Notes on solvents used for extracting and refining salvinorin

July 27, 2006

The use of any hardware or non-reagent grade solvents to extract or refine salvinorin is not up to the strict standards required for any kind of human consumable. I am not a chemist and am not qualified to give advice in regard to the safe use of solvents or their suitability for use to make any kind human consumable including enhanced leaf or any other kind of Salvia divinorum materials which might be smoked, chewed or consumed in any way.

In order of their solubility for salvinorin the following common solvents can be used to extract leaf:

Acetone, methanol, 190+ proof ethanol and 99% isopropyl. I don't like to use methanol due to its toxicity to eyes and the nervous system, even if it is completely evaporated in the process handling it is just too dangerous for me to want to use it regardless of its higher solubility than ethanol. High proof ethanol has a higher solubility for salvinorin than 99% isopropyl so that is a good choice for extracting the leaf especially considering it is food grade but is fairly expensive. Acetone which maintains a high solubility for salvinorin even when chilled to zero degrees F. is my favorite solvent for extracting salvinorin because it does so very quick and thoroughly without the high toxicity that methanol has. Keep in mind the solvents mentioned here are just a few of many which salvinorin is soluble to but are the more common ones easier to find.

Whether purifying the extract to make tincture or to make enhanced leaf you can use 99% isopropyl alone or even high proof ethanol without naphtha but in my opinion for most people this requires at least a 100 gram extraction to do so (300 grams if using ethanol) without washing away a substantial portion of the salvinorin with each cleaning of the extract solids with IPA/isopropyl/isopropanol. Once you are practiced at the technique so that you can use as little solvent as possible to remove the wax or dark impurities you could probably be ok working with smaller amounts of leaf and only use IPA or ethanol to refine the extract but starting out I'd use large batches until you get the hang of it. 99 percent isopropyl is great to work with because of the relatively low solubility of salvinorin to a few ml of this solvent while at the same time having a fairly high solubility to the waxy impurities. Also, IPA is cheap and since 99% isopropyl is very clean you don't have to worry about inducing other impurities to the material.

The reason many individuals refine the dark extract from Salvia divinorum leaf to remove the waxy impurities is because smoking the waxy lipids of the leaf are not good for their lungs along with all of the combustion byproducts which come from burning anything. This reduction of materials being burned is desired by many people because of the health reasons along with being more comfortable to inhale or easier to smoke.

I have trouble smoking enhanced leaf myself because I have been a non smoker my entire life... not weed, not tobacco, not nothing until I found Salvia so when I make my own smoking materials I remove all of the other stuff extracted from the leaf leaving only high purity salvinorin behind which I use to place back on small 25 mg portions of leaf or on tobacco rolling papers which are cut up into very small pieces that produce hardly any smoke at all.

To make a standardized enhanced leaf requires knowing the amount of salvinorin in the material being used to enhance the leaf, purifying the extract to the point where you have little left except high purity salvinorin so that you can get an accurate weight is the only way to really know how much you are putting back on the leaf, thus the need for processing the extract into such high purity.

Another way of refining the extract down to pure salvinorin is to use column chromatography which doesn't require using naphtha or isopropyl but requires the use of lab glass and another solvent etc. Also, the partition method of purifying extract can be done with a mix of methanol, water and hexane in a separatory funnel (substitute naphtha if hexane is unavailable).

Chilled acetone extractions to leaf can produce fairly high purity extract without the need to purify it further if you are going to just extract from a specific weight of leaf and place the extract back on a specific smaller amount of leaf for a very rough standardization but the amount of salvinorin in different batches of leaf can vary, so you can't call it standardized if using that method.

Still, the leaf doesn't need to be exactly standardized to be some very good enhanced leaf, as long as the majority of the waxy impurities have been reduced in some way or another. With a room temperature extraction to leaf using any solvent salvinorin is soluble to can usually only be enhanced up to about 6X strength or too much of the harsh lung irritating materials are placed back on the leaf for most people to want to hack the amount of smoke from. Some people have no problem at all smoking large amounts of strait leaf which I find impossible to hold in my lungs long enough to get effect without exploding into a coughing fit.

Can 90% IPA/isopropyl be used in place of 99% isopropyl which is much harder to find?

I have seen one report that 90% IPA worked for someone but at what efficiency? If you do use it I would extend the amount of time extracting the leaf to at least 10 minutes and make sure to do the extraction to the same leaf at least four times over. Although off the shelf isopropyl isn't a reagent it is considered medical grade which means that it is very clean.

I have been able to find 99% isopropyl on the shelf at many large grocery stores right next to the 70%. High purity/percentage isopropyl is used for many things which include telecommunication fiber optics, fiberglass kits and for gun cleaning. If you want to find various suppliers just do an image search on google under the term "99% Isopropyl" and you should get many links to suppliers. See this abbreviated link for a google search to suppliers of 99 percent IPA: http://www.tinyurl.com/zpg67

Can inexpensive off the shelf solvents be used to make enhanced leaf?

If I were making Salvia for sale to the public I wouldn't extract or refine salvinorin using anything but medical grade 99 percent isopropyl (rubbing alcohol) or reagent grade acetone which has a guaranteed purity but if extracting leaf for my own use alone with the full knowledge that it does not meet the strict standards required for human consumables I am not concerned that I will be poisoning myself with residues from the solvent as long as I have first tested the solvent to make sure that there aren't residues remaining after evaporation. I have found that some brands of hardware store acetone leave very little residue after evaporation. (Which can be removed, see below).

Before I use any kind of solvent for Salvia extractions or refinement of the extract I first check each batch of solvent by evaporating a full cup of it in a glass bowl to see if it leaves any residue. I have found that most hardware store acetone only leaves a slight white watermark looking residue in the bottom of the glass, very slight and may be difficult to see unless you look closely but smudges like a very light oil. What ever you do, avoid acetone which has benzene additives, usually labeled "Extra-strength" acetone and don't evaporate solvents in closed areas!

What might be in a light residue left behind after evaporation of hardware store acetone?

I asked a chemist what these remains were and he told me that they were simple polymers, things like you find in chicken grease etc. and that the manufacturing process for acetone does not produce heavy metals so he wasn't concerned about it. Still I don't want any amount of residue from off the shelf solvents in the extract I make so as a last step I always clean the extract with medical grade isopropyl to remove them by cleaning the extract solids with two or three washes with small amounts of 99% IPA/isopropyl/isopropanol.

Where can I get 99% isopropyl AKA isopropanol?

Many individuals have reported having trouble finding 99 percent isopropyl for use to de-fat or clean extract. I have heard that 90 percent isopropyl does the trick well enough for cleaning the extract of waxes but I wouldn't use it for extracting leaf because I have found that 70 percent IPA is useless for extracting salvinorin making me wary of anything less than 99 percent isopropyl.

One source of high purity isopropyl which might be suitable are those little red bottles used to remove water from gasoline with the brand name of iso-heat which have been reported to be 99 percent isopropyl but I'd be sure to evaporate a bottle of it first to see if it leaves any amount of residue behind. If you want to find an inexpensive source of acetone for extracting leaf I have found the Klean-stip brand of acetone found at Walmart and many other stores in the 3.8 liter can to be very clean and useable for Salvia extractions if the dried extract solids are then thoroughly cleaned to a white purity using medical grade 99% isopropyl.

Where can I find clean naphtha?

The VM&P Naphtha Klean-strip sells is much cleaner than any kind of camp stove fuel which always have an oily rust inhibitor in them. At one point I had always used naphtha to remove the waxy impurities from leaf but these days (2006) I don't think using naphtha is really all that necessary if you are going to clean the extract with IPA anyway. One individual told me that xylene is effective at removing the waxy lipids and impurities from extract than naphtha so that might be worth a shot if you can get it. See all three of these solvents advertised at the following link: http://www.tinyurl.com/cbtzy

If you use any of these hardware solvents to extract leaf or refine extract I highly recommend using 99 percent isopropyl as a last step to clean the extract to remove the slight amount of residue which might

be left behind by them. Be sure to do an evaporation test with each of them to see for yourself how clean they are before using them to work with leaf.

Naphtha is hexanes, you can buy hexane in a bottle sold for rubber cement thinner at art supply stores and use it instead. Naphtha is just light petroleum spirits. Coleman lantern and camp stove fuel is naphtha but has rust inhibitor oil added to it, so I wouldn't use that.

Klean-strip VM&P Naphtha is about as clean as I can find. The thing is, if you are cleaning the waxy lipids and dark impurities from salvia extract using naphtha it is all poured off anyway, so you only really have a few ml of the stuff drying into the extract. Not enough to cause a problem, especially after full evaporation. If benzene is in your solvent I doubt any detectable amount of it will be left behind as it evaporates away too.

It is easy to check to see if your source of naphtha AKA shellite has residuals which will be left behind, evaporate an ounce of it and see what is left. You will have far less than that in the wetted extract, once the naphtha is poured away. I have doubts you will notice any residues from most sources of naphtha from that small an amount of solvent.

If you then wash the extract with some 99 percent isopropyl what ever the naphtha might have left in the extract is washed away by that, something which is medical grade and leaves no residue!

If you want to skip using naphtha all together do so! Any more I only use naphtha for cleaning the extract from a room temperature extraction. Use zero degree F. chilled acetone to extract your leaf instead and you don't have to use naphtha at all. See the "making cigarette papers" .pdf document at http://www.imageevent.com/sphere