

Originally published on the now-defunct Capna Systems blog. Unfortunately, I was not able to save all the graphics and images that were designed specifically for this post. Its performance in the search engine results was strong (Page #1).

Everything You Need to Know About Rick Simpson Oil (RSO)

Rick Simpson Oil (RSO) is an exceptionally potent type of cannabis oil that uses alcohol as its solvent. It was developed by a resourceful cannabis activist named Rick Simpson, specifically to be made at home with simple equipment and readily available ingredients.

As a result, it is incredibly popular, particularly amongst users looking for cannabis products with high THC levels.

So, without further delay, let's dive right in and go over everything you need to know about Rick Simpson Oil (RSO)!

What is Cannabis Oil?

Before we get into the specifics of Rick Simpson Oil (RSO), let's take a moment to discuss the more general category of **cannabis oil**. Essentially, cannabis oil is an extract of the cannabis plant that is rich in the various chemical constituents that give cannabis its psychoactivity and medicinal benefits.

As of 2014, over [545 different constituent compounds](#) have been identified in the cannabis plant, most of which can be broken down into the following three categories:

Terpenes or terpenoids

There are approximately [140 of these compounds present in cannabis](#). According to ongoing research, [many of these terpenes/terpenoids contribute extensive medicinal benefits](#) to the final cannabis product.

Phytocannabinoids

Of the approximately [104 phytocannabinoids that have been identified](#), the two most widely researched and used are [tetrahydrocannabinol \(THC\)](#) and [cannabidiol \(CBD\)](#). Although THC and CBD are closely related and share many of the same medicinal properties, it should be noted that THC is the phytocannabinoid that causes intoxication (or the high associated with marijuana).

Flavonoids or bioflavonoids

So far, scientists have identified about [20 flavonoids in cannabis](#). Because they have not been as extensively studied and analyzed as phytocannabinoids and terpenoids, these constituent compounds are shrouded in a little mystery. However, it appears that they have anti-inflammatory and fungicidal properties, making them [pharmacologically active](#) as well.

But how do you get cannabis oil from the raw plant material (also referred to as **dried cannabis**)? Well, there are a number of [different ways to perform cannabis extraction](#), each with their respective pros and cons. However, they all require the use of a **solvent** to extract the chemical constituents in the unprocessed cannabis oil.

Some varieties of cannabis oil go through additional steps, like [short-path distillation](#), to result in a “purer” final product.

What Is Rick Simpson Oil (RSO)?

So, what is **Rick Simpson Oil (RSO)** and how does it relate to these “pure” cannabis oils? Well, not only is RSO more raw and less processed, it is usually homemade and exceptionally potent. RSO is unique due to the fact that it’s easy and inexpensive to make while basically being a supercharged version of more conventional cannabis oil. This stuff is powerful!

In fact, RSO has exceptionally high levels of THC. If produced properly, **its final concentration of THC can range anywhere from 60 to 90%**! However, in order to attain these high levels and create a ultra-potent final product, most RSO producers start with dried plant material that comes from cannabis strains that already have high THC levels.

So where did this powerful form of cannabis oil come from? Well, it’s named after Rick Simpson, the man who developed the method of production. Circumstance dictated his actions: in 1997 and 2003, respectively, he faced serious medical issues. His physician at the time rejected his request for a **medical marijuana** prescription, so Simpson went about creating his own cannabis product.

And this is how he developed **Rick Simpson Oil (RSO)** as an easy and inexpensive method for producing high-grade cannabis oil. Furthermore, Simpson claimed that RSO helped treat a number of his medical conditions, although not all of these claims have been validated by researchers or the results recreated in large-scale, double-blind studies. However, there is still a [great deal of evidence](#) that [THC has potent medicinal qualities](#) as evidenced by [extensive and ongoing research](#).

Ultimately, RSO is particularly appealing for cannabis enthusiasts since it’s easy to make and does not require fancy equipment or a lot of money. In fact, this **do-it-yourself (DIY)** method of cannabis oil production can be done almost entirely with materials and supplies gathered from regular pharmacies and stores while using **food-grade solvents**.

What Solvent Is Used to Make Rick Simpson Oil (RSO)?

Remember, each type of cannabis oil extraction **requires the use of a solvent**. The chemical properties of this solvent “pull out” the chemical constituents in order to create a final cannabis oil product.

So what kind of solvent is used to make Rick Simpson Oil (RSO)? The answer is simple: alcohol. However, this is a fairly broad category of chemical compounds, so let’s narrow it down to the following two types:

1. **Isopropyl alcohol** - In order to be the most effective, the alcohol solvent should have a concentration of 99% for maximum efficacy.
2. **Ethanol** - Also known as **grain alcohol**, this can also be used for RSO production and is the form of alcohol that is safe to ingest.

In most cases, and according to Simpson himself, **99% isopropyl alcohol is the best option**. This is not necessarily because isopropyl has innate chemical qualities that make it a better solvent than ethanol. Rather, it's due to the fact that you can buy 99% isopropyl alcohol over-the-counter (OTC) in most pharmacies, although you will likely have to ask for it specifically.

On the other hand, the purest form of ethanol available is **Everclear**, which is **95% ethanol (or 190 proof)**. Don't forget that when it comes to your solvent, the higher the alcohol content, the better. It's important to remember that you want the least amount of water in your solvent, so for this reason most RSO producers use 99% isopropyl alcohol.

Indica or Sativa - Which is Better for Making RSO?

Although there is significant debate amongst producers, most agree that the ideal starting plants are high-THC varieties of *Cannabis indica* (sometimes known as *Cannabis sativa indica*). Additionally, Simpson himself has stated that **sedative Indica varieties** or **Indica dominant Sativa hybrids** (with no more than 10% Sativa) are the optimal option.

Furthermore, strains that have low levels of CBD are also preferred, as recent research suggests that [CBD actually counters some of the effects of THC](#).

Consequently, if a producer wishes to recreate the famous potency of Rick Simpson Oil (RSO), it's best that they stick to cannabis varieties that are **high THC** and **low CBD**.

Finally, Simpson has also suggested that the THC content of the sedative Indica strain should be **at least 20% THC and that the plants themselves be females**. By sticking to these criteria, you will ensure that the final oil product will have the telltale potency that has become synonymous with high-quality RSO.

What is the Dosage Amount for Rick Simpson Oil (RSO)?

RSO is so beloved because it can be made easily and inexpensively at home. However, this DIY approach means that it's virtually impossible to create a final product that has standardized dosing and consistent levels of THC.

Ultimately, you need the extensive equipment and technical know-how of a full extraction lab to create consumer-grade products, so choosing the right dosage for homemade RSO can be a bit tricky at times. Remember, **the final THC concentration has a wide range: 60 to 90%**.

However, the general consensus is that you can consume the following amounts of RSO:

1. **Total cannabis novice** - size of $\frac{1}{4}$ a grain of rice.
2. **Occasional user** - size of $\frac{1}{3}$ a grain of rice.
3. **Mild to moderate user** - size up to $\frac{1}{2}$ a grain of rice.
4. **Heavy user** - size between $\frac{1}{2}$ to 1 grain of rice.

These are by no means standardized dosage amounts and should be considered more as general guidelines. Furthermore, if in doubt, adhere to the old maxim: **start low and go slow**. Don't overdo it! While it's true that cannabis products, even potent ones like RSO, are not very dangerous, overconsumption can be extremely unpleasant and may require medical attention.

What are the Benefits of RSO?

Let's take a quick moment to just go over the benefits of RSO. These include:

1. It's easy to make and does not require a highly trained or experienced operator. In fact, a novice in cannabis extraction could potentially make a potent first batch.
2. The production of RSO does not require expensive or complex machinery.
3. RSO can be made at home with readily available ingredients.
4. It has an exceptionally high percentage of THC (60 to 90%), making it one of the more potent forms of cannabis oil.
5. Many users have reported that it has [substantial health and medicinal benefits due to its high percentage of THC](#).
6. It can be ingested both orally or applied topically (as an ointment, balm, or salve).

What are the Side Effects of RSO?

Remember that **RSO is extremely rich in THC**. Consequently, its consumption will deliver a high dose of this psychoactive phytocannabinoid, meaning that the **euphoria** and **marijuana high** will be considerable.

For some users, especially experienced ones, this is precisely why they love RSO so much! On the other hand, users who do not have a high tolerance for cannabis can find the experience of taking too much RSO/THC extremely distressing.

In fact, **excessive consumption of RSO/THC can** [lead to a number of negative side effects](#). In cases of acute consumption, these include:

1. Severe anxiety or paranoia
2. General impairment
3. Slurred speech
4. Slowed down reaction times
5. Poor impulse control
6. Inability to concentrate or think clearly
7. Eyes that are irritated and/or red
8. Sluggishness and/or fatigue

While those all sound incredibly unpleasant, most of them are not permanent or seriously dangerous. However, there are more serious side effects, even though they're very rare. These include:

1. Increase in heart rate (tachycardia)
2. Temporary psychosis or hallucinations

3. Problems with physical movement or coordination (driving while intoxicated from RSO/THC is dangerous and illegal)

In most users, even those who are experienced in consuming cannabis, RSO/THC can also be **amnesic**. This means that it may cause some memory loss as well as the inability to properly form new memories in a user who is intoxicated.

Interestingly enough, [CBD can be used to reverse some of the negative side effects](#) of excessive RSO/THC consumption. Although CBD and THC both interact with the same **cannabinoid receptors** (known as **CB1** and **CB2 receptors**), they have different mechanisms of action.

Is Rick Simpson Oil (RSO) Safe?

Yes, absolutely! Remember that the primary active ingredient in RSO is THC. Consequently, ongoing and long-term cannabis research has concluded that **THC has an incredibly wide safety margin**. In psychopharmacology, the term **LD50** refers to the lethal dose of a compound for 50% of subjects. In terms of cannabis research, multiple studies have concluded that [the median LD50 of THC](#) is:

1. About 800 milligrams (0.8 grams) per 1 kilogram in rats
2. About 3000 milligrams (3 grams) per 1 kilogram for dogs
3. Up to 9000 milligrams (9 grams) per 1 kilogram in non-human primates (monkeys)

If we use these figures to [extrapolate for human subjects](#), the **LD50 for a human weighing 64 kilograms (or 141.1 pounds) would be 8.45 kilograms (or 18.6 pounds)**. That is an ungodly amount of THC! Realistically, a person could not ingest enough cannabis to reach that amount, even if it's in the form of RSO and has an exceptionally high percentage of THC.

Furthermore, **Rick Simpson Oil (RSO) will not cause an overdose** like other, more dangerous drugs. This is because THC does not affect the respiratory system. The breathing process is controlled by a region of our brain known as the **brainstem**, and there is a very low density of cannabinoid-1 (CB1) receptors in the brainstem. As a result, **THC does not impair breathing**.

In fact, THC is usually associated with mortality in cases where an accident has occurred (driving while intoxicated, for example) or if the decedent had multiple drugs in their system. Also known as **combined drug intoxication (CDI)** or **multiple drug intake (MDI)**, this means that the THC was not the direct or primary cause of death.

However, a RSO/THC overdose can still be a frightening experience, especially considering that it can cause massive paranoia, auditory hallucinations, and tachycardia. Consequently, going to the hospital is highly advised if such a situation occurs. While it's true that these adverse effects will eventually subside after a few hours, for some people it's simply too intense to bear without medical intervention.

Ultimately, Rick Simpson Oil remains an exceptionally popular form of cannabis oil. Many cannabis enthusiasts swear by it, although it is generally not advised for users who do not regularly use cannabis products.

In fact, there is even a sizable contingent of its supporters who advise against using it recreationally for anyone who does not have high cannabis tolerance. This makes sense because, at the end of the day, its THC content is just too high for a cannabis novice!

Are There Other Forms of Cannabis Extraction with Alcohol?

Obviously, Rick Simpson Oil (RSO) maintains its popularity due to the ease by which a newcomer can create a potent batch. Virtually anyone can create a final product that will have high levels of THC, even if it's their first time doing any sort of cannabis extraction.

However, for many consumers, the raw and unprocessed nature of RSO is actually a drawback. Furthermore, this DIY approach results in a final product that:

1. Has a bitter, unpleasant taste due to **high levels of chlorophyll**.
2. Lacks **effective quality control**.
3. Has **uneven dosage amounts**.
4. Does not have **specific phytocannabinoids/terpenes that have been targeted**.

Essentially, RSO production is like a brute-force attack. It strips the cannabis plant of everything but the cellulose fibers, resulting in a final product that is potent but not purified or distilled. The RSO has an unappealing color and can have a sludgy consistency due to the fact that it's raw and unprocessed. Some cannabis enthusiasts prefer this form, but it's absolutely true that not every consumer will like that!

As a result, there are methods of cannabis extraction that use **supercooled** or **cryogenic ethanol** to [more effectively extract](#) the most desirable parts of the cannabis plant. In essence, the ultra-low temperature of the ethanol is significant in this extraction process. By cooling the ethanol to well below 0 degrees Celsius, the **polarity of the ethanol is manipulated so that it acts as a nonpolar solvent and only attaches to the desirable phytocannabinoids and terpenes**.

Furthermore, this form of ethanol extraction is [both exceptionally efficient and safe](#). It's also important to note that using these more precise methods means that the final product can have its THC or CBD levels controlled more exactly. For example, not every consumer wants a final product that is chock-full of THC, so using a more sophisticated extraction method allows the producer to create a cannabis extract or oil that will have more manageable amounts of THC.

That being said, Capna Systems specializes in producing sophisticated equipment that can perform precisely these types of cold ethanol extractions. So, if you're interested in learning more about supercooled/cryogenic ethanol extraction and the necessary technology to create high-quality cannabis oil, then you can [contact us](#) or [book a demo](#) to visit our production facility right away! Our knowledgeable and friendly representatives will be happy to give you a tour and show you the exciting developments we have in store for the not too distant future.

References

<https://global.oup.com/academic/product/handbook-of-cannabis-9780198792604?cc=us&lang=en&>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3736954/>
<https://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199662685.001.0001/acprof-9780199662685-chapter-15>
<https://www.springer.com/gp/book/9781588294562>
<https://www.ncbi.nlm.nih.gov/pubmed/30152161>
<https://www.projectcbd.org/sites/projectcbd/files/downloads/cannabinoid-boiling-points-thc-cbd.pdf>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3202504/>
<https://jamanetwork.com/journals/jama/fullarticle/2338251>
<https://www.med.upenn.edu/cbti/assets/user-content/documents/s11920-017-0775-9.pdf>
<https://www.ncbi.nlm.nih.gov/pubmed/10673884>
<https://www.publish.csiro.au/hc/pdf/HC15908>
<http://thechillbud.com/understanding-the-different-types-of-cannabis-oil-and-how-theyre-made/>
<https://www.marijuanabreak.com/rick-simpson-cannabis-oil>
<https://www.cdc.gov/marijuana/faqs/overdose-bad-reaction.html>
<https://phoenixtears.ca/faq-about-rso/>
<https://phoenixtears.ca/super-oils/>
<https://www.thestreet.com/lifestyle/health/rick-simpson-oil-14760699>
<https://merryjane.com/health/everything-you-need-to-know-about-rick-simpson-oil>
<https://www.mdpi.com/1424-8247/5/5/529>
<https://www.ncbi.nlm.nih.gov/pubmed/4852457>
<https://www.ncbi.nlm.nih.gov/pubmed/8213692>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4311234/>
<https://www.leafly.com/news/industry/ethanol-cannabis-extraction>
<https://www.leafly.com/news/industry/ethanol-extraction-cbd-both-safe-efficient-for-business-scale>