



Introduction to Medical Cannabis

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A brief history of Cannabis...

The healing properties of cannabis have been known for quite some time. References to cannabis, and its therapeutic use, date back ancient China, where it was used as a medicine to bring balance to the body, and also as an anesthetic. Cannabis was even introduced into the U.S. Pharmacopoeia in 1854.

Today, we have a much better understanding of cannabis and the healing components these plants possess. Although research is still restricted in the U.S. due to the Schedule 1 classification of cannabis, many studies have shown just how powerful this healing plant can be. Modern research suggests that cannabis is a valuable aid in the treatment of a wide range of conditions. These include pain relief – particularly of pain caused from nerve damage – nausea, spasticity, glaucoma, and movement disorders. Cannabis is also a powerful appetite stimulant, specifically for patients suffering from HIV, AIDS, or dementia. Emerging research suggests that marijuana’s medicinal properties may even protect against some types of malignant tumors, and act as a neuroprotective.

Currently, more than 60 U.S. and international health organizations support granting patients immediate legal access to medicinal marijuana under a physician’s supervision. The medicinal value of cannabis is becoming hard to ignore with study after study proving its effectiveness. The list of organizations that support the use of medical marijuana can be found at: <http://norml.org/marijuana/item/quick-reference>

Here we will go over some of the basics of Medical Cannabis. We will explain the common cannabinoids and how they interact with our bodies natural endocannabinoid system, the difference between Sativa and Indica plants, an intro into terpenes which make up the smell and taste of cannabis, and also methods of cannabis consumption.

Cannabinoids...

There are over 480 natural components found within the cannabis plant, of which 66 have been classified as “cannabinoids,” which are chemicals unique to the cannabis plant. The most well known and researched of these

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chemicals is delta-9-tetrahydrocannabinol (THC), which is the substance primarily responsible for the psychoactive effects of cannabis. This psychoactive effect is moderated by the influence of other components of the plant, mostly the other cannabinoids, but terpenes also play a big part.

These cannabinoids are separated into subclasses, which are as follows:

- Cannabigerols (CBG)
- Cannabichromenes (CBC)
- Cannabidiols (CBD)
- Tetrahydrocannabinols (THC)
- Cannabinol (CBN) and cannabinodiol (CBDL)
- Other cannabinoids (such as cannabicyclol (CBL), cannabielsoin (CBE), cannabitrinol (CBT) and other miscellaneous types)

When searching for a strain of cannabis to medicate with, you will find the following cannabinoids listed in the test results for each specific strain.

THC

- Main psychoactive component of cannabis
 - Pain Relief
 - Appetite Stimulant
 - Reduces nausea and vomiting
 - Suppresses muscle spasms
 - Reduces Inflammation
- Reduces Seizures and Convulsions
- Inhibits cell growth in tumors
- Reduces blood sugar levels
- Promotes bone growth

CBD

- Pain Relief
 - Reduces Inflammation
 - Stimulates appetite
 - Reduces Vomiting and Nausea
- Reduces Contractions of Small Intestines
 - Relieves Anxiety
 - Tranquilizing/Psychosis Management
 - Reduces Seizures and Convulsions
 - Suppresses Muscle Spasms

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- Reduces efficacy of Immune System
 - Reduces Blood Sugar Levels
- Prevents Nervous System Degeneration
 - Treats Psoriasis
- Reduces risk of Artery Blockage
- Kills or Slows Bacteria Growth
- Inhibits Cell Growth in Tumors
 - Promotes Bone Growth

CBG

- Pain Relief
 - Reduces Inflammation
- Kills or Slows Bacteria Growth
 - Treats Fungal Infection
- Inhibits Cell Growth in Tumors
 - Promotes Bone Growth

CBC

- Pain Relief
 - Reduces Inflammation
- Kills or Slows Bacteria Growth
- Inhibits Cell Growth in Tumors
 - Promotes Bone Growth
 - Treats Fungal Infection

CBN

- Pain Relief
- Suppresses Muscle Spasms
 - Aides Sleep

The cannabinoids found within the cannabis plant, when ingested, interact with our bodies natural endocannabinoid system. This system is perhaps the most important physiologic system involved in establishing and maintaining human health. Endocannabinoids and their receptors are found throughout the body: in the brain, organs, connective tissues, glands, and immune cells. In each tissue, the cannabinoid system performs different tasks, but the goal is always the same: [homeostasis](#), the maintenance of a stable internal environment despite fluctuations in the external environment.

The endocannabinoid system, with its complex actions in our immune system, nervous system, and all of the body's organs, is literally a bridge between body and mind. By understanding this system we begin to see a mechanism that explains how states of consciousness can promote health or disease.

In addition to regulating our internal and cellular homeostasis, cannabinoids influence a person's relationship with the external environment. Socially, the administration of cannabinoids clearly alters human behavior, often promoting sharing, humor, and creativity. By mediating [neurogenesis](#), neuronal plasticity, and learning, cannabinoids may directly influence a person's open-mindedness and ability to move beyond limiting patterns of thought and behavior from past situations. Reformatting these old patterns is an essential part of health in our quickly changing environment.

Cannabinoid receptors are present throughout the body, embedded in cell membranes, and are believed to be more numerous than any other receptor system. When cannabinoid receptors are stimulated, a variety of physiologic processes ensue. Researchers have identified two cannabinoid receptors: CB1, predominantly present in the nervous system, connective tissues, gonads, glands, and organs; and CB2, predominantly found in the immune system and its associated structures. Many tissues contain both CB1 and CB2 receptors, each linked to a different action. Researchers speculate there may be a third cannabinoid receptor waiting to be discovered.

Phytocannabinoids are plant substances that stimulate cannabinoid receptors. Delta-9-tetrahydrocannabinol, or THC, is the most psychoactive and certainly the most famous of these substances, but other cannabinoids such as cannabidiol (CBD) and cannabinol (CBN) are gaining the interest of researchers due to a variety of healing properties.

For more detailed information on cannabinoids, visit:

<https://www.leafly.com/news/cannabis-101/cannabinoids-101-what-makes-cannabis-medicine>

For more detailed information on the endocannabinoid system, visit:

<http://norml.org/library/item/introduction-to-the-endocannabinoid-system>

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Sativa v. Indica...

Today, it is widely accepted that cannabis has two different species: cannabis sativa and cannabis indica. Cross-breeding of these two types has led to a wide variety of hybrid strains with unique characteristics. The differences between sativa and indica remain a subject of much debate. However, most agree that indica and sativa plants are distinct in a number of ways.

The most pronounced difference between the two species is the effects they produce after consumption.

Sativa –

- Uplifting
- Energetic
- Cerebral, or a “head high” (deep-in-thought, spacey)
- Best suited for day use

Indica –

- Relaxing
- Calming
- “Couch-lock,” or a “body high” (heavy eyes, relaxed muscles)
- Best suited for night use

Hybrids –

- Every hybrid will produce unique effects, depending on its genetic makeup. Some hybrids will be indica-heavy, some will be sativa-heavy, while some will be more balanced between the two.

Leafly.com is a great resource if you would like to know more about the particular effects of an individual strain. This website provides feedback from thousands of users, and can help guide you to a strain that will produce your desired effects.

Terpenes...

Secreted in the same glands that produce cannabinoids like THC and CBD, terpenes are the pungent oils that color cannabis varieties with distinctive flavors like citrus, berry, mint, and pine. Medical research on cannabis has so avidly focused on cannabinoids that we don't know much about these aromatic compounds yet. However, we know just enough to realize that terpenes are the next frontier in medical marijuana.

Over 100 different terpenes have been identified in the cannabis plant, and every strain tends toward a unique terpene type and composition. In other words, a strain like Cheese and its descendents will likely have a discernible cheese-like smell, and Blueberry offspring often inherit the smell of berries.

The diverse palate of cannabis flavors is impressive enough, but arguably the most fascinating characteristic of terpenes is their ability to interact synergistically with other compounds in the plant, like cannabinoids. In the past few decades, most cannabis varieties have been bred to contain high levels of THC, and as a result, other cannabinoids like CBD, CBC, and CBN have fallen to just trace amounts. This has led growers to believe that terpenes help account for the unique effects induced by each cannabis strain.

This synergy has a scientific basis in our body's endocannabinoid system. THC binds to receptors concentrated most heavily in the brain where psychoactive effects take place. Terpenes also bind to these receptor sites and affect their chemical output. They can also modify how much THC passes through the blood-brain barrier. Their hand of influence even reaches to neurotransmitters like dopamine and serotonin by altering their rate of production and destruction, their movement, and availability of receptors.

The effects these mechanisms produce vary from terpene to terpene; some are especially successful in relieving stress, while others promote focus and acuity. Myrcene, for example, induces sleep whereas limonene elevates

mood. There are also effects that are imperceptible, like the gastroprotective properties of Caryophyllene.

Most importantly, terpenes may offer incredible medical value as they mediate our body's interaction with therapeutic cannabinoids. Many cannabis analysis labs now test terpene content, so any consumer can have a better idea of what effects their strain might produce. With their unlimited combinations of synergistic effects, terpenes will likely open up new scientific and medical terrains for cannabis research.

The Most Common Cannabis Terpenes:

Alpha-Pinene, Beta-Pinene

Aroma: Pine

Effects: Alertness, memory retention, counteracts some THC effects

Medical Value: Helps treat asthma; antiseptic

Also Found In: Pine Needles, Rosemary, Basil, Parsley, Dill

Myrcene

Aroma: Musky, Cloves, Earthy, Herbal with notes of Citrus and Tropical Fruit

Effects: Sedating "couch-lock" effect, Relaxing

Medical Value: Antioxidant, anti-carcinogenic, good for muscle tension, sleeplessness, pain, inflammation and depression

Also Found In: Mango, Lemongrass, Thyme, Hops

Limonene

Aroma: Citrus

Effects: Elevated Mood, Stress Relief

Medical Value: Anti-Fungal, Anti-Bacterial, Anti-Carcinogenic, Dissolves gallstones, Mood-enhancer; may treat gastrointestinal complications, heartburn and depression

Also Found In: Fruit Rinds, Rosemary, Juniper, Peppermint

Caryophyllene

Aroma: Pepper, Spicy, Woody, Cloves

Effects: No detectable physical effects

Medical Value: Gastroprotective, Anti-Inflammatory; good for arthritis, ulcers, autoimmune disorders, and other gastrointestinal complications

Also Found In: Black Pepper, Cloves, Cotton

Linalool

Aroma: Floral, Citrus, Candy

Effects: Anxiety Relief and Sedation

Medical Value: Anti-Anxiety, Anti-Convulsant, Anti-Depressant, Anti-Acne

Also Found In: Lavender

For more information on terpenes, and to view a handy infographic on the benefits of each specific terpene, visit:

<https://www.leafly.com/news/cannabis-101/infographic-what-are-cannabis-terpenes-and-how-do-they-affect-you>

Methods of Consumption...

Cannabis is most often inhaled - either through a cigarette (joint), pipe, water-pipe (also known colloquially as a 'bong'), or vaporizer. Consumers tend to prefer inhalation as a route of administration because they begin to experience cannabis' effects almost immediately after inhalation. This outcome allows them to moderate their dose as needed or in accordance

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with their particular preference, as well as to achieve immediate relief from pain, nausea, and other symptoms.

Regardless of whether a person is inhaling cannabis via a joint, pipe, or water-pipe, they are still subjecting their lungs to potentially noxious smoke. However, studies have, to date, failed to link cannabis inhalation - even over the long-term - to the sort of adverse pulmonary effects associated with tobacco smoking. According to a 2012 study published in the Journal of the American Medical Association (JAMA), lifetime, moderate cannabis smoking (defined as at least one joint per day for seven years or one joint per week for 49 years) was not associated with adverse effects on pulmonary function. Cannabis inhalation is also not associated with increased prevalence of certain types of cancers, such as melanoma, prostate cancer, or breast cancer. Nor has its use been associated with higher prevalence of tobacco-related cancers such as lung cancer

The use of a water-pipe filtration system primarily cools cannabis smoke. However, this technology is not particularly efficient at eliminating the toxic byproducts of combustion. As a result, some cannabis consumers utilize vaporizers, which heat marijuana to a point where cannabinoid vapors form, but below the point of combustion. This technology allows consumers to experience the rapid onset of the plant's effects while avoiding many of the associated respiratory hazards associated with smoking -- such as coughing, wheezing, or chronic bronchitis. In several clinical trials, investigators have concluded that vaporization is a "[safe and effective](#)" cannabinoid delivery mode that "does not result in exposure to combustion gases." Researchers also report that vaporization results in higher plasma concentrations of THC compared to smoked cannabis.

Consuming moderate to high quantities of marijuana orally, such as in food or in a tincture (a liquid-based solution), will yield a different and sometimes more intense outcome. Consumers will typically not begin to feel any psychoactive or physiological effects of the plant for at least 45 minutes to 90 minutes after ingestion. This delayed onset makes it more difficult for subjects to regulate their dosage. Orally consumed cannabinoids tends to be stronger acting and last far longer (upwards of four to six hours is typical) than the effects of inhaled cannabis. This result is largely because of the way bodies metabolize THC. When cannabis is inhaled, THC passes rapidly from the lungs to the blood stream and to the

brain. By contrast, when cannabis is consumed orally, a significant portion of THC is converted into the metabolite 11-hydroxy-THC before reaching the brain. (Inhaling cannabis produces only trace levels of this chemical.) Since this metabolite is believed to be slightly more potent than THC and possesses a greater blood-brain penetrability, the physical and psychoactive effects of substance may be magnified in some consumers.

Some users prefer these longer-lasting effects, particularly those seeking to treat chronic conditions. Other consumers, such as those seeking occasional symptomatic relief or those less experienced to cannabis' effects prefer the milder, shorter-lived effects associated with inhalation.