes to use are ones that call for a limited quantity of fats or oils. Note: Potency of cannabis butters vary depending on the quality of the medicine. If the medicine being used is of high quality, meaning the number of resin glands on the herbal material is abundant, then less herbal material is needed to make a potent butter.

Topical

Cannabis can be absorbed trans-dermally, meaning through the skin layer, an oil applied directly to a sore muscle can bring about relief in a targeted, quick fashion. Also, cannabis has been proven to have anti-bacterial properties, which makes it an ideal ingredient to add to a salve, for faster healing.

Summary

Extractions and infusions are a testament to the adaptability and versatility of the cannabis plant and, in many ways, mirror those traits. The methods of extraction are nearly as varied as the strains currently available on the market. Whether you are looking to use super critical solvents or follow the solvent-less path, there is a method of extraction or infusion to suit every skill level and discipline. Concentrated cannabinoids are seen by many to be the future of both medical and recreational cannabis.

Infusions are becoming much more mainstream as well; edibles have evolved far beyond the brownies of yesteryear and as patients look for ways to target specific areas where pain and inflammation occur, topical applications are quickly gaining in popularity. Through continued research and study, our knowledge of the cannabis plant will only grow. So too, will our methods of extracting and infusing, as processes and techniques are further refined.

Glossary

- BHO - Butane Hash Oil; an extraction created by using butane as a solvent to extract cannabinoids from cannabis
- Budder - BHO with a waxy consistency
- Pull and Snap - BHO with a semi-glass consistency, that is more malleable and bends before snapping apart
- Shatter - BHO with a glass-like consistency
- Flash Point - The lowest temperature at which a solvent will vaporize and become combustible
- Purge - To rid, clear or free your extract of excess solvent. Commonly done in a vacuum oven
- Closed Loop System (CLS) - A system where solvents do not exit the extraction system and can be recycled for later use
- Winterize/De-Wax - The process of removing any remaining solvent or plant waxes from your extract
- PHO - Propane Hash Oil
- QWET - Quick Wash Ethanol
- QWISO - Quick Wash Isopropyl
- Bubblehash - The final product of ice water extraction
- Dry Trim - Plant material that has been dried before being processed
- Fresh Frozen - Also called flash frozen; Plant material that is frozen immediately after harvest
- Full Melt - A grade of bubble hash that melts completely into oil when heated
- Carrier - Another term for solvent
- Rosin - The final product of Rosin Tech extraction
- Kief - The resin glands (trichomes) that accumulate in containers or are sifted with a mesh screen or sieve
- Dry Sift - A hash making technique where screens and agitation are used to separate trichomes from plant matter

Thought Provoking Questions

- Why is it important to keep your work space clean and sterile?
- How does polar or non-polar solvent effect the use?
- What does it mean if a concentrate is dark green or brown?
- Why is the flashpoint so important for safety?
- What is the point of winterizing final product?
- Why does NIC not teach "Open Blasting"?
- Which solvents are stored in high pressure containers and why?
- What is a closed-loop-system?
- Why is alcohol such a common extraction solvent?
- What makes "Rick Simpson Oil" so popular?
- How can fumes be dangerous?
- What are the benefits of solventless methods?
- What makes dry trim or fresh frozen better?
- Why is it important to be gentle with the cannabis material?
- What is the most efficient way to use the rosin method?
- How do cannabinoids bond to compounds?
How can the different oils be used for different MIPs?

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Useful Links:

- Rick Simpson Homepage:
- <http://phoenixtears.ca/>
- Skunk Pharm QWISO:
- <http://skunkpharmresearch.com/qwiso/>
- Skunk Pharm QWET:
- <http://skunkpharmresearch.com/qwet-extraction/>
- How To Operate A Closed Loop Extractor:
- <http://statusrising.com/2015/05/13/how-to-operate-a-closed-loop-extraction-system/>
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- <http://www.medicaljane.com/2014/08/15/cannabis-concentrates-101-how-to-get-started-with-closed-loop-extracting/>