# CANNABIS

**It should be mentioned that although Cannabis is legal in Canada at time this was written (2026), and in fact it is an herb that you can grow in your garden or in house (allowed 3 plants per person at this time), this does not mean that it is the answer to all your problems.**

**Many people use it to help them cope with Cancer. That is the majority of its usage, but it should be noted that it doesn't cure cancer, and if possible, other holistic methods can be taken to help the body heal itself from cancer. Everyone has to make up their mind about what energy, time, money and procedures they want to employ when they are sick.**

**I will tell you a story about my usage. I don't particularly like cannabis. I don't like the smell, taste, or very much about it. If you have a choice as to how to take it – do the pills. Any type of smoke to the brain is going to injure the brain cells, even campfire smoke. So I went to the doctor and said that I have insomnia since menopause and should I try cannabis. The prescription was some sort of disgusting paste, but I took it for a couple of nights, just couldn't stand the taste. Then I put it into a brownie snack and tried it, tasted a bit better. Next I decided to grow it myself so I had a product with no chemicals and I could make it into an oil. After trying to nurture the plant that was eaten by aphids and God knows what else, I gave up on that.**

**Finally the local shops started opening on many streets in the town and I went in to see what they had. They had 5 mg of THC. So I tried them – and they worked so well. Lovely sleep, 7-8 hours. But in about 5-6 months I was only getting 4 hours sleep a night, so I took two pills (10mg). Several months later I increased the dosage to 3 pills a night (15mg). This kept going over the next couple of years until I was taking 30mg a night. It was working, but I was having weird side effects. Doom and gloom at night while I was in bed. I figured it was the marijuana and ignored it but it was really weird.**

**Then I started have stomach flu occurrences – stomach flu that lasted 1-3 weeks at a time. I also seemed to have a headache every night around 8:30pm. I was losing weight and thought the problem was because I was born with stomach problems and age was just enhancing the weakness. It continued on and off for 2 years and one day I thought, "I wonder if the cannabis could be at the base of this, probably not, it is just a natural weed", but I went on the internet and searched for cannabis and gastro problems. Turns out that long term use can cause gastro-enteritis.**

**So I stopped taking my nightly crutch and also stopped sleeping. I still had a couple of bouts of gastro-enteritis and then it stopped. No more stomach flu. That is not the end of the story unfortunately. I then tried a non-addictive sleeping pill that was suppose to be harmless and started having terrible headaches which also kept me awake and that got worse each month until I decided to stop everything and just not sleep. I went into withdrawal for a month, curled up into a little ball, drinking gallons of water to stop the headaches, and detoxed the brain from the damage done by the sleeping pill. I didn't sleep much, but after a month I was getting 2-3 hours sleep a night and occasionally no sleep at all. Within 6 months, I was getting 3-4 hours sleep, just up all night once in a while. I changed some of my routines, took out all electrical apparatus from where I was sleeping. Started going to bed early and relaxing (boring but it helped). Within a year the sleeping pattern was improved, not perfect, but vastly improved.**

**So I mention this to let people know that even a simple garden plant can lead to unwanted side effects. Be aware of everything that goes into your body. Treat it like the temple it is.**

**Having said that, I am sharing here the information I gained to educate myself about cannabis. This information was gathered around 2022 - 2023.**



## INDICA STRAINS

CRITICAL MASS
HINDU KUSH
GRAND DADDY PURP
SENSI STAR
G13
BLUEBERRY
AFGHANI
CHEM DOG
BUBBA KUSH



## SATIVA STRAINS

ACAPULCO GOLD
AMNESIA HAZE
DURBAN POISON
STRAWBERRY COUGH
SUPER LEMON HAZE
CHOCOLOPE
SUPER SILVER HAZE
SOUR DIESEL
JACK HERER
MAUI WAUI



## HYBRID STRAINS

GIRL SCOUT COOKIES
WHITE WIDOW
CHEMDAWG 91
SKUNK #1
BRUCE BANNER #3
CANNATONIC
NORTHERN LIGHTS #5
OG KUSH
AK-47
HEADBAND

| | STRESS | PAIN | INSOMNIA | DEPRESSION | INFLAMMATION | LACK OF APPETITE ..... | DRY MOUTH | DRY EYES | DIZZY | PARANOID | HEADACHE | ANXIOUS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **INDICA STRAINS (deep relaxation)** | | | | | | | | | | | | |
| Critical Mass<br>THC: 19-22% CBD: | XXX | XX | XX | XX | X | | XXX | XXX | XX | X | X | |
| CBD Critical Mass<br>(+ muscle spasms) | XX | XXX | | XX | XX | | | | | | | |
| Blueberry Kush | XXX | XX | XX | X | X | | XXX | XX | X | X | X | |
| **Crown Royale<br>(blueberry/purple kush) | XX<br>21% THC | XXX<br>2% CBD | | XX | & muscle spasms/cramps | | XX | XXX | | | | |
| Northern Lights | XXX | XXx | XX | XX | | X | XXX | X | X | x | x | x |
| Grandaddy Purple | XXX | XX | XX | XX | | X | XXX | XX | X | x | x | |
| Bubba Kush | XXX | XX | XXX | XX | | X | XXX | xx | X | x | x | |
| **Purple Kush<br>24-25% THC CBD: .2-.4 | XX | XX | XXX | xx | | xx | XXX | xx | x | x | x | |
| Purple OG Kush | XXX | XXX | xx | XX | | xx | XXX | XXX | xx | | xx | xx |
| Pink Kush<br>THC 21.4% CBD .05% | XXx | XX | XXX | XX (& headaches) | | | | | | | | |
| Girl Scout Cookies GSC<br>THC: 20.1% CBD .05% | | | | | | | | | | | | |
| **HYBRID STRAINS (strains between Indica and Sativa. They are broken into two categories, those with Sativa dominant – cerebral high with relaxation that are best for boosting creativity and the Indica dominant that are best for the body high and night time)** | | | | | | | | | | | | |
| Blue dream | XXX | XX | | XXX | | | XXX | XX | x | x | | x |
| GSC(girl scout cookie)<br>THC 19.9%; CBD .05% | XXX | XX | X | XX | | X | XXX | XX | X | X | | X |
| OG Kush | XXX | XX | Xx | XX | | xx | XXX | XX | X | X | | X |
| Bubble Gum | XXX | XX | Xx | Xxx | | xx | XXX | XX | X | x | | x |
| White Widow | XXX | XX | xx | XX | | xx | XXX | XX | x | x | | x |

**SATIVA (more energizing – Rick Simpson says you need to rest and sleep to heal so he doesn't recommend any Hazes or Sativa type**

## STRONGEST THC STRAINS:

**Kosher Kush 21.5%**
**Bruce Banner 23.4%**
**Bruce Banner #3 29%**
**Ghost Train Haze 20.8% (sativa dominant) use small doses**
**Ghost OG 25.7%**

**The White 24.3%**
**Death Star 21.6%**
**Chemdawg 23.0%**
**White Fire OG 23.2%**
**King Tut 30%**
**Blissful Wizard 28-34%**
**Girl Scout Cookies 28%**
**Tickle Kush 28%**
**Pink Kush 21%**

**DO NOT USE HAZE STRAINS says Rick Simpson**

## BEST CBD STRAINS:

**Berry Blossom 100% organic. 13-16%, no THC**
**Critical Mass**
**Charlotte's Web 20%. Name came from 5 year old girl named Charlotte who used to overcome 50 seizures a day.**
**ACDC 20:1 CBD:THC 50% sativa and 50% indica**
**Harlequin 15% (6% THC)**
**Jamaican Lion: 13% suppose to be 1:1**
**Cannatonic: 5-17%**
**Sour Tsunami:**
**Avi-dekel: 16%, no THC. Along with Charlotte's Web, it was noted for cancer treatments**
**Stephen Hawking Kush: Indica. not sleepy but soothing, relaxed and happy**
**Pennywise: Indica. For relaxed, happy, euphoric, able to function.**

**Best strains for CHRONIC INFLAMMATION: Blueberry, Chocolope, Gold Leaf**
**Best for Colitis, Crohns, etc.: use CBD heavy indica such as Cheese and Blueberry.**
**Best for Pain: King's Kush;**

## BRAIN CANCER:

**McAllister showed that a combination of THC and CBD is much more efficient at killing cells from an aggressive brain cancer, glioblastoma multiforme, than either cannabinoid onits own. Marcu got the idea to test cannabinoids in combination because the plant itself deploys them in combination,and he entitled his poster "Plant Wisdom:CBD Synergizes with THC to Inhibit GBM Proliferation and Survival. Marcu says "Looking at chro-matograms of plant samples, I noticed that certain cannabinoid ratios were showing up frequently. THC to CBD in a 10-to-1 ratio was very common. So I thought a 10-to-1 ratio would be more effective than either compound alone. Sean McAllister suggested that we start by testing the cannabinoids individually,and that's what we did starting with the precursor compound CBG⌕ to see how well they killed cancer cells in the petri dish arcu measured the efficacy of THCand THC acid, CBD and CBD acid, cannabinol and cannabichrome. Then hestarted testing various combinations "and that's when we started seeing surprising results," he recounts. "Doses that literally did not kill a statistically significant amount of cancer cells were suddenly obliterating everything in the petridish in three days."The most efficient combination turned out to be a 4-to-1 ratio of THC to CBD. Whether that THC-to-CBD ratio is optimal only in the case of one particular cell line, or holds true in treating other glioblastomas, or other cancers, re-**

mains to be studied. Marcu, McAllister et al also deter-mined that cannabinoids in combination kill cancer cells by a different pathway than cannabinoids acting solo. Marcu's analogy for the layman: "Instead of choking the victim, 'you hold his arms while I punch him in the stomach.'"Individually or in combination, cannabinoids kill cancer cells by inducingapoptosis "programmed cell death".
Cannabinoids in combination induce apoptosis earlier in the cancer cell's lifecycle ρwhich is good news, given the goal of preventing metastasis.The cells go through three phases: initial growth, synthesis of DNA, division."Cancer cells grow and divide, grow and divide, and soak up all the nutrients around them," says Marcu. "You wan tto inhibit them in the growth phases, if possible. And that's what the combination of cannabinoids does, we found."Marcu was outside smoking a cigarette when his first prize was announced at the ICRS awards banquet. "I have since tried to quit," he says ruefully.Marcu applauds the work of Antonio Luchini, the grad student whose presentation took second place. Luchini showed that inhibiting FAAH can reduce the cocaine reward response.

**SKIN CANCER:** As the research has not been done to know what particular strain is best suited to a particular condition or cancer, Rick says to use several suitable Indica dominant or pure Indica strains high in THC ( ideally 20% to 25%+ ) and typically low in CBD ( around 1 % ) to create a blanket effect of cannabinoids to try to cover all the bases. Ideally the oil is applied neat and covered with a bandage or plaster for 3 days, then reapplied until it disappears / shrinks or falls off. A great salve would be.. Using 2mls++ of the cannabis oil with 100 grams of cocoa butter ( absorbs well ), warmed / blended together.. Not forgetting to ingest the oil to get to it from the inside, ingested oil alongside the topical application is best, using neat / pure oil or as neat as possible is best when / where possible. If necessary, take the time to check the thread marked "Attention new members" that is posted on all recent threads on Rick's Facebook page for more basic information. Worth mentioning that.. Although a Sativa salve would work, some people are affected when it comes into contact ( get high ), Sativa makes people feel more energetic and may not be suitable for everyone.. when ingested a Sativa is unbearable: won't allow people to sleep for days, hallucinations etc, not what we recommend as people give up treatment. Most either apply topically / neat if possible & Ingest the full protocol ( 60 MLS / grams over 90 days ) or some only ingest a super tiny daily maintenance / preventative dose as mentioned on the "Attention new members" thread that is posted on all recent threads on Rick's Facebook page.. It's always best to follow the full protocol when possible, 60 grams is usually enough, although no guarantees can be made with any treatments including this one.. Rick says miracles are a common occurrence when using the real home made oil. Ingesting the oil has massive benefit in any amount, if following the full protocol, always follow the dosage instructions to the letter when possible .

Many people are said to be using White Widow for cancer treatment which is a Hybrid.

**For pancreatic Cancer:** Looking for good reasons to grow your own medical marijuana to help you treat pancreatic cancer and the side effects of other cancer treatments. It takes the right amount of THC to effectively combat the pain, nausea, and vomiting caused by chemotherapy, radiation and other treatments used to fight cancer.
You also need the right amount of CBD to control the emotions surrounding having cancer, including depression, nervousness, and anxiety. Growing your own cannabis gives you complete control over the strain of marijuana you grow, and how much THC and CBD it contains.

Medical cannabis strains that are high in THC are most effective for treating nausea and vomiting. Try growing some THC-heavy strains such as Afghan Kush, Trainwreck and Green Crack to improve appetite and reduce pain.

For Cancer. Symptoms vary according to which type of cancer you have.

For cancer pain:

Blackberry Kush (THC heavy indica strain).

ACD sweet citrisy hybrid strain if trying to avoid psychoactive effects of THC.

**Harliquin has THC and CBD, annihilates pain with minimal mental cloudiness. Sativa helps.**

**For cancer nausea:**

**Northern Lights keeps glued in one spot for a while but calms stomach and sour stomachs.**

**Blueberry Diesel . Balancing. Not racy or lethargic. Settles stomach, lifts mood.**

**Sativa: if you want to stay up and active but stomach is keeping you down.**

**For loss of appetite:**

**Bubba Kush, high THC, gives ravenous hunger but tends to keep you up and alert.**

**Skywalker OG: Boosts appetite without feeling overly lethargic. Uplifting.**

**Granddaddy Purple: boosts appetite**

**For Cancer depression:**

**Super Silvee Haze – sativa strain.**

**Chernobyl: (Hybrid) jumpstarts energy and mood any time of the day.**

**For Cancer Fatigue:**

**Strawberry Cough (Sativa)**

**Pineapple Express (Hybrid)**

**Chocolope (Sativa)**

**For Fibromyalgia: Blue Dream (sativa) really good for stress; Harlequin really good for pain; Cannatonic for pain, stress, clearing mind. Critical Mass for pain, depression, insomnia. Tahoe OG. Granddaddy Purple- stress, pain, insomnia. GSC (girl scout cookies) – stress, depression, pain. Blueberry- stress, pain, insomnia. Bubba Kush for Stress, Pain, Insomnia. Headband is hybrid for Stress, Depression, Pain.**

**FOR INSOMNIA: use indicas. Inhaling is faster, but edibles can help stay asleep longer. Aged cannabis can have sleepier effects than fresh flower.**
**Cannabis sativa, can relieve pain, increase mobility, and help patients sleep better. It's also a natural source of CBD. If you grow your own Cannabis sativa, you can have this relief whenever you need it. Simpson doesn't recommend it medically because it energizes and can keep you awake, and sick people need to sleep and relax.Go easy on t he high THC strains if it is anxiety keeping you up. A light dose of these strains can float you to sleep, but larger doses can worsen anxiety in some. Try a strain with some CBD in it if you are sensitive to THC which often eases its anxious side effects.**
**Recommended: Tahoe OG Kush; Granddaddy Purple; Skywalker – use small amount, large doses can exacerbate anxiety; God's Gift; Afghan Kush(also knocks' out pain, anxious thoughts); Northern Lights; uses high THC to annihilate pain and insomnia, pay mind to dose low and slow. Ogre; Querkle; Pound Hammer if the mind can't stop thinking; Big Bud.**
**Higher doses of THC can cause a hangover effect so keep doses small.**

## FOR MENOPAUSE SYMPTOMS (hot flushes, etc)

1. **Blue Dream - Hybrid**
2. **Girl Scout Cookies, Hybrid**

3. **Sour Diesel – Sativa**
4. **OG Kush - Hybrid**

## FOR DEPRESSION, WOMEN

**they like high CBD strains, they are uplifting**

1. **Charlotte's Web, Sativa**
2. **Green Crack, Sativa**
3. **Harlequin, Sativa**
4. **Lemon Kush, Hybrid**
5. **Others: Cannatonic, Skywalker, Agent Orange, Jack Herer**

## FOR FATIGUE:

**Strawberry Cough (Sativa)**
**Pineapple Express (Hybrid)**
**Chocolope (Sativa)**
**Sour Diesel (Sativa)**
**Green Crack (Sativa)**
**Jack Herer (Sativa)**
**White Widow (Hybrid)**
**Durban Poison (Sativa)**
**Trainwreck (Hybrid)**
**Indica strains for fatigue: Jesus OG; Bubblegum Kush; Paris OG; M-39; SupermanOG; Nuken;**

**For ACNE:** **THC increases oil production; CBD has opposite effect. CBD Inhibits Lipid Synthesis and induces Cell Death in Human Sebaceous Gland-Derived Sebocytes."Acne involves the overproduction of sebum, a lipid (oily substance) excreted by the sebaceous glands to create water-proofing of the skin. Conversely, lipid production is too low in dry-skin conditions such as seborrhea, eczema and itch-ng (which can lead to inflammation). It has been learned in recent years that the sebaceous glands and hair follicles(which also produce oil) have endocannabinoid receptors, as do the surface keratinocytes.**

## WHERE TO BUY (these are available in Canada where Cannabis is legal):

**CROP KING 1 844 276-7546 or local (6040 563-0291 They only sell seeds, no buds.**

**UPPER CANADA SEED BANK: uppercanadaseedbank.ca. They carry feminized cannabis seeds so you are guaranteed bud production. Payment is by e-transfer.**

**LEAFLY: www.leafly.com They are located in Hope, B.C. They don't sell anything, just info. Very good website explaining all the strains.**

**CANNA FARM: cannafarms.ca need to register a medical document with them.**

**birchandfog.com – in Vancouver, no medical card needed. Free shipping over $150**
**BIRCHANDFOG.COM: my password is shamballa**

**BC BUD: I am registered under user name ldcares. P/w shamballa**
**bcbud.store – you can order buds without a prescription from these people. No medical card needed.**

**cannabiscare.ca – medical cannabis on line**
**medcannabiscanada.ca – medical cannabis on line**

**Other: cannacaelan@protonmail.com**

**the connaisseur.wordpress.com**

**medcannabis canada**

# Information about OG Kush:

| | |
|---|---|
| **ORIGIN** | **Chemdawg Crossed with Old World Paki Kush** |
| **EFFECTS** | **Relaxed – 10**<br>**Happy – 9**<br>**Euphoric – 8**<br>**Pplifted – 7**<br>**Hungry – 5** |
| **ADVERSE REACTIONS (NEGATIVE)** | **Dry Mouth – 10**<br>**Dry Eyes – 6**<br>**Dizzy – 4**<br>**Paranoid – 3**<br>**Headache – 2** |
| **FRAGRANCE** | **Lemon, Sour, Earthy, Pine** |
| **FLAVORS** | **Earthy, Pine, Spicy, Herbal, Woody** |
| **MEDICAL** | **Stress – 10**<br>**pain – 8**<br>**depression – 8**<br>**insomnia – 6**<br>**headaches – 5** |
| **FLOWERING TIME INDOORS** | **8-9 Weeks** |
| **FLOWERING TIME OUTDOORS** | **Early October** |
| **PLANT HEIGHT** | **Low but Dense** |
| **THC CONTENT %** | **19-26%** |
| **CBD %** | **0.30%** |
| **INDICA / SATIVA %** | **75% / 25%** |
| **INDOOR YIELD** | **17oz/ m2** |
| **OUTDOOR YIELD** | **16 oz/ Plant** |
| **CLIMATE** | **Hot and Tropical** |
| **GROWTH LEVEL** | **Moderate** |
| **RESISTANCE TO DISEASE** | **Susceptible to Powdery Mildew, Low Resistance to Bugs and Disease** |

# Information about Bubba Kush strain

**Bubba Kush is a distinctive indica strain widely popularized among recreational and medical users world wide. Its strong tranquilizing properties guarantee a beautifully dreamy euphoric state, making Bubba Kush the go-to choice for those seeking a stress-crushing smoke.**

**A famed native of California, Bubba Kush is said to have been created by crossing an OG Kush hybrid with an unknown indica rumoured to be from New Orleans. Its parentage is also known to stem from Northern Lights, however, it isn't 100% certain.**

**Bubba Kush was created in 1996, and has since become somewhat of a sensation. It has gained notoriety in the United States for being heavy on the couch-lock, making Bubba Kush a popular and effective relaxant.**

**Bubba Kush is an exceptionally effective muscle relaxant. Muscle tension is easily eased with a couple of puffs of this strain, and a pleasant, heavy euphoria is quickly observed. It is the quintessential happy-strain, putting the mind and body at ease without delay.**

**If you are trying to stay focused, this isn't the strain for you. Bubba Kush has a high that is hazy and soothing, and plunges you in a dream-like state with an intense head high that can contain visuals. It can induce a state of relaxation, and sleepiness, if consumed in larger doses.**

| | |
|---|---|
| **ORIGIN** | **OG Kush with a rumoured Northern Lights or Afghani** |
| **EFFECTS** | **relaxed – 10**<br>**sleepy – 7**<br>**happy – 7**<br>**euphoric – 6**<br>**hungry – 5** |
| **ADVERSE REACTIONS (NEGATIVE)** | **dry mouth – 10**<br>**dry eyes – 5**<br>**dizzy – 3**<br>**paranoid – 3**<br>**anxious – 2** |
| **FRAGRANCE** | **spice, sweet, earthy, coffee, nutty** |
| **FLAVORS** | **earthy, sweet, pungent, chocolate, coffee** |
| **MEDICAL** | **stress – 10**<br>**pain – 8**<br>**insomnia – 7**<br>**depression – 6**<br>**lack of appetite – 4** |
| **FLOWERING TIME INDOORS** | **8-9 weeks** |
| **FLOWERING TIME OUTDOORS** | **End of October** |
| **PLANT HEIGHT** | **Short** |
| **THC CONTENT %** | **14-22%** |
| **CBD %** | **0.06%-0.1%** |
| **INDICA / SATIVA %** | **90% / 10%** |
| **INDOOR YIELD** | **15oz/ m2** |
| **OUTDOOR YIELD** | **20oz/ plant** |

| | |
|---|---|
| **CLIMATE** | **warm, springtime climate** |
| **GROWTH LEVEL** | **Tall** |
| **RESISTANCE TO DISEASE** | **High** |

**** 10 is the highest***

**** 1 is the lowest***

**WHITE WIDOW**

**Among the most famous strains worldwide is White Widow, a balanced hybrid first bred in the Netherlands by Green House Seeds. A cross between a Brazilian sativa landrace and a resin-heavy South Indian indica, White Widow has blessed every Dutch coffee shop menu since its birth in the 1990s. Its buds are white with crystal resin, warning you of the potent effects to come. A powerful burst of euphoria and energy breaks through immediately, stimulating both conversation and creativity. White Widow's genetics have given rise to many other legends like White Russian, White Rhino, and Blue Widow. Still, many growers prefer cultivation of the original White Widow, which flowers in about 60 days indoors.**

## Information about White Zombie :

**White Zombie is an uplifting hybrid that means more on its Indica qualities. This strain is ideally enjoyed on the lazy days when you have the time to simply kick back and relax. This strain is high in THC and effective as a medical strain, as well as for recreational use.**

**White Zombie is a potent IndiCa dominant hybrid strain with unknown parentage, although much speculation points towards Zombie OG as one of its parent strains. This bud is euphoric and relaxing at the same time, and is ideal as an evening strain, or to be enjoyed on those days when you don't have any responsibilities to take care of.**

**This plant is also a soothing medical strain it is widely used for the treatment of many chronic conditions. White Zombie is highly effective in treating anxiety and depression and other mood related issues, as it is relaxing and uplifting at the same time.**

**White Zombie is very good at inducing a good vibe, causing me to feel happier then when you started your day. This strain is favored by artists and musicians for the inspiration it provides in terms of creativity, allowing them to continue creating without boundaries.**

**This Indica dominant plant is known for the total relaxation it induces, making you feel calm and chilled out, and allowing you to forget all your worries. White Zombie is best enjoyed in good company, surrounded with friends who are also out to simply chill and hang out without any particular agenda.**

**White Zombie can make you feel euphoric for hours on end, making you smile from ear to ear and burst out in sudden fits of giggles. This strain is super effective in making you feel uplifted, and will cause you to feel more positively and optimistic as you go about your day.**

**Fragrance**

**White Zombie is a strong smelling as a plant, and will fill the room with its pungent aroma right away. This Indica hybrid also smells woody and earthy, which will add to the total experience of an invigorating smoking experience.**

**Flavors**

**White Zombie is more diverse in taste, with a pungent flavor dominating its over all personality. This strain will taste like sage and pine on the inhale, well on the exhale you will notice a sweet and woody aftertaste, that will make your tongue feel sticky and sweet.**
**Adverse Reaction**

**White Zombie has some adverse reactions due to its THC levels reaching up to 18%, but most of its side effects Will only affect less experienced smokers. This strain will make you feel dehydrated, and your mouth will feel dry and parched after smoking.**

| | |
|---|---|
| **ORIGIN** | **UNKNOWN** |
| **EFFECTS** | **happy – 10**<br>**creative – 8**<br>**relaxed – 8**<br>**euphoric – 8**<br>**uplifted – 7** |
| **ADVERSE REACTIONS (NEGATIVE)** | **dry mouth – 10**<br>**dry eyes – 6**<br>**headache – 3**<br>**anxious – 3**<br>**dizzy – 2** |
| **FRAGRANCE** | **woody, earthy, pungent** |
| **FLAVORS** | **pungent, sage, earthy, pine, sweet, woody** |
| **MEDICAL** | **stress – 10**<br>**depression – 8**<br>**pain – 7**<br>**lack of appetite – 4**<br>**insomnia – 4** |

**** 10 is the highest***
**** 1 is the lowest***

# Information about Hindu Kush Strain:

| | |
|---|---|
| **ORIGIN** | **landrace pure indica from region between Pakistan and Afghanistan** |
| **EFFECTS** | **relaxed – 10**<br>**sleepy – 7**<br>**happy – 6**<br>**euphoric – 6**<br>**hungry – 4** |
| **ADVERSE REACTIONS (NEGATIVE)** | **dry mouth – 10**<br>**dry eyes – 7**<br>**dizzy – 3**<br>**paranoid – 2**<br>**anxious – 1** |
| **FRAGRANCE** | **earthy, fragrant, pine, sweet, pungent** |
| **FLAVORS** | **herbal, lemon, pine, spicy, sweet, woody** |
| **MEDICAL** | **stress – 10**<br>**insomnia – 9**<br>**pain – 9**<br>**depression – 5**<br>**lack of appetite – 4** |
| **FLOWERING TIME INDOORS** | **7-8 weeks** |
| **FLOWERING TIME OUTDOORS** | **late September, early October** |
| **PLANT HEIGHT** | **Short** |
| **THC CONTENT %** | **15%-20%** |
| **CBD %** | **0.50%** |
| **INDICA / SATIVA %** | **100% indica** |
| **INDOOR YIELD** | **14oz/ m2** |
| **OUTDOOR YIELD** | **16oz/ plant** |
| **CLIMATE** | **warmer outdoor climates** |
| **GROWTH LEVEL** | **easy** |
| **RESISTANCE TO DISEASE** | **high resistance** |

- ***10 is the highest***
  **** 1 is the lowest***

# Northern Lights

If you know anything about strains, you would know about this one. A renowned and respected near-pure indica, Northern Lights has become a famed relaxant. This strain is big among indica-lovers, and with good reason – it is notoriously happy-go-lucky and perfect for putting a troubled mind to sleep.

By mixing an Afghani indica with a Thai sativa, Northern Lights was created. Hailing from the outskirts of Seattle, Washington, it was propagated out of the Netherlands in 1985 and has since become a legend in its own right.

Its reputation for being fast-acting and an instant hit is everything Northern Lights is about. For this reason, it has gained traction in California, and has quickly climbed up the ranks for one of the most in demand strains.

| | |
|---|---|
| **ORIGIN** | **Afghani Indica crossed with a Thai Sativa** |
| **EFFECTS** | **relaxed – 10**<br>**happy – 8**<br>**euphoric – 7**<br>**sleepy – 7**<br>**uplifted – 5** |
| **ADVERSE REACTIONS (NEGATIVE)** | **dry mouth – 10**<br>**dry eyes – 7**<br>**dizzy – 2**<br>**paranoid – 1**<br>**headache – 1** |
| **FRAGRANCE** | **sweet, bitter, spicy, citrus** |
| **FLAVORS** | **earthy, sweet, pine, lemon, skunk** |
| **MEDICAL** | **stress – 10**<br>**pain – 8**<br>**insomnia – 7**<br>**depression -7**<br>**lack of appetite – 3** |
| **FLOWERING TIME INDOORS** | **7-9 weeks** |
| **FLOWERING TIME OUTDOORS** | **Mid October** |
| **PLANT HEIGHT** | **Average** |
| **THC CONTENT %** | **18%** |
| **CBD %** | **0.10%** |
| **INDICA / SATIVA %** | **90% / 10%** |
| **INDOOR YIELD** | **18oz/ m2** |
| **OUTDOOR YIELD** | **22oz/ plant** |
| **CLIMATE** | **sunny mediterranean climate** |
| **GROWTH LEVEL** | **easy** |
| **RESISTANCE TO DISEASE** | **high** |

** 10 is the highest*
** 1 is the lowest*

**Effects**

**As is expected from a clear indica, Northern Lights is a soothing-smooth friend who will ensure you some real relaxation. It induces a powerful heavy-body high that makes you want to sink into your couch and stay in there, nestled and tucked in.**

**The flow that Northern Lights pulls you into, is one guaranteed to conjure all your happy thoughts. There is a certain euphoric high that comes with it and the smiles and laughter is guaranteed to be instantly infectious.**

**Whatever it is that has been bothering you until that first puff, is guaranteed to go up in smoke. If you need an extra hand at falling asleep, then this is the strain for you. Its gentle effects will uplift you while gently rocking you into a restful slumber.**

**Fragrance**

**Northern Lights has a very distinct scent to it. Its sweet and spicy notes follow you around, and are broken up with a hint of bitter lime. Some have reported noticing a bit of an ammonia smell to this strain, but with the hint of citrus, it makes for a pretty invigorating smelling strain. Northern Lights Fragrance, Wraps You In A Blanket Of Happiness**

**Flavors**

**The flavor of Northern Lights is quite skunky and full-bodied, without being overpowering. It hints at fresh pines and earth mixed with a bit of sweetness. A trace of lemon can also be observed when smoked, and it can leave a sweet dank taste inside your mouth afterwards.**

**Adverse reactions**

**One of the reasons why this strain has become so popular among indica-lovers, is because of the minimal adverse effects. Northern Lights can occasionally cause a feeling of not being able to move from the spot, which can often be confused with paranoia.**

**As a whole, it is rare for users of Northern Lights to feel dizzy or have a headache, but it can occur sometimes. The most commonly reported adverse effects are the usual cottonmouth, combined with a dry eyes sensation and a feeling of being dehydrated.**

**Medical**

**Widely recommended for its supreme medical abilities, Northern Lights is a favorite among those seeking to treat physical pain as well as mental instabilities. Mood swings and depression are easily relieved by this strain's uplifting personality.**

> ***TIP: Looking to buy Norther Lights seeds? Check out this marijuana seed shop***

**Because of Northern Lights' generous CBD content, it has also proven to be effective in treating pain. Its potency guarantees the easing of pains and cramps from conditions such as irritable bowel syndrome, PMS, arthritis, muscle spasms and many more.**

**Northern Lights Medical**

**Patients who have been diagnosed with mental conditions have also benefited from the use of this strain. Northern Lights can ease symptoms and side effects from the treatment of OCD, social anxiety disorder, general anxiety and PTSD. It is a powerful relaxant, that can induce sleep in those who suffer from insomnia and restlessness.**

**In cases where cancer patients were treated for a lack of appetite due to radiology and chemotherapy, Northern Lights has also proven to be a suitable choice. It can help ease the feeling of nausea, and successfully curb hunger.**

# Growing

**Northern Lights is a strain that is known for being seriously easy to grow. It is a relatively small to average growing plant, with distinctive amount of resinous buds. This strain can be grown indoors and also outdoors.**
**If grown outdoors, Northern Lights prefers a warm and sunny environment, thriving in balmy Mediterranean, Californian or North African settings. This plant can flourish into a tree when kept in full sunlight and tended to carefully, but is generally not a fussy plant to careful.**

Flowering Time

**Indoors**

This strain reportedly takes an average of 7 to 9 weeks to flower, although there are times when it is ready for harvest after only 7 weeks. Northern Lights can yield an average of 18 ounces per square meter in a healthy indoor environment.

**Outdoors**

When kept in its preferred sunny climate, this strain can give a generous harvest. This indica can produce an estimate of up to 22 ounces per plant, and is usually ready for harvest around the middle of October.

# CRITICAL MASS

**Critical Mass is wildly popular in the medical field for its notable CBD content, that is known to manae many pain-related medical conditions. This plant is as smooth as they come, truly defining what it means to be strong indica, and earning its fanbase by being consistently easy to cultivate, and offering a generous yield to boot.**

**This strain is a legend in its own right and is a profitable and generous strain even for novices to cultivate. Critical Mass produces buds that are capable of growing heavy to such a degree that they may be in danger of breaking branches from trying to hold up its impressive weight.**

**Critical Mass was created by crossing an Afghani indica with renowned heavyweight Skunk #1, thus creating a soothing bud with a potent knock-out punch. This hybrid is a new take on the famed Mr. Nice Seeds strain called Bug Bud, but has carved out a reputation for itself as a true-blue heavy-body indica dominant strain.**

**Information about Critical Mass Strain:**

| | |
|---|---|
| **ORIGIN** | **Afghani indica mixed with Skunk #1** |
| **EFFECTS** | **relaxed – 10**<br>**happy – 7**<br>**sleepy – 5**<br>**euphoric – 5**<br>**uplifted – 5** |
| **ADVERSE REACTIONS (NEGATIVE)** | **dry mouth – 10**<br>**dry eyes – 4**<br>**anxious – 2**<br>**dizzy – 2**<br>**paranoid – 2** |
| **FRAGRANCE** | **citrus, honey, skunky, sweet** |
| **FLAVORS** | **earthy, sweet, pungent, skunky, citrus** |
| **MEDICAL** | **stress – 10**<br>**pain – 9**<br>**depression – 7**<br>**insomnia – 7**<br>**inflammation – 4** |
| **FLOWERING TIME INDOORS** | **8-9 weeks** |
| **FLOWERING TIME OUTDOORS** | **mid September** |
| **PLANT HEIGHT** | **Medium** |
| **THC CONTENT %** | **20%** |
| **CBD %** | **5%%** |
| **INDICA / SATIVA %** | **80% / 20%** |
| **INDOOR YIELD** | **27oz/ m2** |
| **OUTDOOR YIELD** | **21oz/ plant** |
| **CLIMATE** | **warm and sunny mediterranean outdoor climate** |

| | |
|---|---|
| **GROWTH LEVEL** | **easy** |
| **RESISTANCE TO DISEASE** | **prone to mold, so best to keep plant well ventilated and dry** |

**** 10 is the highest***
**** 1 is the lowest***

**Effects**

**Critical Mass is a very reliable relaxant, and is therefore an easy choice to consider when you are in for a relaxed night in watching movies, by yourself or even with company. This strain is quite heavy on the body, so as long as you don't have to operate heavy machinery, you should be in for a good ride.**

***TIP: Looking to buy Critical Mass seeds? Check out this marijuana seed shop***

**This indica-dominant strain is guaranteed to make you feel happy and in a light and floaty mood, and it will make it easy for you to tuck away your worries and let them go for the day. Critical Mass can also make you feel sleepy and if you continue to smoke it in large doses, don't be surprised if it ends up putting you to sleep.**

**An Indica-Dominant Body Knock-Out – Image powered by Heavymicrogrow.wordpress.com/**

**Critical Mass has a strong body high that is said to last you for a few hours, keeping you in a giggly and euphoric mood for the rest of the night. This hybrid is especially pleasant for those who need a little mood-booster, as it is able to keep you in good spirits and will make you feel thoroughly uplifted.**

**Fragrance**

**Critical Mass has a very distinctly refreshing fragrance. This sweet bud can fill the room with its citrus-sugary aroma, making you feel invigorated and invited. It has a slightly skunky hint to it, mixed with the scent of sweet and freshly harvested honey.**

**Flavors**

**This fragrant plant has a taste that does not disappoint. Critical Mass boasts of all the especially sweet flavors you can think of. It will leave a taste of skunky citrus on your tongue upon the inhale, and in the exhale will make you think of a sweet earthy smoke.**

**Adverse Reaction**

**Critical Mass has only a few side effects, the most common ones being that you may at times feel slightly dehydrated, and it may leave you with a dry mouth and dry eyes. In some cases you may experience some mild dizziness along with the dehydration, but this does not usually persist.**

**Critical Mass Adverse Reaction**

**This indica-dominant hybrid can also induce feelings of anxiety and sometimes even paranoia in some. Critical Mass is quite potent, and is heavy on the body, and so if you aren't accustomed to its strength, this strain may overwhelm you and cause for you to feel slightly uncomfortable with its high.**

**Medical**

**Critical Mass is very popular in the medical cannabis community, because of its above average CBD levels. This means that this strain is a master at easing many pain-related discomforts, allowing the patient to go about their day without feeling weighed down by it.**

**Among the pain conditions it is widely used for, Critical Mass is especially useful for the treatment of joint pain, muscle spasms and migraines. It is also an effective way to treat inflammation, and has proven itself to offer much relief for long term sufferers, without the side effects of prescription medication.**

**Critical Mass Medical**

**Critical Mass has also been recommended to those who struggle with mood disorders. Chronic stress can be crippling, but this indica dominant hybrid can offer much help in this department, allowing the patient to relax and leave his worries behind. For this same reason, this strain should also be considered for those suffering from depression and insomnia.**

**Growing**

**Critical Mass is a relatively easy strain to cultivate, even for beginner growers. It is generous in its yield, and is happy as long as she gets a lot of sun and warmth, and is shielded from humidity and rain. This plant yields highly and its buds can become heavy and weigh down its branches, so it may need some additional support in holding itself up.**

**Flowering Time**

**Indoors**
**This indica-dominant plant can take around 8 to 9 weeks to flower and be ready for a harvest when grown indoors. Critical Mass can be expected to produce an indoor yield of about 27 ounces per square meter of good and fresh bud.**

**Outdoors**
**Critical Mass grown outdoors needs a Mediterranean climate to thrive in, and can be expected to yield an average of about 21 ounces per plant. This strain is usually ready for a harvest around the middle of September.**

## Information about Death Star Strain:

**Death Star is an Ohio-bred hybrid, that is more indica than sativa. It is a strain that has risen to fame not only due to its fitting name, but also because of its reliable, smooth high. Growers love this plant because it is fairly uncomplicated to tend to, and easy even for amateur growers to cultivate.**

**This indica delivers a powerful body high, that will have you happily munching out to the Star Wars trilogy on your couch. Death Star is a cross between Sensi Star and Sour Diesel, and was created in its native Ohio, from where it quickly rose to stardom.**

**Death Star started gaining popularity in 2004 and has brought all the Star Wars nerds to the yard since. A perfect blend of both indica and sativa, this strain has more prominent indica features. This is why it is in demand among those looking for something to space themselves out with, and the perfect strain to unwind to.**

| | |
|---|---|
| **ORIGIN** | **Sour Diesel mixed with Sensi Star** |
| **EFFECTS** | **relaxed – 10**<br>**happy – 8**<br>**euphoric – 7** |

| | |
|---|---|
| | **sleepy – 6**<br>**uplifted – 5** |
| **ADVERSE REACTIONS (NEGATIVE)** | **dry mouth – 10**<br>**dry eyes – 4**<br>**dizzy – 3**<br>**anxious – 2**<br>**paranoid – 1** |
| **FRAGRANCE** | **diesel, earthy, pungent, skunky, sweet** |
| **FLAVORS** | **diesel, skunky, sweet, citrus, earthy, pungent** |
| **MEDICAL** | **stress – 10**<br>**pain – 10**<br>**depression – 7**<br>**insomnia – 6**<br>**nausea – 4** |
| **FLOWERING TIME INDOORS** | **8-9 weeks** |
| **FLOWERING TIME OUTDOORS** | **early to mid October** |
| **PLANT HEIGHT** | **Short** |
| **THC CONTENT %** | **18%-27%** |
| **CBD %** | **0.40%** |
| **INDICA / SATIVA %** | **75% / 25%** |
| **INDOOR YIELD** | **14oz/ m2** |
| **OUTDOOR YIELD** | **12oz/ plant** |
| **CLIMATE** | **sheltered and sunny outdoor climate** |
| **GROWTH LEVEL** | **easy** |
| **RESISTANCE TO DISEASE** | **high resistance** |

***10 is the highest***
**** 1 is the lowest***

***This star of a strain is very potent, as is famous for just that. Newbies should approach this one slowly, as a little really does go a long way. Death Star will provide a guaranteed perfect head and body high that will set off your inner nerd.***

***TIP: Looking to buy Death Star seeds? Check out this marijuana seed shop***

**Death Star can make you feel body-heavy, relaxing you infinitely. This strain will have you feeling euphoric and happy, like you have been swept up into the universe by a rocket and are never coming down again.**

# CHEMISTRY OF CANNABIS

**The cannabis buds are the dried flowers of the female plant. Hashish is a compacted resin of the plant, both are usually ingested or smoked.**
**Medical cannabis oil, a solvent-extracted viscous oil, is consumed by smoking or vaporization but can also be used as a food additive.**
**Oral ingestion from edibles is a slow absorption process but this does not result in a loss of pharmacological activity.**
**Oral ingestion delays the psychoactive effects by 30-90 minutes and peaks at 2-3 hours with effects lasting for longer periods of time (4-12 hours), depending on THC levels. In smokers with chronic heavy (daily) cannabis use THC can be detected in their blood even after a month of sustained abstinence.**
**The cannabis plant consists of a wide variety of chemicals and compounds. About 140 of these belong to a large class of aromatic organic hydrocarbons known as terpenes (pronounced tur-peens). You may have also heard people talk about terpenoids. The words terpene and terpenoid are increasingly used interchangeably, although these terms do have different meanings. The main difference between terpenes and terpenoids is that terpenes are hydrocarbons (meaning the only elements present are carbon and hydrogen); whereas, terpenoids have been denatured by oxidation (drying and curing the flowers) or chemically modified.**
**Terpenes are synthesized in cannabis in secretory cells inside glandular trichomes, and production is increased with light exposure. These terpenes are mostly found in high concentrations in unfertilized female cannabis flowers prior to senescence (the condition or process of deterioration with age). The essential oil is extracted from the plant material by steam distillation or vaporization. Many terpenes vaporize around the same temperature as THC (which boils at about 157°C), but some terpenes are more volatile than others. Terpenes also play an incredibly important role by providing the plant with natural protection from bacteria and fungus, insects and other environmental stresses.**
**It is well established that cannabis is capable of affecting the mind, emotions and behavior. The main psychotropic cannabinoid, delta-9-tetrahydrocannabinol (THC) has been intensely studied. However, many of the other cannabinoids, terpenoids and flavonoids found in medical marijuana that play a big role in boosting the therapeutic effect of cannabis remain understudied.**
**Terpenes are common constituents of flavorings and fragrances. Terpenes, unlike cannabinoids, are responsible for the aroma of cannabis. The FDA and other agencies have generally recognized terpenes as "safe." Terpenes act on receptors and neurotransmitters; they are prone to combine with or dissolve in lipids or fats; they act as serotonin uptake inhibitors (similar to antidepressants like Prozac); they enhance norepinephrine activity (similar to tricyclic antidepressants like Elavil); they increase dopamine activity; and they augment GABA (the "downer" neurotransmitter that counters glutamate, the "upper"). However, more specific research is needed for improved accuracy in describing and predicting how terpenes in cannabis can be used medicinally to help treat specific ailments / health conditions.**
**Synergistic Effects**
**The Carlini et al study demonstrated that there may be potentiation (a form of synaptic plasticity that is known to be important for learning and memory) of the effects of THC by other substances present in cannabis. The double-blind study found that cannabis with equal or higher levels of CBD and CBN to THC induced effects two to four times greater than expected from THC content alone. The effects of smoking twice as much of a THC-only strain were no different than that of the placebo.**
**This suggestion was reinforced by a study done by Wilkinson et al to determine whether there is any advantage in using cannabis extracts compared with using isolated THC. A standardized cannabis extract of THC, CBD and CBN (SCE), another with pure THC, and also one with a THC-free extract (CBD) were tested on a mouse model of multiple sclerosis (MS) and a rat brain slice model of epilepsy.**
**Scientists found that SCE inhibited spasticity in the MS model to a comparable level of THC alone, and caused a more rapid onset of muscle relaxation and a reduction in the time to maximum effect than the THC alone. The CBD caused no inhibition of spasticity. However, in the epilepsy model, SCE was a much more potent and again more rapidly-acting anticonvulsant than isolated THC; however, in this model, the CBD also exhibited anticonvulsant activity. CBD did not inhibit seizures, nor did it modulate the activity of THC in this model. Therefore, as far as some actions of cannabis were concerned (e.g. anti-spasticity), THC was the active constituent, which might be modified by the presence of other components. However, for other effects (e.g. anticonvulsant properties) THC, although active, might not be necessary for the observed effect. Above all, these results demonstrated that not all of the therapeutic actions of cannabis herb is due to the THC content.**
**Dr. Ethan Russo further supports this theory with scientific evidence by demonstrating that non-cannabinoid plant components such as terpenes serve as inhibitors to THC's intoxicating effects, thereby increasing THC's therapeutic index. This "phytocannabinoid-terpenoid synergy," as Russo calls it, increases the potential of cannabis-based medicinal extracts to treat pain, inflammation, fungal and bacterial infections, depression, anxiety, addiction, epilepsy and even cancer.**
**What are Flavonoids?**
**Flavonoids are one of the largest nutrient families known to scientists, and include over 6,000 already-identified family members. About 20 of these compounds, including apigenin, quercetin, cannflavin A and cannflavin B (so far unique to cannabis), β-sitosterol, vitexin, isovitexin, kaempferol, luteolin and orientin have been identified in the cannabis plant. Flavonoids are known for their antioxidant and anti-inflammatory health benefits, as well as their contribution of vibrant color to the**

**many of the foods we eat (the blue in blueberries or the red in raspberries).**

**Some flavonoids extracted from the cannabis plant have been tested for pharmacological effects. The clinical findings are promising, but further research is needed to fully understand what role flavonoids play in the overall therapeutic effects of cannabis treatment, especially how they interact with cannabinoids by either synergistically enhancing them or reducing their effects.**

**The Terpene Wheel**

**Terpenes have been found to be essential building blocks of complex plant hormones and molecules, pigments, sterols and even cannabinoids. Most notably, terpenes are responsible for the pleasant, or not so pleasant, aromas of cannabis and the physiological effects associated with them. Patients will often ask to smell the cannabis when selecting their medicine. The idea is that certain aromas help identify different strains and their effects.**

**As the Casano et al study shows, medical marijuana strains can vary greatly from one source to another, and even from one harvest to another. Those with relatively high concentrations of specific terpenes do, however, make them easier to identify by their smell than other strains. Most agree that varieties that smell of musk or of clove deliver sedative, relaxing effects (high level of the terpene myrcene); piney smells help promote mental alertness and memory retention (high level of the terpene pinene); and lemony aromas are favored for general uplift in mood and attitude (high level of limonene).**

**DECARBOXYLATING**

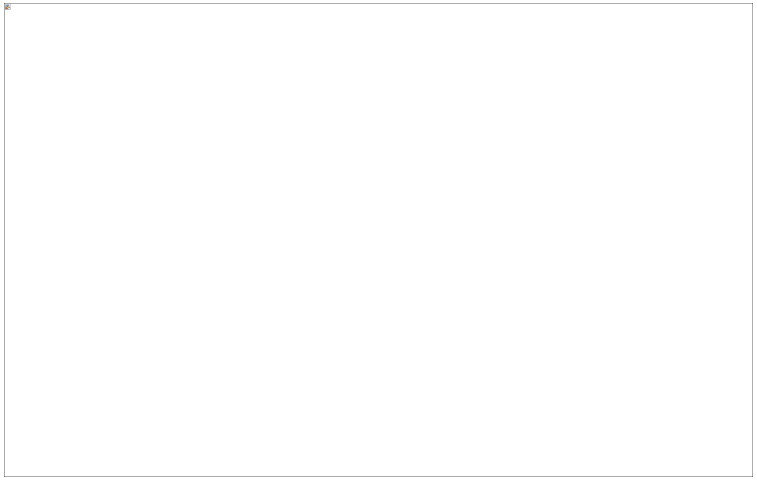
**The word “decarboxylation” may seem intimidating at first glance, but in reality, the process by which you eliminate a carboxylic acid group from an organic compound is one that all stoners undertake on a daily basis. In fact, every time you put your flame up to a packed bowl of raw herb or hit the button on your vaporizer, you’re effectively decarboxylating cannabis. It’s the critical step to unearthing the psychoactive effects within cannabis, and without it, there are no cannabinoid acids being produced, and thus, no high.**

**The Chemical Process**

**Decarboxylation is a simple chemical process involving raw cannabis and a heat source, but within this simple process is a complex and ever-evolving art, one that has been slowly gaining prominence as cannabis use has become more socially acceptable as a medicinal and recreational substance.**

**Before the flame of your lighter “decarbs” your bud, the marijuana is packed with a tetrahydrocannabinolic acid (THCA), a chemical compound that is stored within the trichomes of raw cannabis flower, and is not psychoactive in the slightest. To get the effect that cannabis is known for, we must first transform this THCA into the good old tetrahydrocannabinol (THC), the primary psychoactive compound found in cannabis.**

**There are two primary stages in which decarboxylation can happen: when the flower is drying and afterward, when it is heated. When smoking or vaporizing, the process is far from artisanal or intensive. The extreme heat instantly activates the THC, which is absorbed into our bodies via our cannabinoid receptors, producing that beloved high. However, when decarboxylating cannabis for edibles or extractions, we must activate these psychoactive cannabinoids on our own before consumption takes place.**



**How to Decarboxylate for Cooking**

**Though I’m far from a culinary expert myself, I’ve had the fortune to have met renowned cannabis chefs such as Miguel Trinidad of 99th Floor and Michael Cirino of A Razor/ A Shiny Knife, both of whom spoke about the decarboxylation process as a delicate art form. The two most common methods of decarboxylation are through the oven or with a boiling process.**

**Cannabis begins to decarboxylate at around 220 degrees Fahrenheit. For the optimal oven method, you should preheat to 220–245 degrees, and bake the ground-up**

**flower for about 30–45 minutes, depending on your preferences and the cannabis being utilized. It's recommended that you grind up your cannabis finely before spreading it evenly upon a baking tray lined with parchment paper. Kief can also be decarboxylated with the oven method, but in half the time that it would take flower. It's important to note that a household oven doesn't always match the exact temperature that it's dialed to, thus it's essential to constantly check the temperature and the oven itself throughout the process. Once your decarboxylated cannabis is dry and brown in color, let it cool down and pulse it within a food grinder. From here, you can start thinking about binding your decarboxylated cannabis with the fats in certain oils or alcohol.**



**Another method that is a bit more intensive, but also quite popular amongst cannabis chefs, is the boiler method. For this, you must place the cannabis in a vacuum-sealed boiling bag. Then, you must submerge the cannabis-filled bag into boiling water for about 90 minutes, ensuring that the water does not evaporate from the high temperature. After 90 minutes, the bag is removed from the water and cooled before opening. Like the oven method, you should be sure to moderate the temperature throughout the process (which should be at around 212 degrees Fahrenheit for the boiling water bath). This method can also be performed with a hot oil bath, but at higher temperatures (250 degrees) and until the bubbles begin to taper off.**

**Preserve Your Terps and THC**

**Although cooking at higher temperatures might help your cannabis decarboxylate at a faster rate, slowing down the process has some immense benefits as well. When it comes to extracting THC and that distinctive flavor of each cannabis strain, which comes from pungent, naturally occurring oils called terpenes, decarboxylation must be performed more slowly. Once temperatures get up to 300 degrees Fahrenheit, both the cannabinoids and terpenes become compromised, so even if you're in a rush to decarboxylate, beware of letting your heat source get too hot.**

| Temperature | Heating Mode | Plant Material Time | Keif/Hash Time | Cannabis Oil time |
|---|---|---|---|---|

| x/- SF | | High THC | High CBD | High THC | High CBD | |
|---|---|---|---|---|---|---|
| 300F | oven | 10-18 min | 15-25 min | 5-10 min | 10-15 min | |
| 250F | Hot oil bath | | | | | Until bubbles taper off |
| 245F | oven | 50-60 min | 60-90 min | 30-40 min | 40-50 min | |
| 212F | Boiling water bath | 90-120 min | 2-4 hours | 90-120 min | 2-4 hours | |

**Now that you've successfully decarboxylated your cannabis, you can now infuse it with various cooking oils, butter, lecithin, and also create potent alcohol or vegetable glycerine tinctures. Although you can technically still get a high from skipping the decarboxylation process and throwing your bud right into a heated solvent, you're severely hindering both the integrity and potency of the cannabinoids and terpenes by doing so. Decarboxylation can be a lengthy and trying process, but your body and mind will certainly thank you for it once you ingest a fully activated edible infusion.**

## Decarboxylation Tips

**When making cannabis oil for treating late stage cancer it is important to understand decarboxylation. Cannabis in raw/unheated form is primarily THCA, which converts to active THC through heat and time.**

**While some very slow and gradual decarboxylation does occur at temperatures as low as room temp during drying and curing stages of weed preparation it is not until higher heats are encountered that all THCA is converted to THC. If you are making cannabis oil you need to make sure the oil is cooked sufficiently to complete full decarb.**

**Raw cannabis is very beneficial and cannabinoid acids like THCA, along with naturally present terpenes, are believed to be very beneficial with possible anti cancer properties. However, it is active THC, and CBD, that has the majority of clinical and anecdotal evidence supporting its cancer killing effects. So, based on what is currently known, cannabis oil that is most potent in THC content is likely going to be the most potent medicine for curing cancer. Raw cannabis in the form of juices and unheated oils are beneficial too and would make a great addition to someone's treatment, but should not replace cooked cannabis oil, and often require much larger quantities for therapeutic value. Raw or partially cooked oils will contain a wider range of components including cannabinoid acids and terpenes, which are lost when oils are fully cooked, but THC is the most essential cannabinoid for fighting cancer so make sure you decarb your medicine properly to maximise its potency.**

**The Rick Simpson method only guarantees partial decarb from the rice cooker stage, and while full decarboxylation can be achieved with the use of a coffee warmer or candle warmer it can take some time to complete this process and other gentle heating devices may not be hot enough. Many of the solvents used have boiling points below the optimum temps for full and rapid decarb. If you do not have a coffee/candle warmer, of even if you do, it is recommended to put your oil in the oven at 110 degrees Celsius for about an hour (optimum temperature range is 110c to 130c/230F to 266F).**

**Visible bubbling will cease when the solvent and water, along with volatile terpenes, are boiled off. But you will see very small pin prick explosions on the surface of the oil during decarboxylation. When this has ceased and there is no activity on the surface of the oil at temps of 110c or above, then you know that decarboxylation is complete. While you want to ensure that temperature does exceed 110 degrees Celsius for decarb, it is also advised to stay below 140 as temps above 140 can lead to a loss of THC through vaporisation or degradation to CBN (vaporising of THC occurs from 157c).**

**In an ideal world everyone would have access to both raw and cooked cannabis in a well controlled manner, but in this world where oil making can be expensive and risky it is best to make sure your medicine is as potent as it can be to maximise its potential.**

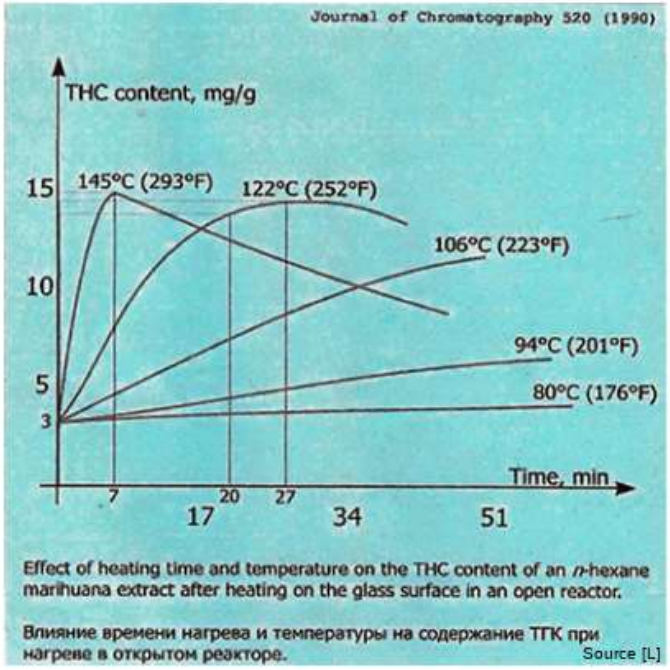
# Time and Temperature

While the research is young we still have much to learn on how individual cannabinoids and other phytochemical componds interact with each other and endogenously. This graph and table starts to gives us insight and understand of the desired balance between decarboxylation and degradation of raw cannabis (particularly THC). As we see, THC degrades faster at higher temperatures. Upon degradation it becomes CBN (which is more sedative - see chart A).

We are in search to gain knowledge of the ideal time and temperature to prevent volatile compound loss, as well as activate all the medicinal phytochemicals to help aid individual patients ailments. Knowledge is power, so share it!

Decarb time and temp (roughly, +/-) for THC.* Variables will play a role.

(180°F - 82.2°C) 4 - 5 hours
(200°F - 93.3°C) 3 hours
(220°F - 104.4°C) 1.5 hours
(240°F - 115.6°C) 1 hour




Effect of heating time and temperature on the THC content of an *n*-hexane marihuana extract after heating on the glass surface in an open reactor.

Влияние времени нагрева и температуры на содержание ТГК при нагреве в открытом реакторе. Source [L]

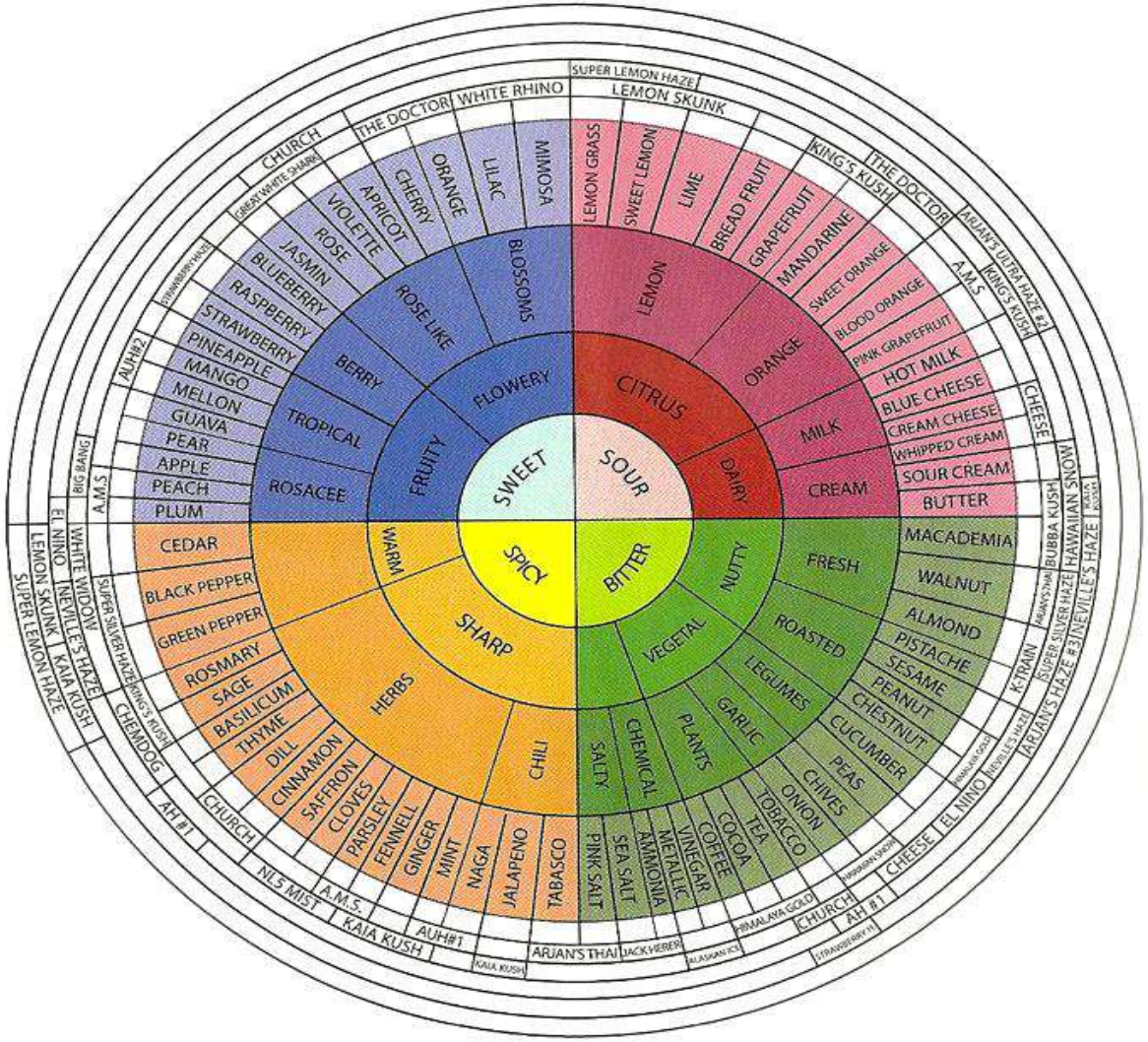
| **Kief** | | **Oven Temperature 240°F - 115.5°C** | |
|---|---|---|---|
| Compound | Before Decarb | 30 Min Decarb | 60 Min Decarb |
| THCA | 24.5% | 2.6% | .1% |
| THC | 3.8% | 25.4% | 25.5% |
| CBDA | .6% | .3% | .3% |
| CBD | 0% | 1% | .1% |
| CBN | .4% | 1% | 1.4% |
| Moisture | 0% | 0% | 0% |
| Total Cannabanoids | 29.3% | 30.3% | 27.4% |

Testing provided by SC Labs

| **Cannabis Trim** | | | |
|---|---|---|---|
| Compound | Before Decarb | 30 Min Decarb | 60 Min Decarb |
| THCA | 6.5% | 2.9% | .2% |
| THC | .6% | 4.8% | 6.9% |
| CBDA | .2% | .2% | .1% |
| CBD | 0% | 0% | .1% |
| CBN | 0% | 0% | 0% |
| Moisture | 3.4% | 4.5% | 0% |
| Total Cannabanoids | 7.3% | 7.9% | 7.3% |

Source [H]

Remember, these are just guidelines and other variables like elevation will




**In a spectral analysis performed by [Green House Seed Co.], they were able to identify the terpenes in each of their strains, and developed a "flavor wheel" to help medical marijuana patients decide on their strain of choice based on the effects desired. Although one of the primary purposes of the wheel was to market different seeds for this particular company, the concept and vocabulary used is becoming an invaluable tool for medical marijuana patients, caregivers, and cultivators alike.**
**Since then, several companies have developed their own terpene and weed wheels, albeit for the same reasons — to market their own products or services — and that's OK. By mapping out terpene profiles, we are able to predict and even manipulate the effects and medicinal value of varieties, giving breeders endless opportunities for**

**developing new, highly-desired cannabis strains by basing breeding decisions on real analytical data. The more we are able to communicate using the same language, the easier it is for everyone to understand clearly what medicine they are getting.**

# Terpenes in Cannabis

## Myrcene

**Myrcene, specifically β-myrcene, is a monoterpene and the most common terpene produced by cannabis (some varieties contain up to 60% of the essential oil). Its aroma has been described as musky, earthy, herbal – akin to cloves. A high myrcene level in cannabis (usually above 0.5%) results in the well-known "couch-lock" effect of classic Indica strains. Myrcene is found in oil of hops, citrus fruits, bay leaves, eucalyptus, wild thyme, lemon grass and many other plants.**
**Myrcene has some very special medicinal properties, including lowering the resistance across the blood to brain barrier, allowing itself and many other chemicals to cross the barrier easier and more quickly. In the case of cannabinoids (like THC), myrcene allows the effects of the cannabinoid to take effect more quickly. More uniquely still, myrcene has been shown to increase the maximum saturation level of the CB1 receptor, allowing for a greater maximum psychoactive effect.**
**Myrcene is a potent analgesic, anti-inflammatory, antibiotic and antimutagenic. It blocks the action of cytochrome, aflatoxin B and other pro-mutagenic carcinogens.**
**The Bonamin et al study focused on the role of β-myrcene in preventing peptic ulcer disease. The study revealed that β-myrcene acts as an inhibitor of gastric and duodenal ulcers, suggesting it may be helpful in preventing peptic ulcer disease. Its sedative and relaxing effects also make it ideal for the treatment of insomnia and pain.**
**Since myrcene is normally found in essential oil from citrus fruit, many claim eating a fresh mango about 45 minutes before consuming cannabis will result in a faster onset of psycho activity and greater intensity. Be sure to choose a mango that is ripe otherwise the myrcene level will be too low to make a difference.**

**Pinene**
**Pinene is a bicyclic monoterpenoid. Akin to its name, pinene has distinctive aromas of pine and fir. There are two structural isomers of pinene found in nature: α-pinene and β-pinene. Both forms are important components of pine resin. α-pinene is the most widely encountered terpenoid in nature. Pinene is found in many other conifers, as well as in non-coniferous plants. It is found mostly in balsamic resin, pine woods and some citrus fruits. The two isomers of pinene constitute the main component of wood turpentine. Pinene is one of the principal monoterpenes that is important physiologically in both plants and animals. It tends to react with other chemicals, forming a variety of other terpenes (like limonene) and other compounds.**
**Pinene is used in medicine as an anti-inflammatory, expectorant, bronchodilator and local antiseptic. α-pinene is a natural compound isolated from pine needle oil which has shown anti-cancer activity and has been used as an anti-cancer agent in Traditional Chinese Medicine for many years. It is also believed that the effects of THC may be lessened if mixed with pinene.**

## Limonene

**Limonene is a monocyclic monoterpenoid and one of two major compounds formed from pinene. As the name suggests, varieties high in limonene have strong citrusy smells like oranges, lemons and limes. Strains high in limonene promote a general uplift in mood and attitude. This citrusy terpene is the major constituent in citrus fruit rinds, rosemary, juniper and peppermint, as well as in several pine needle oils.**
**Limonene is highly absorbed by inhalation and quickly appears in the bloodstream. It assists in the absorption of other terpenes through the skin and other body tissue. It is well documented that limonene suppresses the growth of many species of fungi and bacteria, making it an ideal antifungal agent for ailments such as toenail fungus. Limonene may be beneficial in protecting against various cancers, and orally administered limonene is currently undergoing clinical trials in the treatment of breast cancer. Limonene has been found to even help promote weight-loss.**
**Plants use limonene as a natural insecticide to ward off predators. Limonene was primarily used in food and perfumes until a couple of decades ago, when it became better known as the main active ingredient in citrus cleaner. It has very low toxicity and adverse effects are rarely associated with it.**

## Caryophyllene

**Beta-caryophyllene is a sesquiterpene found in many plants such as Thai basils, cloves, cinnamon leaves and black pepper, and in minor quantities in lavender. It's aroma has been described as peppery, woody and/or spicy. Caryophyllene is the only terpene known to interact with the endocannabinoid system (CB2). Studies show β–caryophyllene holds promise in cancer treatment plans. Research shows shows that β–caryophyllene selectively binds to the CB2 receptor and that it is a functional CB2 agonist. Further, β–caryophyllene was identified as a functional non-psychoactive CB2 receptor ligand in foodstuff and as a macrocyclic anti-inflammatory cannabinoid in cannabis.**

**The Fine/Rosenfeld pain study demonstrates that other phytocannabinoids in combination, especially cannabidiol (CBD) and β-caryophyllene, delivered by the oral route appear to be promising candidates for the treatment of chronic pain due to their high safety and low adverse effects profiles.**

**The Horváth et al study suggests β-caryophyllene, through a CB2 receptor dependent pathway, may be an excellent therapeutic agent to prevent nephrotoxicity (poisonous effect on the kidneys) caused by anti-cancer chemotherapy drugs such as cisplatin.**

**The Jeena, Liju et al study investigated the chemical composition of essential oil isolated from black pepper, of which caryophyllene is a main constituent, and studied its pharmacological properties. Black pepper oil was found to possess antioxidant, anti-inflammatory and antinociceptive properties. This suggests that high-caryophyllene strains may be useful in treating a number of medical issues such as arthritis and neuropathy pain.**

**Beta-caryophyllene is used especially in chewing gum when combined with other spicy mixtures or citrus flavorings.**

## Linalool

**Linalool is a non-cyclic monoterpenoid and has been described as having floral and lavender undertones. Varieties high in linalool promote calming, relaxing effects. Linalool has been used for centuries as a sleep aid. Linalool lessens the anxious emotions provoked by pure THC, thus making it helpful in the treatment of both psychosis and anxiety. Studies also suggest that linalool boosts the immune system; can significantly reduce lung inflammation; and can restore cognitive and emotional function (making it useful in the treatment of Alzheimer's disease).**

**As shown by the Ma, J., Xu et al study, linalool may significantly reduce lung inflammation caused by cigarette smoke by blocking the carcinogenesis induced by benz[α]anthracene, a component of the tar generated by the combustion of tobacco. This finding indicates limonene may be helpful in reducing the harm caused by inhaling cannabis smoke.**

**Linalool boosts the immune system as it directly activates immune cells through specific receptors and/or pathways. The Sabogal-Guáqueta et al study suggests linalool may reverse the histopathological (the microscopic examination of biological tissues to observe the appearance of diseased cells and tissues in very fine detail) hallmarks of Alzheimer's Disease and could restore cognitive and emotional functions via an anti-inflammatory effect.**

**The Environmental Protection Agency has approved its use as a pesticide, flavor agent and scent. It is used in a wide variety of bath and body products and is commonly listed under ingredients for these products as beta linalool, linalyl alcohol, linaloyl oxide, p-linalool and alloocimenol. Its vapors have been shown to be an effective insecticide against fruit flies, fleas and cockroaches.**

**Linalool has been isolated in several hundred different plants. The Lamiaceae plant and herb family, which includes mints and other scented herbs, are common sources. The Lauraceae plant family, which includes laurels, cinnamon, and rosewood, is also a readily available source. The Rutaceae family, which contains citrus plants, is another viable source. Birch trees and several different plant species that are found in tropical and boreal climate zones also produce linalool. Although technically not plants, some fungi produce linalool, as well. Linalool is a critical precursor in the formation of Vitamin E.**

## Terpinolene

**Terpinolene is a common component of sage and rosemary and is found in the oil derived from Monterey cypress. Its largest use in the United States is in soaps and perfumes. It is also a great insect repellent. Terpinolene is known to have a piney aroma with slight herbal and floral nuances. It tends to have a sweet flavor reminiscent of citrus fruits like oranges and lemons.**

**Terpinolene has been found to be a central nervous system depressant used to induce drowsiness or sleep or to reduce psychological excitement or anxiety. Further, terpinolene was found to markedly reduce the protein expression of AKT1 in K562 cells and inhibited cell proliferation involved in a variety of human cancers.**

**Camphene**

**Camphene, a plant-derived monoterpene, emits pungent odors of damp woodlands and fir needles. Camphene may play a critical role in cardiovascular disease.**

**The Vallianou et al study found camphene reduces plasma cholesterol and triglycerides in hyperlipidemic rats. Given the importance that the control of hyperlipidemia plays in heart disease, the results of this study provide insight into to how camphene might be used as an alternative to pharmaceutical lipid lowering agents which are**

**proven to cause intestinal problems, liver damage and muscle inflammation. This finding alone warrants further investigation.**
**Camphene is a minor component of many essential oils such as turpentine, camphor oil, citronella oil and ginger oil. It is used as a food additive for flavoring, and also used in the preparation of fragrances. It is produced industrially by catalytic isomerization of the more common α-pinene.**

## Terpineol

**α-Terpineol, terpinen-4-ol, and 4-terpineol are three closely related monoterpenoids. The aroma of terpineol has been compared to lilacs and flower blossoms. Terpineol is often found in cannabis varieties that have high pinene levels, which unfortunately mask the fragrant aromas of terpineol.**
**Terpineol, specifically α-terpineol, is known to have calming, relaxing effects. It also exhibits antibiotic, AChe inhibitor and antioxidant antimalarial properties.**

## Phellandrene

**Phellandrene is described as pepperminty, with a slight scent of citrus. Phellandrene is believed to have special medicinal values. It has been used in Traditional Chinese Medicine to treat digestive disorders. It is one of the main compounds in turmeric leaf oil, which is used to prevent and treat systemic fungal infections.**
**Phellandrene is perhaps the easiest terpene to identify in the lab. When a solution of phellandrene in a solvent (or an oil containing phellandrene) is treated with a concentrated solution of sodium nitrate and then with a few drops of glacial acetic acid, very large crystals of phellandrene nitrate speedily form.**
**Phellandrene was first discovered in eucalyptus oil. It wasn't until the early 1900s that it was actually constituted and shown that phellandrene from eucalyptus oil contained two isomeric phellandrene (usually referred to as α-phellandrene and β-phellandrene), and on oxidation with potassium permanganate gave distinct acids, concluding that the acids had been derived from two different isomeric phellandrene. Before that, phellandrene was mistaken for pinene or limonene. Today, we are aware of many essential oils where phellandrene is present. It is, however, a somewhat uncertain terpene as it can only be detected in the oils of some species, especially in Eucalypts, at particular times of the year.**
**Phellandrene can be found in a number of herbs and spices, including cinnamon, garlic, dill, ginger and parsley. A number of plants produce β-phellandrene as a constituent of their essential oils, including lavender and grand fir. The recognizable odors of some essential oils depend almost entirely upon the presence of phellandrene. Oil of pepper and dill oil are composed almost entirely of phellandrene. The principal constituent in oil of ginger is phellandrene. Phellandrene, particularly α-phellandrene, is absorbed through the skin, making it attractive for use in perfumes. It is also used as a flavoring for food products.**

## Carene

**Delta-3-carene is a bicyclic monoterpene with a sweet, pungent odor. It is found naturally in many healthy, beneficial essential oils, including cypress oil, juniper berry oil and fir needle essential oils. In higher concentrations, delta-3-carene can be a central nervous system depressant. It is often used to dry out excess body fluids, such as tears, mucus, and sweat.**
**It is nontoxic, but may cause irritation when inhaled. Perhaps high concentrations of delta-3-carene in some strains may be partially responsible for symptoms of coughing, itchy throat and eye afflictions when smoking cannabis.**
**Delta-3-carene is also naturally present in pine extract, bell pepper, basil oil, grapefruit and orange juices, citrus peel oils from fruits like lemons, limes, mandarins, tangerines, oranges and kumquats.**
**Carene is a major component of turpentine and is used as a flavoring in many products.**

## Humulene

**Humulene is a sesquiterpene also known as α-humulene and α–caryophyllene; an isomer of β–caryophyllene. Humulene is found in hops, cannabis sativa strains, and Vietnamese coriander, among other naturally occurring substances. Humulene is what gives beer its distinct 'hoppy' aroma.**
**Humulene is considered to be anti-tumor, anti-bacterial, anti-inflammatory, and anorectic (suppresses appetite). It has commonly been blended with β–caryophyllene and used as a major remedy for inflammation. Humulene has been used for generations in Chinese medicine. It aids in weight loss by acting as an appetite suppressant.**

### Pulegone

**Pulegone, a monocyclic monoterpenoid, is a minor component of cannabis. Higher concentrations of pulegone are found in rosemary. Rosemary breaks down acetylcholine in the brain, allowing nerve cells to communicate more effectively with one another.**

**An ethnopharmacology study indicates pulegone may have significant sedative and fever-reducing properties. It may also alleviate the side effects of short-term memory loss sometimes associated with higher levels of THC.**
**Pulegone has a pleasant peppermint aroma and is considered to be a strong insecticide.**

## Sabinene

**Sabinene is a bicyclic monoterpene whose aromas are reminiscent of the holidays (pines, oranges, spices). Results of an ongoing study by Valente et al suggest that sabinene should be explored further as a natural source of new antioxidant and anti-inflammatory drugs for the development of food supplements, nutraceuticals or plant-based medicines.**
**Sabinene occurs in many plants, including Norway spruce, black pepper, basil and Myristica fragrans (an evergreen indigenous to the Moluccas)—the Spice Islands of Indonesia. The seeds of the Myristica fragrans are the world's main source of nutmeg. Sabinene exists as (+)- and (–)-enantiomers.**

## Geraniol

**Geraniol produces a sweet, delightful smell similar to roses. This makes geraniol a popular choice for many bath and body products. It is also known to be an effective mosquito repellant. Medically, geraniol shows promise in the treatment of neuropathy.**