

## IMPORTANT NOTE

**KEEP THIS PRODUCT OUT OF THE REACH OF CHILDREN AND PETS. If a child puts the RSHO-oil in his or her mouth or swallows the RSHO-oil, take it away from the child and contact a doctor immediately.**

**Do not drive a car or operate machinery until you know how it affects you. While taking the RSHO-oil, do not drink alcohol, smoke marijuana, or take other drugs that have an effect on the central nervous system (such as sedatives or hypnotics). Unless advised by your doctor, do not use the RSHO-oil if you are pregnant or nursing.**

This leaflet provides a summary of information about the RSHO-oil. Please read it and keep it in case you need to look at it again. You can always ask us for more information if you have any questions.

## CONTENT

<b>INTRODUCTION .....</b>	<b>2</b>
What are Cannabinoids? .....	2
RSO/RSHO-oil.....	2
<b>PRECAUTIONS .....</b>	<b>3</b>
Storage Instructions .....	4
If You Are Taking Medicines .....	4
Chemo and Radiation Therapy .....	4
What to Watch For (Adverse Effects) .....	4
If You Have Problems in the First Few Days.....	4
What to Do When Problems Occur .....	4
How to Eat.....	5
What to Eat.....	5
When to Eat.....	5
<b>Dosage .....</b>	<b>6</b>
How to dosage.....	6
Measuring a dose .....	7
Starting and Daily Time of Administration.....	8
Starting administration to find your optimum dosage (used mostly to reduce pain).....	8
Advanced administration/Rick Simpson treatment (used mostly by cancer patients) .....	9
<b>Effects of cannabinoids on various health conditions and diseases .....</b>	<b>13</b>
<b>Effects of cannabinoids on cancer.....</b>	<b>20</b>

## INTRODUCTION

### What are Cannabinoids?

The RSHO-oil contains fractions or active components of the cannabis/hemp plant that are called cannabinoids. The two most researched cannabinoids are Tetrahydrocannabinol (**THC**) and Cannabidiol (**CBD**). Your brain creates its own set of cannabinoids — similar to those found in cannabis — via the endocannabinoid system. Cannabinoids work by interacting with specific receptors. These receptors are located within different parts of the body, such as the central nervous system and immune system.

Cannabinoids activate two types of receptors: CB1 receptors, located within the nervous system, the brain and nerve endings, and CB2 receptors, located within the immune system.

Tetrahydrocannabinol (**THC**) is the most common psychoactive cannabinoid. It is best known for causing the high you get from smoking marijuana. However, it also seems to have a number of [medical applications](#), such as pain relief, the ability to improve appetite, effective against inflammations and enhance the immune system.

Cannabidiol (**CBD**) is the second most common cannabinoid. Although it has no psychoactive effects, it appears to improve mood and alleviate pain. CBD has received a lot of attention lately because of its antipsychotic effect that calms the nervous system. Studies suggest that it may help with epilepsy, schizophrenia and a number of other ailments.

Research has shown that cannabinoids can reduce tumour growth and progression in animal models of cancer, in addition to their well-known palliative effects on some cancer-associated symptoms. Cannabinoids have a wide range of anti-cancer effects, such as triggering cell death, through a mechanism called apoptosis, stopping cells from dividing, preventing new blood vessels from growing into tumours, reducing the chances of cancer cells spreading through the body by stopping cells from moving or invading neighbouring tissue, speeding up the cell's internal 'waste disposal machine' – a process known as autophagy – which can lead to cell death. The effects of the cannabinoids on anti-cancer properties are still being researched. More information can be found here:

[http://www.mediccanna.com/?page\\_id=53](http://www.mediccanna.com/?page_id=53)

<http://www.cancer.gov/cancertopics/pdq/cam/cannabis/healthprofessional/page4>

<http://www.ncbi.nlm.nih.gov/pubmed/22555283>

(For more information, see the section: 'Effects of cannabinoids on...' at the end of this article)

### Rick Simpson Oil, RSO/RSHO-oil and Amsterdam-oil

The RSO-oil (Rick Simpson Oil) can also be referred to as RSHO-oil (Rick Simpson Hemp Oil), Amsterdam-oil, Hemp oil or Cannabis oil. This type of oil can be produced in a similar way as described by Rick Simpson, containing its most important cannabinoid, THC. A product containing a large amount of THC (above 20-25%, as recreational hemp already contains this amount) can already be seen as such a product.

The RSO-oil also has to contain a full spectrum of cannabinoids (*THCV, CBG and CBC etc. but usually in smaller quantities*).

In order to produce 1 gram or 1 ml (0,035oz) of RSO-oil you would need approximately 10 gram (0,35oz) of recreational cannabis/hemp and 25ml (0,9uk fl oz) of at least 90% pure alcohol (for internal use). Making your own concentrated RSO-oil is less expensive and safer than buying it, however it takes a half year to grow a hemp plant out of a seed (seeding in spring, harvest in fall).

## PRECAUTIONS

Be very cautious while using this product if you:

- have or had heart disease
- have or had cardiac disorders because of occasional hypotension, possible hypertension, syncope, or tachycardia
- have current or a history of drug abuse
- have current or a history of alcohol abuse
- have or had mental health problems (mania, depression, schizophrenia)
- have a history of seizure disorder and/or seizure-like activity
- have allergies to drugs
- are pregnant or nursing, or become pregnant

If you become pregnant while taking the RSHO-oil, stop using it until you have talked to your doctor.

The RSHO-oil should be used with caution in children because it has not been studied in children.

The RSHO-oil should be used with caution in elderly patients because they may be more sensitive to the neurological, psychoactive, and postural hypotensive effects of the drug.

Do not drive or operate machinery until you are sure how the RSHO-oil affects you and you are able to perform safely.

You may experience changes in mood or have other effects when first taking the RSHO-oil. Be sure that there is a responsible person nearby when you first take RSHO-oil or when there is an adjustment in your dose.

It is important not to take sedatives, hypnotics, other mind-altering substances, or alcohol, while taking RSHO-oil without notifying your health care givers (physician, pharmacists and nurses). Do not drive or attempt other activities requiring full alertness while taking RSHO-oil.



## Storage Instructions

The best place to store the RSHO-oil is in a cool place (46-59°F; 8-15°C) or in the refrigerator. Be careful that the capsules don't freeze. Heat or moisture may cause the syringes to break down or stick together, so keep your it away from heat and direct light, and potentially damp places like in the bathroom or near the kitchen sink. The RSHO-oil, if preserved as above, can be used for at least one year from the production date.

## If You Are Taking Medicines

The RSHO-oil use may change the effect of other medicines. It is important to tell your doctor about all the medicines you are taking including all non-prescription medication. The RSHO-oil can dangerously interact with alcohol and with other drugs that have an effect on the central nervous system (such as Valium, Librium, Xanax, Seconal, Nembutal, or Phenobarbital).

## Chemo and Radiation Therapy

The RSHO-oil can be used after or during Chemo and Radiation Therapy.

## What to Watch for (Adverse Effects)

You should not smoke marijuana while using the RSHO-oil. It is possible to get too much cannabinoids (an overdose), especially if you use the RSHO-oil and smoke marijuana at the same time.

Signs of a mild overdose	Moderate overdose	Severe overdose
Drowsiness/Sleepiness	Memory problems	Decreased motor coordination
Euphoria	Depersonalization	Lethargy
Heightened sensory awareness	Mood alteration	Slurred speech
Altered time perception	Urinary retention	Dizziness when standing up too fast (postural hypotension)
Red eyes	Constipation	
Dry mouth		
Rapid heart rate (tachycardia)		

An overdose might cause you to faint.

The oil has an onset of action of approximately 0.5 to 1 hours and peak effect at 2 to 4 hours. Duration of action for psychoactive effects is 4 to 6 hours, but the appetite stimulant effect may continue for 24 hours or longer after administration. Sleeping 8 – 10 hours a day is normal, sleeping more than 10 hours a day can indicate an overdose. Furthermore, some people will feel very tired, although this depends from person to person

## If You Have Problems in the First Few Days

When you first use the RSHO-oil your body is more sensitive and you may experience dizziness, confusion, sleepiness, or a high feeling. These symptoms usually go away in 1 to 3 weeks with continued dosage and 2 to 3 weeks with increasing dosage. If these symptoms are troublesome or persist, decrease or stop using the RSHO-oil until you feel normal again. Drinking or eating something sweet (e.g. water with honey or ice cream) can reduce these symptoms that arise directly after intake.

## What to Do When Problems Occur

IF YOU NOTICE ANY WORRISOME SYMPTOMS OR PROBLEMS, STOP USING THE RSHO-OIL AND CONSULT YOUR DOCTOR.

## How to Eat

Eating a nutritionally balanced diet is fundamental for all stages of life. There is some indication that optimal nutrition can help maintain the integrity of the immune system, and an adequate diet will allow you to better withstand diseases.

The purpose of consuming an adequate diet, even at times when you don't feel like eating is to maintain an ideal weight and good nutritional status. Key to an adequate diet is food dense in calories and nutrients. In other words, when you find it difficult to eat, make the most of what you do consume by selecting foods that provide many calories or nutrients in each mouthful.

Try some of the following ideas to boost your food intake. Keep in mind the foods you previously may have limited in your diet, especially those higher in fat, now can provide a significant source of calories. Enjoy an ice cream sundae frequently.

Cool or cold foods can dull pain from mouth and throat sores; popsicles may even numb your mouth prior to eating a larger meal. The cooler temperatures also diminish the aroma of unappetizing food.

Blend one cup of non-fat dry milk powder with one quart of whole milk. Refrigerate and use "double strength" milk for all traditional uses (puddings, cereal, shakes, soups).

Foods with a softer consistency, such as applesauce, may aid swallowing. Creamed sauces or gravies also moisten food to encourage swallowing.

Creating an appetizing meal involves more than just food. Try to eat in a pleasant atmosphere – sit in a comfortable chair, use a tablecloth and china, invite a friend to share your meal.

## What to Eat

Planning ahead is one of the most effective ways to deal with a loss of appetite. Stock up on staple foods, particularly those high in calories and protein, so they're available when you need them. Include favourite foods on your shopping list. Also consider these protein and nutrient dense foods:

- Non-fat dry milk powder; Powdered breakfast drinks; Peanut butter and jelly; Pudding cups; "Trail mix" (dried fruit, nuts, cereals); Creamed soups; Canned (or frozen) fruit in heavy syrup; Canned tuna, chicken or other sandwich spreads; Boxed macaroni and cheese

In addition to staples, refrigerated and frozen foods contribute important nutrients to an adequate diet. Several key choices, high in protein and calories, are listed below:

- Yogurt, Cheeses; Cold cuts; beef and poultry; Cottage cheese; Ice cream and sherbet; Popsicles or pudding pops; Hard cooked eggs or pasteurized egg (raw or undercooked cracked eggs pose danger of Salmonella)

Commercial food supplements are also available to boost your caloric and nutrient intake. Offered in a variety of flavours and textures, these products supply a concentrated source of calories and protein. You may want to ask your treatment provider for more information about supplements. You may also request a referral to a registered dietician who can provide individualized dietary recommendations to you.

## When to Eat

"Nutritious" meals can be eaten three times a day, but frequent, small snacks or meals can help you consume the calories and protein you need without feeling full from a large meal. Eat when you feel hungry, using modern technology, including your microwave, to quickly prepare a nutritious snack or meal.

## Dosage

The RSHO-oil has a different effect from person to person (e.g. body mass, age, condition etc.). This means that every person can have a different administration to achieve the best results. You may adjust your RSHO-oil dosage if needed to maximize its effect or to decrease any side effects. If you miss a dose, take it as soon as you remember. However, if it is almost time for your next dose, skip the missed dose and go back to your regular dosing schedule. Do not double your dose.

Furthermore, limited research has been carried for optimum administration with the effects of cannabinoids on various health conditions. Most scientific research is based on animal models and tissue. Research where humans are involved, only measure the effects of very small amounts of THC.

The psychoactive effects of the RSHO-oil make it very difficult to start and often take a couple of weeks to get used to it.

### How to dosage

#### **ORAL administration**

The RSHO-oil can best be taken orally by putting the oil below your tongue and let it dissolve for around 5-10 minutes before swallowing. This will allow a maximum absorption of cannabinoids in the bloodstream. Please note that the taste is very bitter and therefore unpleasant. Additionally, the oil can be ingested together with food and/or drinks.

Other means of intake are described below.

#### **LUBRICATION on the skin**

When an oral intake is difficult or even impossible, one could place a thin and small layer of oil on top of a patch (plaster) and stick it on a clean spot of on skin (avoid the same spot for 7 days).

In order to obtain a less concentrated and strong oil one can mix the RSHO-oil with a cold-pressed oil (such as olive oil). The ratio to start with could be 1:3 (e.g. 1ml of hemp oil : 3ml of olive oil).

#### **RECTAL administration**

The RSHO-oil can be used as suppository/rectal. The RSHO-oil can be mixed with Cocoa butter or Cocos oil.

#### **VAPORIZING**

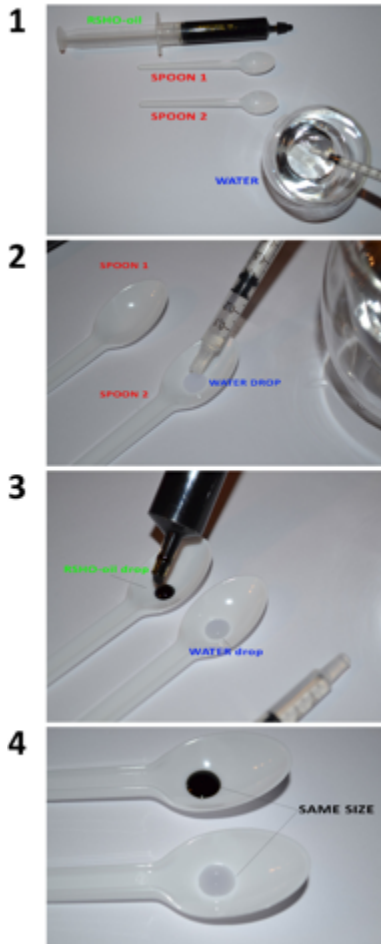
Inhalation with a vaporizer can be possible. However, the pure RSHO-oil is too thick to work in vaporizer pens that wick the oil to the heat source and must be diluted or thinned using polyethylene glycol 400 (or PEG 400 for short, you would need to buy it additionally).

The PEG will absorb the most RSHO-oil if you use about 5ml PEG to 1ml RSHO-oil (so a ratio of 5:1). After mixing the PEG and your RSHO-oil let it cool down. A small surface tension and low viscosity will let it gas out better, therefore, leave the mixture in a shot glass for about 10 to 15 minutes after removing it from the heat. The mix should have clear yellow to amber color

## Measuring a dose

The RSHO-oil has approximately the same weight (gram) and volume (ml).

Start with **0.02 ml per day** for at least a week before increasing in order to see whether unwanted effects occur (increased sleepiness and feeling tired is a normal reaction).



### Using a 1ml syringe

Requirements:

- a) 1 ml syringe (included)
- b) Two identical spoons
- c) Glass of water
- d) RSHO-oil

Use water comparison of droplet size (no need to swallow the water). This dosage method is precise up to 0,01ml.

### STEP BY STEP

**(Image 1)** First absorb water with a 1 ml syringe to a desired dosage.

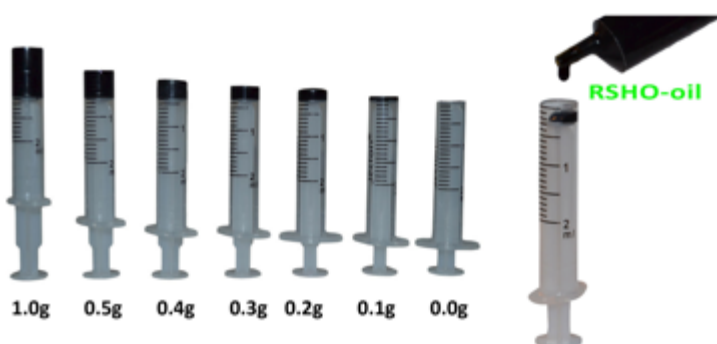
For example, if you wish to start with 0.02 ml RSHO-oil, then absorb the water with a 1 ml syringe to a slightly higher volume. Hold the syringe with the point up and slowly press the surplus of air & water out until you exactly reach 0.02 ml of water.

**(Image 2)** Secondly, extract this water into a spoon.

**(Image 3 & 4)** Thirdly, take the RSHO-oil and slowly extract the black oil on a second spoon. Try to extract a similar sized/amount of the oil as the size of the water droplet that you measured and extracted in the other spoon.

**Finally**, the RSHO-oil in the spoon can be removed with the lower part of the tongue. Let the oil dissolve for 5 - 10 min, while moving the tongue. The leftover can be swallowed.

**Figure 1.** Starting to dose the RSHO-oil by a comparison method with a water droplet for small dosages.



**Figure 2.** Dosing large amounts of the RSHO-oil, where the oil is extracted directly into an open-end 2ml syringe.

### Using a 2ml syringe

Requirements:

- a) 2 ml syringe (included)
- b) RSHO-oil

For more advanced usage of the RSHO-oil using a 2ml syringe. This dosage method is precise up to 0,05ml.

### STEP BY STEP

1. Set the scale of the open-end 2 ml syringe at a desired level.
2. Slowly extract the RSHO-oil into the 2ml syringe to the edge.
3. Put the 2 ml syringe with the hemp oil under the tongue and extract the oil into the mouth. Let the oil dissolve for 5 - 10 min while moving the tongue. The left over can be swallowed.



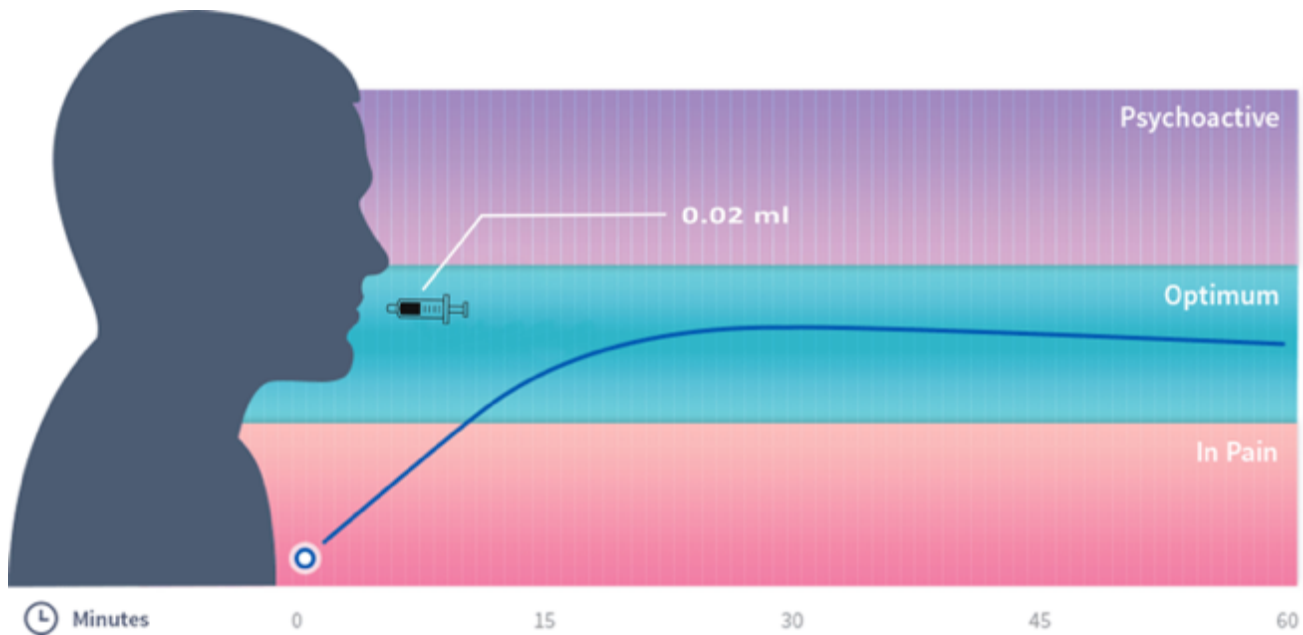
### Starting and Daily Time of Administration

You will most likely start with a dose of around 0.02 ml per day for at least a week in order to be aware of possible adverse/unwanted effects. The administration is done preferably after supper or later in the evening before bedtime. Large doses can be divided in multiple intake intervals of 15 - 30 min.

### Starting administration to find your optimum dosage (used mostly to reduce pain)

After a week on very low doses, you can start increasing the daily administration. You may try to find your optimum dose to maximize its effect (pain reduction) or to decrease any side effects.

In the graph below (**figure 3**), the optimum amount is shown in the blue area. Keep in mind that the effects of THC can be delayed up to an hour. If pain is still persistent, then a further increase dosage step can be taken (e.g. each increasing step could be 0.02 ml).



**Figure 3.** Finding your optimum dosage, where pain is reduced and psychoactive effects are not occurring.



## Advanced administration/Rick Simpson treatment (used mostly by cancer patients)

**Figure 4** displays possible treatments developed by Rick Simpson. Cancer patients or patients with other heavy diseases often use this kind of treatment, as it is believed that a dosage of 1ml/day for over a month will reduce or remove the tumour most optimum. **Please note that this method of administration has not scientifically tested.**

*(It is often discussed that a higher intake of cannabinoids in your blood will increase the effects of cannabinoids)*

This kind of treatment requires 60 ml of a highly concentrated RSHO-oil to be consumed in 90 days.

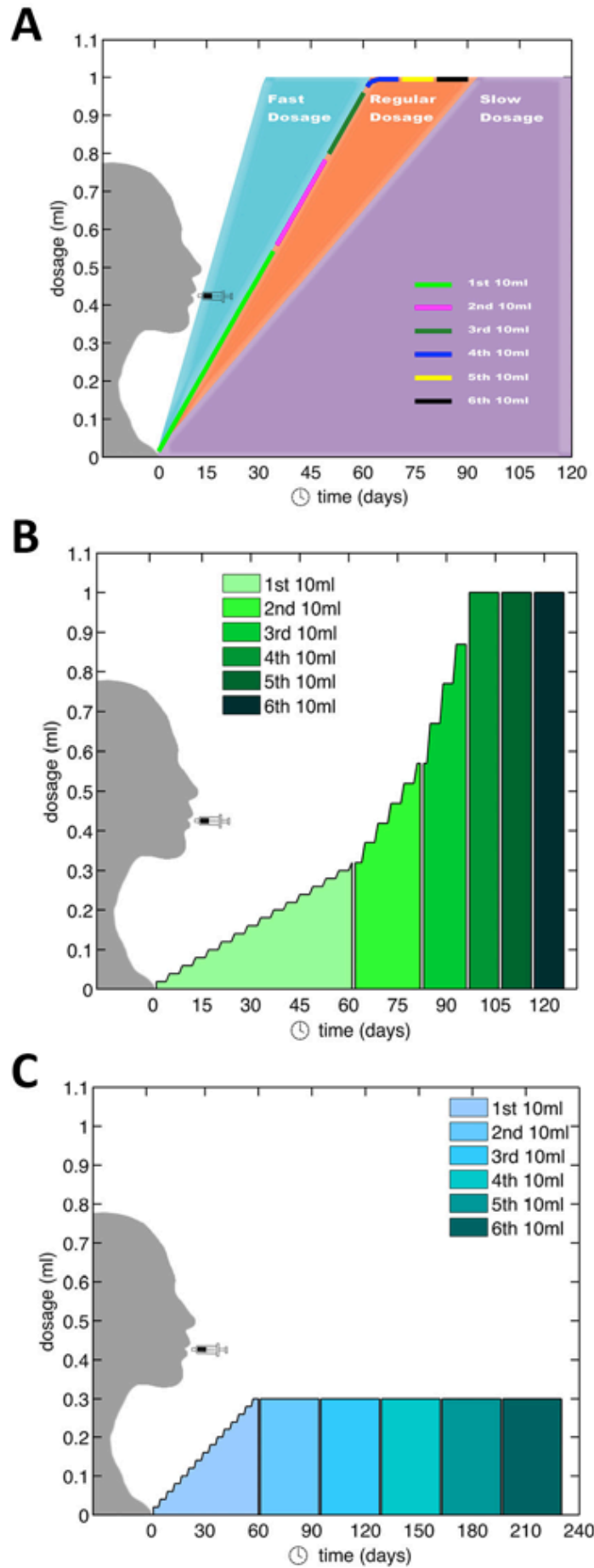
- Daily administration is recommended.
- The treatment is divided in two continues parts to use 30ml of the RSHO-oil each:
  - o The first 30ml is used to build up tolerance in order to handle the side effects that often occur and to achieve the 1 ml /day. The normal time frame for the first part is 2 months, but it can be shortened or extended to ones' need. Especially if for example the oil has a very strong impact on the patient. Start with 0.02 ml / day and build up to 1 ml.
  - o The second part of the treatment is the most important part. The second 30ml should be administrated in a time frame of one month, thereby administrating 1 ml of oil per day for the whole month.

However, every person will experience different effects of the RSHO-oil and therefore it is very difficult to follow one precise dosing example.

**Figure 4** (below) shows three types of possible treatment examples. The timeframe (in days) is projected on the horizontal x-axis, while the dosage (in ml) is projected on the vertical axis. The exact daily administration values can be found in the table below figure 4.

- **Figure 4a** is a typical Rick Simpson treatment example, where one starts with a very small amount to get used to the oil and build it up to achieve a dose of 1ml / day. The chart is divided in three administration zones. A regular treatment would require to achieve the 1 ml / day in about 60 days, leaving 30 days for a daily administration of 1 ml / day. A faster and slower administration for achieving the 1 ml / day can also be seen.
  - o *The disadvantage of this treatment is that one would require increasing the dose daily, which is very difficult. Therefore, one will typically not be able to continuously increase the dose each day, but can try to stay within a certain zone (fast, regular or slow).*
- **Figure 4b** is developed to purpose an easier way of increasing the daily dosage. Every 5<sup>th</sup> day one should double the dose. With every next 10 ml the dose increment increases as well. The last 30ml are meant to have a daily intake of 1 ml / day. This treatment example requires less than 60 ml of the RSHO-oil and there is no need to increase the dose daily.
  - o *The disadvantage of this treatment is that it takes as long as the slow treatment from figure 4a.*
- **Figure 4c** is developed for those who have trouble to intake 1 ml / day (even after a couple of weeks of using the oil) and in cases of other diseases. The administration is similar as in figure 4b (double increase of the dose every 5<sup>th</sup> day), but the maximum intake is 0.3 ml / day.
  - o *The disadvantage of this treatment is that it takes very long to intake a total amount of e.g. 60 ml.*

The graphs and tables are designed for an educational purpose and based on an oral intake.



**Figure 4.** (a) Three possible (fast-regular-slow) Rick Simpson treatments. (b) Adaptive Rick Simpson treatment by double increasing the dose every 5<sup>th</sup> day. (c) Double increments of the dose each 5<sup>th</sup> day up to a maximum of 0.3 ml / day.

	Figure 4a Fast	Figure 4a Regular	Figure 4a Slow	Figure 4b	Figure 4c
Day	Dose	Dose	Dose	Dose	Dose
1	0,02	0,02	0,02	0,02	0,02
2	0,05	0,04	0,03	0,02	0,02
3	0,08	0,05	0,04	0,02	0,02
4	0,12	0,07	0,05	0,02	0,02
5	0,15	0,08	0,06	0,04	0,04
6	0,18	0,10	0,07	0,04	0,04
7	0,21	0,12	0,08	0,04	0,04
8	0,24	0,13	0,09	0,04	0,04
9	0,28	0,15	0,11	0,06	0,06
10	0,31	0,16	0,12	0,06	0,06
11	0,34	0,18	0,13	0,06	0,06
12	0,37	0,20	0,14	0,06	0,06
13	0,40	0,21	0,15	0,08	0,08
14	0,44	0,23	0,16	0,08	0,08
15	0,47	0,24	0,17	0,08	0,08
16	0,50	0,26	0,18	0,08	0,08
17	0,53	0,28	0,19	0,10	0,10
18	0,56	0,29	0,20	0,10	0,10
19	0,60	0,31	0,21	0,10	0,10
20	0,63	0,32	0,22	0,10	0,10
21	0,66	0,34	0,23	0,12	0,12
22	0,69	0,36	0,24	0,12	0,12
23	0,72	0,37	0,25	0,12	0,12
24	0,76	0,39	0,27	0,12	0,12
25	0,79	0,40	0,28	0,14	0,14
26	0,82	0,42	0,29	0,14	0,14
27	0,85	0,44	0,30	0,14	0,14
28	0,88	0,45	0,31	0,14	0,14
29	0,92	0,47	0,32	0,16	0,16
30	0,95	0,48	0,33	0,16	0,16
31	0,98	0,50	0,34	0,16	0,16
32	1,00	0,52	0,35	0,16	0,16
33	1,00	0,53	0,36	0,18	0,18
34	1,00	0,55	0,37	0,18	0,18
35	1,00	0,56	0,38	0,18	0,18
36	1,00	0,58	0,39	0,18	0,18
37	1,00	0,60	0,40	0,20	0,20
38	1,00	0,61	0,41	0,20	0,20
39	1,00	0,63	0,43	0,20	0,20
40	1,00	0,64	0,44	0,20	0,20
41	1,00	0,66	0,45	0,22	0,22
42	1,00	0,68	0,46	0,22	0,22
43	1,00	0,69	0,47	0,22	0,22
44	1,00	0,71	0,48	0,22	0,22
45	1,00	0,72	0,49	0,24	0,24
46	1,00	0,74	0,50	0,24	0,24
47	1,00	0,76	0,51	0,24	0,24
48	1,00	0,77	0,52	0,24	0,24
49	1,00	0,79	0,53	0,26	0,26
50	1,00	0,80	0,54	0,26	0,26
51	1,00	0,82	0,55	0,26	0,26
52	1,00	0,84	0,56	0,26	0,26
53	1,00	0,85	0,57	0,28	0,28
54	1,00	0,87	0,59	0,28	0,28
55	1,00	0,88	0,60	0,28	0,28
56	1,00	0,90	0,61	0,28	0,28
57	1,00	0,92	0,62	0,30	0,30
58	1,00	0,93	0,63	0,30	0,30
59	1,00	0,95	0,64	0,30	0,30

60	1,00	0,96	0,65	0,30	0,30
61	1,00	0,98	0,66	0,32	0,30
62	1,00	1,00	0,67	0,32	0,30
63	1,00	1,00	0,68	0,32	0,30
64	1,00	1,00	0,69	0,32	0,30
65	1,00	1,00	0,70	0,37	0,30
66	1,00	1,00	0,71	0,37	0,30
67	1,00	1,00	0,72	0,37	0,30
68	1,00	1,00	0,73	0,37	0,30
69	1,00	1,00	0,75	0,42	0,30
70	1,00	1,00	0,76	0,42	0,30
71	1,00	1,00	0,77	0,42	0,30
72	1,00	1,00	0,78	0,42	0,30
73	1,00	1,00	0,79	0,47	0,30
74	1,00	1,00	0,80	0,47	0,30
75	1,00	1,00	0,81	0,47	0,30
76	1,00	1,00	0,82	0,47	0,30
77		1,00	0,83	0,52	0,30
78		1,00	0,84	0,52	0,30
79		1,00	0,85	0,52	0,30
80		1,00	0,86	0,52	0,30
81		1,00	0,87	0,57	0,30
82		1,00	0,88	0,57	0,30
83		1,00	0,90	0,57	0,30
84		1,00	0,91	0,57	0,30
85		1,00	0,92	0,67	0,30
86		1,00	0,93	0,67	0,30
87		1,00	0,94	0,67	0,30
88		1,00	0,95	0,67	0,30
89		1,00	0,96	0,77	0,30
90		1,00	0,97	0,77	0,30
91		1,00	0,98	0,77	0,30
92			0,99	0,77	0,30
93			1,00	0,87	0,30
94			1,00	0,87	0,30
95			1,00	0,87	0,30
96			1,00	0,87	0,30
97			1,00	0,97	0,30
98			1,00	0,97	0,30
99			1,00	0,97	0,30
100			1,00	0,97	0,30
101			1,00	0,97	0,30
102			1,00	0,97	0,30
103			1,00	0,97	0,30
104			1,00	0,97	0,30
105			1,00	0,97	0,30
106			1,00	0,97	0,30
<b>Total ml used</b>	<b>60,51</b>	<b>60,51</b>	<b>60,51</b>	<b>39,22</b>	<b>23,40</b>

## Effects of cannabinoids on various health conditions and diseases

### Alzheimer's Disease

Cannabinoids showed potent activity against a variety of methicillin-resistant *Staphylococcus aureus* (MRSA) and *Streptococci*:

- <http://www.jneurosci.org/content/25/8/1904.short>
- <http://onlinelibrary.wiley.com/doi/10.1038/sj.bjp.0707446/full>
- <http://www.sciencedirect.com/science/article/pii/S0165614706002677>
- <http://molpharm.aspetjournals.org/content/79/6/964.short>

### Amyotrophic lateral sclerosis (ALS)

Research articles presenting results that are indicating that cannabinoids can have a delayed motor impairment and prolonged survival in experiments with mice:

- <http://informahealthcare.com/doi/abs/10.1080/14660820310016813>
- <http://www.sciencedirect.com/science/article/pii/S0014299906005103>
- <http://onlinelibrary.wiley.com/doi/10.1111/j.1471-4159.2006.04346.x/full>

### Analgesia (Pain reduction)

Research articles presenting results that are indicating that cannabinoids suppress nociceptive neurotransmission at the level of the spinal cord and the thalamus:

- <http://www.ncbi.nlm.nih.gov/pubmed/21610490?dopt=Abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/10462067?dopt=Abstract>
- <http://www.sciencedirect.com/science/article/pii/S0014299905010812>
- <http://www.nature.com/nature/journal/v395/n6700/abs/395381a0.html>
- <http://www.nature.com/nature/journal/v394/n6690/abs/394277a0.html>
- <http://www.ncbi.nlm.nih.gov/pubmed/15085199?dopt=Abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/9539680?dopt=Abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/11106791>

### Antibacterial

Cannabinoid receptors are important in the pathology of AD and cannabinoids can succeed in preventing the neurodegenerative process occurring in the disease:

- <http://pubs.acs.org/doi/pdf/10.1021/np8002673>
- <http://link.springer.com/article/10.1007/BF00399444>

### Antipsychotic

Research articles presenting both preclinical and clinical studies, which are investigating the potential antipsychotic effect together with the possible underlying mechanisms of action. Various experimental studies in animals, healthy human volunteers, and schizophrenic patients support that cannabinoids could have antipsychotic properties. Moreover, recent studies suggest that cannabinoids have a pharmacological profile similar to that of atypical antipsychotic drugs.

- <http://informahealthcare.com/doi/abs/10.3109/15622970801908047>
- <http://www.nature.com/npp/journal/v35/n6/abs/npp2009235a.html>
- <http://link.springer.com/article/10.1007/s00221-006-0503-x>
- <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=2170948&fileId=S1461145708008560>

### Anxiety

Research articles presenting results that are indicating that by modulating the neuronal endogenous cannabinoid signalling systems with cannabinoids could represent a novel approach to the treatment of anxiety-related:

- <http://jpet.aspetjournals.org/content/318/1/304.short>
- <http://www.sciencedirect.com/science/article/pii/S0091305705001346>

- <http://www.nature.com/nm/journal/v9/n1/abs/nm803.html>
- <http://onlinelibrary.wiley.com/doi/10.1046/j.1460-9568.2002.02192.x/abstract?deniedAccessCustomisedMessage=&userIsAuthenticated=false>

### Arthritis

Research articles presenting results that are indicating a reduced joint damage effect and preventive breakdown of collagen in Arthritis:

- <http://www.ncbi.nlm.nih.gov/pubmed/22530636>
- <http://www.ncbi.nlm.nih.gov/pubmed/16536902>
- <http://www.future-science.com/doi/abs/10.4155/fmc.12.20?journalCode=fmc>

### Cerebral Palsy and spasticity

Two research papers describing a mediated effect of cannabinoids to cerebral Palsy and spasticity:

- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2626929/>
- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3202504/>

### COPD (Chronic Obstructive Pulmonary Disease)

Some studies suggest a small improvement of the unpleasantness of breathlessness, however, more research is necessary to tell whether cannabinoids are really effective:

<http://crd.sagepub.com/content/8/2/109.short>  
<http://onlinelibrary.wiley.com/doi/10.1038/sj.bjp.0705435/full>

blogs/news articles:

[http://www.naturalnews.com/044664\\_cannabis\\_oil\\_COPD\\_marijuana.html](http://www.naturalnews.com/044664_cannabis_oil_COPD_marijuana.html)  
<http://www.healthy-holistic-living.com/cannabis-oil-works-copd-conventional-medications-fail.html>

### Crohn's disease (a.k.a. Crohn syndrome and regional enteritis is a type of inflammatory bowel disease (IBD))

Cannabinoids can, by activating two types of cannabinoid receptors, CB1 and CB2 receptors, have an effect of gastroprotection, reduction of gastric and intestinal motility and reduction of intestinal secretion:

- <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0009453#pone-0009453-t004>
- <http://informahealthcare.com/doi/abs/10.1517/13543784.12.1.39>

### Depression

Research articles indicating that cannabinoids can function as a tolerance and blockade of long-term depression at synapses in the nucleus:

- <http://www.jneurosci.org/content/23/12/4815.short>
- <http://onlinelibrary.wiley.com/doi/10.1111/j.1469-7793.1998.867bj.x/full>
- <http://www.jneurosci.org/content/19/16/6795.short>

<http://www.pnas.org/content/99/12/8384.short>

### Diabetes

Research articles showing results that are indicating that cannabinoids have an antiallodinic effect. Cannabinoids are believed to be deeply involved in all aspects of the control of energy balance, as important functions of endocannabinoids and CB1 receptors in this context are to enhance energy storage into the adipose tissue and reduce energy expenditure by influencing both lipid and glucose metabolism:

- [http://link.springer.com/chapter/10.1007/978-3-642-17214-4\\_4](http://link.springer.com/chapter/10.1007/978-3-642-17214-4_4)
- <http://diabetes.diabetesjournals.org/content/61/3/716.short>
- <http://diabetes.diabetesjournals.org/content/59/4/1046.short>
- <http://www.sciencedirect.com/science/article/pii/S0304394004010821>
- <http://diabetes.diabetesjournals.org/content/59/4/1046.short>

### Eosinophilia granuloma

Research articles presenting results of pilot studies, where a drug with cannabinoid like compounds resulted in resolution of clinical signs and was able to reduce eosinophilic granuloma and eosinophilic plaque generation in animals.

- <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2826.2008.01674.x/full>
- <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-3164.2001.00214.x/pdf>
- <http://onlinelibrary.wiley.com/doi/10.1111/j.1600-0625.2009.00923.x/full>
- <http://www.sciencedirect.com/science/article/pii/S1090023305002741>

### Epilepsy

Research articles presenting results that are indicating an anticonvulsant effect of cannabinoids by limiting the spread of epileptogenic activity:

- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1176332/>
- <http://www.ncbi.nlm.nih.gov/pubmed/16044663>
- <http://www.sciencedirect.com/science/article/pii/S009130578290418X>

### Fibromyalgia

Preliminary studies suggest that cannabinoids might be an effective therapy in patients with fibromyalgia, as patients experience significant improvements in clinical pain:

- <http://www.nature.com/nrrheum/journal/v4/n7/full/ncprheum0826.html>
- <http://europepmc.org/abstract/MED/15159679/>
- <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0018440#pone-0018440-g002>
- <http://www.rheumatologynetwork.com/articles/cannabinoids-and-pain>
- <http://www.sciencedirect.com/science/article/pii/S1526590007008735>

### Fibrosis

Some research articles describing the receptor activation by cannabinoid ligands, which may result in pro- or antifibrogenic effects depending on their interaction with CB1 or CB2, respectively:

- <http://jpet.aspetjournals.org/content/324/2/475.short>
- <http://www.sciencedirect.com/science/article/pii/S0002944010600752>
- [http://www.tandfonline.com/doi/abs/10.1300/J175v02n01\\_03](http://www.tandfonline.com/doi/abs/10.1300/J175v02n01_03)

### Glaucoma

Research articles presenting results that are indicating that cannabinoids may ameliorate optic neuronal damage through suppression of aspartate receptor hyperexcitability, stimulation of neural microcirculation, and the suppression of both apoptosis and damaging free radical reactions, among other mechanisms, such as effectively lowering the intraocular pressure:

- <http://www.sciencedirect.com/science/article/pii/S0163725802002590>
- <http://bjo.bmj.com/content/88/5/708.short>
- <http://onlinelibrary.wiley.com/doi/10.1046/j.0953-816X.2000.01401.x/abstract;jsessionid=AE20C29AD9CD2CBDE862BA3828DB7F57.f02t04?deniedAccessCustomisedMessage=&userIsAuthenticated=false>
- <http://archophth.jamanetwork.com/article.aspx?articleid=264203>
- <http://informahealthcare.com/doi/abs/10.3109/02713688409000797>

### Heart

Some research articles showing that cannabinoids contribute to cardioprotective phenomenon of remote ischemic preconditioning via cannabinoid receptors in the heart.

- <http://www.sciencedirect.com/science/article/pii/S0014299907010928>
- <http://jpet.aspetjournals.org/content/286/2/697.short>
- <http://www.sciencedirect.com/science/article/pii/S0024320502024748>

Cannabinoids inhibited the electrically evoked cardioacceleration

- <http://jpet.aspetjournals.org/content/297/2/819.short>

### Hepatitis C (can lead to Liver Cirrhosis)

Studies suggest that modest cannabis use may offer symptomatic and virological benefit to some patients undergoing HCV treatment by helping them maintain adherence to the challenging medication regimen:

- [http://journals.lww.com/eurojgh/Abstract/2006/10000/Cannabis\\_use\\_improves\\_retention\\_and\\_virological.5.aspx](http://journals.lww.com/eurojgh/Abstract/2006/10000/Cannabis_use_improves_retention_and_virological.5.aspx)

### Herpes - Simplex Virus Type 2 - Epstein–Barr virus (EBV, also called human herpesvirus 4)

Research articles about the effects of cannabinoids on the decrease of host resistance to infections, such as the herpes virus in vitro and animal experiments:

- <http://iaia.asm.org/content/23/3/670.short> (the highest doses in this research were 150mg/kg which is equal to approximately 0,25ml/kg of the RSHO oil)
- <http://www.sciencedirect.com/science/article/pii/S0165572897002270>
- <http://ebm.sagepub.com/content/182/2/181.short>
- <http://ebm.sagepub.com/content/181/2/305.short>
- <http://www.biomedcentral.com/1741-7015/2/34> (concentrations of THC inhibit EBV reactivation in virus infected/immortalized B cells)

### HIV Aids

Cannabinoids on HIV:

- <http://www.ncbi.nlm.nih.gov/pubmed/23463725>
- <http://www.ncbi.nlm.nih.gov/pubmed/22448282>

### Hyperplasia (BPH, Enlarged prostate)

A research article regarding BPH, indicating that administration of cannabinoids turns the vascular hyperplasia into a pattern of blood vessels that is characterized by small, differentiated and impermeable capillaries. This is associated with a reduced expression of vascular endothelial growth factor and other pro-angiogenic cytokines

- <http://www.sciencedirect.com/science/article/pii/S0302283809008616>
- <http://www.nature.com/nrc/journal/v3/n10/full/nrc1188.html> (only a small part of the article)

### Hypothyroidism

Research articles presenting results that are indicating that cannabinoids system can underlay the hyperactive phenotype associated with hypothyroidism.

- <http://press.endocrine.org/doi/abs/10.1210/en.2007-1586>
- <http://www.sciencedirect.com/science/article/pii/S030372071200456X>

### Inflammation

Research articles indicating that cannabinoids have immunosuppressive and anti-inflammatory properties, because they can modulate both the function and secretion of cytokines from immune cells:

- <http://www.nature.com/nri/journal/v5/n5/abs/nri1602.html>
- <http://www.sciencedirect.com/science/article/pii/S0165572805001608>
- [http://www.painjournalonline.com/article/S0304-3959\(01\)00454-7/abstract](http://www.painjournalonline.com/article/S0304-3959(01)00454-7/abstract)
- <http://www.sciencedirect.com/science/article/pii/S0304395901004547>
- <http://onlinelibrary.wiley.com/doi/10.1038/sj.bjp.0707531/full>

### Irritable bowel syndrome (IBS, or spastic colon)

Cannabinoids have similarly demonstrated the ability to block spinal, peripheral and gastrointestinal mechanisms that promote pain in headache, fibromyalgia, IBS and related disorders

- <http://europepmc.org/abstract/MED/15159679/reload=0;jsessionid=f1TepyEpNRADyPeTxj8n.22>
- <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2982.2010.01587.x/full>
- [http://journals.lww.com/jcge/Abstract/2011/01000/Cannabinoid\\_Receptor\\_1\\_Gene\\_Polymorphism\\_and.10.aspx](http://journals.lww.com/jcge/Abstract/2011/01000/Cannabinoid_Receptor_1_Gene_Polymorphism_and.10.aspx)



- <http://europepmc.org/abstract/MED/15159679/reload=0;jsessionid=f1TepyEpNRADyPeTxj8n.22>

## Leukemia

Articles regarding to the destructive effect of cannabinoids on leukemia cells.

- <http://www.leafscience.com/2013/10/14/cannabinoids-destroy-leukemia-cells-new-study-finds/>
- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC298868/>
- <http://bloodjournal.hematologylibrary.org/content/105/3/1214.long>

## Liver Cirrhosis

Some research articles describing how cannabinoids can limit the progression of liver fibrosis and even induce apoptosis and growth inhibition of hepatic myofibroblasts:

- <http://www.sciencedirect.com/science/article/pii/S0016508502182801>
- <http://jpet.aspetjournals.org/content/324/2/475.short>
- <http://www.nature.com/nm/journal/v12/n6/abs/nm1421.html>
- <http://informahealthcare.com/doi/abs/10.1517/14728222.11.3.403>

## Lymphoma

Some links to research done on the reductive lymphoma tumour cell viability and an increase in apoptosis effect of cannabinoids:

- <http://www.ncbi.nlm.nih.gov/pubmed/12091357?dopt=Abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/12091357?dopt=Abstract>
- <http://onlinelibrary.wiley.com/doi/10.1002/ijc.23584/abstract>
- <http://molpharm.aspetjournals.org/content/70/5/1612.abstract>
- <http://cancerres.aacrjournals.org/content/68/2/339.long>

## Multiple sclerosis (MS)

Cannabinoid receptors have been discovered in neural tissues. These receptors may play a role in mediating the effects of the cannabinoids. The research articles below indeed show results how cannabinoids can be used for the management of multiple sclerosis. In addition, there are findings that suggest that as well as ameliorating signs and symptoms of multiple sclerosis, cannabinoid CB1 and/or CB2 receptor activation may suppress some of the pathological changes that give rise to these signs and symptoms:

- <http://www.ncbi.nlm.nih.gov/pubmed/19901724>
- <http://link.springer.com/article/10.1007/s12035-007-0005-2>
- <http://www.sciencedirect.com/science/article/pii/S0163725802002553>
- <http://www.idmu.co.uk/oldsite/pdfs/canmsreview.pdf>

## Muscular dystrophy

Research articles regarding Muscular dystrophy and cannabinoid treatment:

- <http://www.sciencedirect.com/science/article/pii/S0300943277901066>
- <http://link.springer.com/article/10.1007/BF02124097>

## Osteoporosis (Bone disease)

Some research articles presenting results how blockade of CB1 receptors by cannabinoids stimulate adipocyte differentiation, inhibit osteoblast differentiation, and increase cAMP and pCREB in osteoblast and adipocyte precursors. The cannabinoid receptors are therefore unique in that it regulates peak bone mass and bone turnover through an effect on osteoclast activity, but protects against age-related bone loss by regulating adipocyte and osteoblast differentiation of bone marrow stromal cells:

- <http://www.sciencedirect.com/science/article/pii/S1550413109002022>
- <http://hmg.oxfordjournals.org/content/14/22/3389.short>
- <http://onlinelibrary.wiley.com/doi/10.1038/sj.bjp.0707593/full>
- <http://www.nature.com/nm/journal/v11/n7/abs/nm1255.html>
- <http://link.springer.com/article/10.1007/s00223-010-9378-8>

## Parkinson

some research papers describing that some cannabinoids, especially THCV (Garcia, 2011), could rescue dopaminergic neurons due to some anti-inflammatory mechanism:

- <http://www.campusmoncloa.es/en/news/can-a-cannabinoid-alleviate-parkinsons-disease/174/>
- <http://onlinelibrary.wiley.com/doi/10.1111/j.1476-5381.2011.01278.x/full>
- <http://www.ncbi.nlm.nih.gov/pubmed/19839934>
- <http://www.ncbi.nlm.nih.gov/pubmed/17168732>
- <http://www.ncbi.nlm.nih.gov/pubmed/10939305>

## Prostate

Stimulation of CB1 cannabinoid receptors have been shown to inhibit contractions of the rat prostate gland (Tokanovic et al., 2007 ). This action appeared to be indirect, and the authors used immunohistochemical techniques to localize the CB1 cannabinoid receptors to the prostatic epithelium. CB1 cannabinoid receptor expression has also been shown in the epithelial layer of the human prostate (Ruiz-Llorente et al., 2003). Furthermore, an anandamide uptake transporter and the fatty acid amidohydrolase enzyme, which degrades endocannabinoids, are also expressed in the human prostate (Ruiz-Llorente et al., 2004). More recently, CB1 and CB2 cannabinoid receptors have also been localized on sensory nerves innervating the human prostatic stroma and have been implicated in mediating inhibition of contraction (Gratzke et al., 2010). This indicates that cannabinoid receptors may also be a possible therapeutic target for the treatment of BPH.

- Tokanovic et al., 2007. <http://www.ncbi.nlm.nih.gov/pubmed/20180098>
- Ruiz-Llorente et al., 2003. <http://www.ncbi.nlm.nih.gov/pubmed/12497582>
- Ruiz-Llorente et al., 2004. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1574211/>
- Gratzke et al., 2010. <http://www.ncbi.nlm.nih.gov/pubmed/19733001>

## Psoriasis

Here are some research articles describing the decrease and inhabitation of keratinocyte proliferation by cannabinoids:

- <http://www.sciencedirect.com/science/article/pii/S092318110600315X>
- <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-3083.2004.01184.x/abstract;jsessionid=1E0E0EF7A4E6CC4001D89F1D6473BBAD.f03t01?deniedAccessCustomisedMessage=&userIsAuthenticated=false>
- <http://www.sciencedirect.com/science/article/pii/S016561470900128X>

## Sexual behaviour

Here are some of these research articles with a stimulating effect on the influence of sexual behaviour:

- <http://www.idmu.co.uk/cansex.htm>
- <http://www.pnas.org/content/98/3/793.full>
- [http://www.academia.edu/1390411/Cannabinoid\\_receptor\\_antagonism\\_increases\\_female\\_sexual\\_motivation](http://www.academia.edu/1390411/Cannabinoid_receptor_antagonism_increases_female_sexual_motivation)
- <http://www.ncbi.nlm.nih.gov/pubmed/24120423>

## Sleep Apnoea

Research shows that cannabinoids stabilize respiration during all sleep stages:

- <http://europepmc.org/abstract/med/12071539>
- <http://onlinelibrary.wiley.com/doi/10.1002/cbdv.200790150/abstract;jsessionid=10E4ED0BBE5E38CFCABE4E75143856FF.f01t03>

## Spasticity

Research articles regarding the effect of cannabinoids on spasticity:

- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2626929/>
- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3202504/>
- <http://www.medicaljane.com/2014/07/07/cannabis-classroom-cerebral-palsy-and-medical-marijuana/>

- <http://www.ncbi.nlm.nih.gov/pubmed/25158585>

#### **Spasticity associated with multiple sclerosis and cerebral palsy**

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2626929/>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3202504/>

<http://www.medicaljane.com/2014/07/07/cannabis-classroom-cerebral-palsy-and-medical-marijuana/>

<http://www.ncbi.nlm.nih.gov/pubmed/25158585>

#### **Tinnitus**

Some research articles about the anti-epileptic drug effect of cannabinoids which can reduce the severity of tinnitus. Given that cannabinoid receptor agonists have been shown to exert anti-epileptic effects in some circumstances:

- <http://medicalmarijuana.com/medical-marijuana-treatments/Tinnitus>

- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3002631/>

- <http://www.jscholaronline.org/articles/JPDM/Cannabis-Cannabinoids-and-Tinnitus.pdf>

#### **Ulcerative Colitis (form of IBD)**

Signalling pathway through cannabinoid receptors may reduce colitis-associated inflammation. Cannabinoids may therefor influence the manifestation of inflammatory bowel diseases, suggesting cannabinoids as potential target for future therapies:

- <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0009453>

- <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0006893#pone-0006893-g008>

# Effects of cannabinoids on cancer

## Brain (Glioma) cancer

Cannabinoids inhibit glioblastoma cell proliferation, expression and activity. The effects led to significant modulations of the cell cycle and induction of reactive oxygen species and apoptosis:

- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2806496/>
- <http://www.nature.com/bjc/journal/v95/n2/abs/6603236a.html>
- <http://www.ncbi.nlm.nih.gov/pubmed/15313899>
- <http://www.ncbi.nlm.nih.gov/pubmed/23079154?dopt=Abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/11714882>

## Bladder cancer

Decrease of viability and apoptosis of bladder cancer cells by the influence of cannabinoids:

- <http://www.sciencedirect.com/science/article/pii/S0090429510003663>
- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2878434/>
- <http://www.cps.org.tw/p/CJP/content/45/1/45133.pdf>

## Bone cancer

Attenuated effect of cannabinoids on bone cancer:

- <http://www.sciencedirect.com/science/article/pii/S000689930800807X>
- <http://www.sciencedirect.com/science/article/pii/S0024320510000755>
- <http://www.sciencedirect.com/science/article/pii/S0014299906013148>

## Breast cancer

Cannabinoids inhibits human breast cancer cell proliferation and invasion through differential modulation of the extracellular signal-regulated kinase and reactive oxygen species pathways, and eventually leading to down-regulation of metastasis expression and the activation of the intrinsic apoptotic pathway in breast cancer cells:

- <http://www.ncbi.nlm.nih.gov/pubmed/20859676>
- <http://www.ncbi.nlm.nih.gov/pubmed/21566064?dopt=Abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/22776349>
- <http://www.ncbi.nlm.nih.gov/pubmed/15749859?dopt=Abstract>

## Cholangiocarcinoma (Bile duct cancer)

Cannabinoids inhibited cell proliferation, migration and invasion, and induced cell apoptosis. They can also decreased actin polymerization and reduced tumour cell survival in anoikis assay. Consequently, some cannabinoids are potentially used to retard cholangiocarcinoma cell growth, metastasis, reduce joint damage effect and prevent the breakdown of collagen in Arthritis:

- <http://informahealthcare.com/doi/abs/10.1080/07357900903405934>
- <http://www.nature.com/labinvest/journal/v91/n7/abs/labinvest201162a.html>
- <http://www.jbc.org/content/282/17/13098.short>
- <http://www.ncbi.nlm.nih.gov/pubmed/22530636>
- <http://www.ncbi.nlm.nih.gov/pubmed/16536902>

## Colon cancer (Bowel cancer / colorectal cancer / rectal cancer)

Inhibition of tumour cell growth by modulating key survival signalling pathways by the influence of cannabinoids:

- <http://www.ncbi.nlm.nih.gov/pubmed/22231745>
- <http://www.ncbi.nlm.nih.gov/pubmed/16042581?dopt=Abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/23749906>
- <http://cancerres.aacrjournals.org/content/68/15/6468.short>

## Kidney cancer

Cannabinoids down regulate CB1 receptors in renal cell carcinomas:

- <http://jhc.sagepub.com/content/58/12/1129.short>

### Liver cancer

Reduction of viability of tumour cells, an inhabitation of tumour growth and even the induction of an apoptotic mechanism in tumour cells by the influence of cannabinoids:

- <http://www.ncbi.nlm.nih.gov/pubmed/21475304>
- <http://www.sciencedirect.com/science/article/pii/S0165460806004110>
- <http://molpharm.aspetjournals.org/content/77/5/854.short>
- <http://molpharm.aspetjournals.org/content/77/5/854.short>

### Lung cancer

Anti-invasive and antimetastatic effect of cannabinoids in primary tumour cells from lung cancer patients:

- <http://www.ncbi.nlm.nih.gov/pubmed/22198381?dopt=Abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/21097714?dopt=Abstract>
- <http://www.nature.com/onc/journal/v27/n3/abs/1210641a.html>
- <http://www.ncbi.nlm.nih.gov/pubmed/10861074?dopt=Abstract>

### Meningioma cancer

Stimulation of the cannabinoid receptors in the human body can act as an anti-tumour mediator:

- <http://onlinelibrary.wiley.com/doi/10.1111/j.1471-4159.2005.03013.x/full>
- <http://onlinelibrary.wiley.com/doi/10.1046/j.1471-4159.2001.00092.x/full>

### Mouth & Throat cancer

Cannabinoids are potent inhibitors and have a toxic effect to oral cancer cells:

- <http://www.ncbi.nlm.nih.gov/pubmed/20516734>

### Multiple myeloma (plasma cell myeloma/Kahler's disease)

A new research article from 2014 shows results how cannabinoids can inhibit growth, arrest cell cycle progression and induced MM cells death by regulating pathways. These results provide a rationale for using cannabinoids to increase the activity of proteasome inhibitors in MM:

- <http://onlinelibrary.wiley.com/doi/10.1002/ijc.28591/abstract;jsessionid=609D44474AEDE276F6407A5C4E6CB859.f04t01?deniedAccessCustomisedMessage=&userIsAuthenticated=false>

### Neuroblastoma

Inhibition of N-type calcium channels by cannabinoids could decrease excitability and neurotransmitter release.

- <http://www.pnas.org/content/89/9/3825.short>
- <http://molpharm.aspetjournals.org/content/44/3/498.short>
- <http://onlinelibrary.wiley.com/doi/10.1111/j.1476-5381.1992.tb14321.x/abstract>
- <http://molpharm.aspetjournals.org/content/26/3/532.short>

### Ovarian cancer

Antiproliferative effect on ovarian cancer cells by cannabinoids:

- <http://www.aacrmeetingabstracts.org/cgi/content/abstract/2006/1/1084?maxtoshow&hits=80&RESULTFORMAT&fulltext=cannabinoid&searchid=1&FIRSTINDEX=560&resourcetype=HWCIT>
- <http://www.ncbi.nlm.nih.gov/pubmed/8812248>

### Pancreatic cancer

Cannabinoids inhibit pancreatic adenocarcinoma cell growth and lead to apoptosis of pancreatic tumour cells via CB2 receptors:

- <http://cancerres.aacrjournals.org/content/66/13/6748.abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/17943729>
- <http://www.nature.com/cddis/journal/v2/n4/abs/cddis201136a.html>

### Prostate cancer

Anti-androgenic, cell viability and increased apoptosis effects of cannabinoids on prostate tissue:

- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3339795/?tool=pubmed>
- <http://www.ncbi.nlm.nih.gov/pubmed/12746841?dopt=Abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/22594963>

### Stomach/gastric cancer

Cannabinoids suppress proliferation on gastric cancer cell, through the induction of apoptosis. It seems that cannabinoids synergistically enhance the cytotoxic effect of paclitaxel on gastric cancer cell and can reduce gastric cancer cell proliferation via cell cycle arrest:

- [http://www.journalofsurgicalresearch.com/article/S0022-4804\(08\)00452-6/abstract](http://www.journalofsurgicalresearch.com/article/S0022-4804(08)00452-6/abstract)
- <http://onlinelibrary.wiley.com/doi/10.1002/jcb.22540/abstract;jsessionid=381F860F0232E51A2A6577545091E91B.f04t02?deniedAccessCustomisedMessage=&userIsAuthenticated=false>
- <http://onlinelibrary.wiley.com/doi/10.1002/jcb.23041/abstract?deniedAccessCustomisedMessage=&userIsAuthenticated=false>

### Skin cancer

Activation of cannabinoid receptors induced the apoptotic death of tumorigenic epidermal cells whereas the viability of non-transformed epidermal cells remained unaffected. Furthermore cannabinoids can induce a considerable growth inhibition of malignant tumours:

- <http://www.ncbi.nlm.nih.gov/pubmed/12511587>
- <http://cancerres.aacrjournals.org/content/68/10/3992.short>
- <http://cancerres.aacrjournals.org/content/68/2/339.short>

### Uterine cancer (Cervical cancer)

Cannabinoids inducing apoptosis on cervical carcinoma cell lines, by specific targeting, and inhibit cell proliferation. Cannabinoids also seem to have a mediated a protective effect:

- <http://www.sciencedirect.com/science/article/pii/S0090825803009521>
- <http://jnci.oxfordjournals.org/content/100/1/59.abstract>
- <http://www.ncbi.nlm.nih.gov/pubmed/8812248>