

Patient Education - Benefits and Drawbacks

Cannabis, also referred to as marijuana, is a plant that has been used for many different purposes for thousands of years, including fiber for paper and clothing and fuel, and nutritionally as a source of high quality dietary oils and protein as well as for many different medical purposes..

Medicinally, the mature plant's flowers and leaves have been used in a variety of forms because they contain a resin filled with terpenes and cannabinoids, such as THC, which causes certain psychoactive and physical reactions, and CBD, or cannabidiol, a powerful anti-inflammatory and antioxidant

THC, or delta-9-tetrahydrocannabinol, is the main cannabinoid responsible for the psychoactive effects, while other cannabinoids such as CBD, cannabigerol (CBG) and cannabichromene (CBC) are thought to have many other beneficial properties.

Active Ingredients in Cannabis

Scientists have discovered several hundred terpenes and about 70 cannabinoids in marijuana. Each cannabinoid produces certain effects, which may be modified in as yet unclear ways by the terpenes, and possibly by other compounds such as flavinoids.

A great deal of research has been done on the medical uses of cannabis, especially in the last 25 years since the discovery of the “endocannabinoid system”, an important regulatory system that keeps other body systems in balance. Stimulation of endocannabinoid receptors (called CB1 and CB2 receptors) by compounds produced by the human body or by cannabinoids from the cannabis plant results in the medical effects for which cannabis has been used for nearly 5,000 years.

The cannabinoids that are thought to be primarily responsible for the medical effects observed with cannabis include:

- Cannabichromene, or CBC, which provides pain relief and calming effects;
- Cannabidiol, or CBD, which treats anxiety, convulsions, inflammation and nausea without causing psychoactive effects. CBD also has neuroprotectant and antioxidant effects;
- Cannabinol, or CBN, which reduces the occurrence of seizures and lowers intraocular pressure;
- Cannabigerol, or CBG, which also lowers intraocular pressure, promotes relaxation and contains antimicrobial properties;
- Delta-9-Tetrahydrocannabinol, or THC, which treats a wide variety of medical problems, such as pain and nausea, and it has the strongest psychoactive effect of all of the cannabinoids found in marijuana;
- Flavonoids, terpenes and terpenoids, which create the smell and flavor of each cannabis strain, increase circulation and may treat a variety of skin conditions;
- Tetrahydrocannabivarin, or THCV, shows positive results for metabolic disorder and type 2 diabetes treatment.

Cannabis Strains and Their Uses

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Medical cannabis is available in more than one hundred varieties, all of which offer unique combinations of effects. Therefore, within certain broad categories, physicians may recommend that their patients test different varieties to find the one that most suits their needs.

There are four main categories of strains: sativa, indica, sativa/indica hybrids and high-CBD varieties which are usually indica derivatives. The specific concentration of each cannabinoid is different by plant and strain. It is important to note that much of the information on strain-specific effects is anecdotal. Studies are now being designed that will shed new light on the following generally-accepted strain specific effects. Please bear in mind that some patients respond differently to the various cannabis strains than might be expected from the general guidelines below.

Cannabis Sativa: The sativa strain, native to tropical climates, is tall and tree-like with thin leaves. Sativa strains tend to mentally stimulate and energize the patient, making it suitable for use during daytime hours. Patients may also experience feelings of euphoria when taking sativa cannabis. Negative side effects are rare and mild, but feelings of paranoia and anxiety may be caused or amplified. The sativa strain is thought to be helpful for treating problems such as:

- General abdominal complaints;
- Depression;
- Headaches;
- Fatigue;
- Lack of Appetite.

Cannabis Indica: The indica strain was first grown in temperate climates. Indica strains are shorter and have broader leaves than their sativa counterparts. Those who take an indica strain may experience a sedated or relaxed feeling, so patients usually get the best results when taking it at night. Indica is thought to be useful in treating:

- Anxiety;
- Insomnia;
- General Pain;
- Muscle Spasms.

Cannabis Sativa/Indica Hybrids: The most commonly used cannabis strains are sativa/indica hybrids. Growers created various hybrids to give medical cannabis patients the benefits of both sativa and indica for optimal results. Each hybrid is typically either a sativa or indica dominant crossbreed. Hybrids tend to work well for treating:

- Lack of Appetite;
- Nausea.

Cannabis High-CBD: The cannabis varieties in this strain have been laboratory tested and were found to have high cannabidiol, or CBD, levels. High-CBD strains offer several health benefits without a large degree of psychoactive effects, allowing patients to work and drive while taking

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therapeutic doses. Medicinal high-CBD strains are an excellent option for people who need to treat:

- Anxiety;
- Inflammation;
- General Pain;
- Seizures;

Products and Dosage Methods

There are multiple dosage methods for cannabis usage: inhalation, ingestion and topical applications. Each method produces a unique medicinal effect, even if the patient uses the same strain in different ways.

Inhalation

Takes Effect in 1-5 Minutes

Effects Last 1-4 Hours

Many patients choose to inhale cannabis via a rolled joint, pipe or vaporizer because these dosage method are convenient and fast acting. However, respiratory tract irritation is a short-term side effect. Current research finds that the long-term side effects of smoking cannabis are minor, however habitual and heavy smoking of cannabis may cause phlegm production, bronchitis and chronic coughing. Cannabis smoke is known to have substances that cause cancer, called carcinogens. When studied at a molecular and cellular level, the cannabinoids in marijuana are shown to lower the effect of the smoke's carcinogens and no verified cases of lung cancer or other lung diseases have been found in cannabis smokers.

Kief and hashish, or hash, are two popular popular cannabis products. Kief is a powdered substance made from the resin glands of marijuana plants. Kief is compressed to create hash. Hash has a paste-like texture and a THC content that ranges from 15 to 70 percent. Kief and hash may be inhaled or ingested.

Extracted from mature cannabis foliage, hash oil is a combination of the resin and other essential oils. Hash oil ranges in THC content from 30 to 90 percent. This oil can be added to food or smoked in a joint, pipe or specialty hash pipe.

Ingestion

Takes Effect in 1-2 Hours

Effects Last 6-8 Hours

Cannabinoids reach maximum potency when heated, and they are fat-soluble. Therefore, cannabis may be added to many drinks and foods. Heat is necessary to create active THC and CBD. Since ingested cannabis is processed by the body's liver, patients may experience stronger

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and longer-lasting psychoactive effects, especially when using products high in THC. The most common ways to ingest cannabis are through:

- Cannabis butter, which is cannabinoid-infused butter;
- Cannabis oil, which is made in a similar manner to cannabis butter, but it is a blend of cooking oil and cannabinoid resins;
- Cannabis liquor, which is an infusion of leaves and stems with rum, brandy or other alcoholic beverages;
- Cannabis beverages, which includes coffee and tea. Since the cannabis resins are not soluble in water, some form of oil must be added to coffee or tea to ensure that the resins dissolve in the beverage.

Another ingestion method is via a cannabis tincture. As concentrated cannabis liquids, cannabis tinctures take effect in 5-30 minutes with effects lasting 1-6 hours. The fastest way to introduce a cannabis tincture to the body is by holding a few drops under the tongue for one minute before swallowing the liquid. This product has a low odor, and it is easy to dose. Tinctures also come in sublingual sprays.

Medicinal cannabis is also available in pills and sprays, with effects that are very similar to those resulting from the preparations above.

Several prescription cannabis-based medications are available in pharmacies. Dronabinol, a Schedule III drug, is a capsule that contains synthetic THC in sesame oil and can be prescribed by physicians. These pills do not contain any of the other cannabinoids, and they are designed to treat weight loss and lack of appetite in AIDS patients as well as vomiting and nausea in chemotherapy patients. Sativex is a mouth spray that is used to treat aggravating symptoms in cancer and MS patients, such as overactive bladder, spasticity and neuropathic pain. Sativex is not yet available in the United States.

Topical

Takes Effect in Varying Times

Effects Last for Varying Times

The plant and its oil extracts can be added to lotions, salves and balms to make topical products. Topical cannabis does not create psychoactive effects in patients. These products are effective at reducing pain and inflammation. Topical cannabis can treat numerous ailments, such as:

- Allergic Skin Reactions;
- Inflammation;
- Muscle Strains;
- Post-Herpetic Neuralgia;
- Swelling.

Additional Notes:

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Although cannabis has an extraordinary record of safe and effective use spanning many centuries, it is important to use as little as is needed to achieve the medical benefits for which it was recommended by your doctor. Less may well be more when using medical cannabis. Bear in mind that cannabis has a biphasic dose-response curve, which means that symptoms that are improved by using cannabis at low doses may be exacerbated, or made worse, when it is used in high doses. Nausea is a good example of this. At low doses, marijuana can prevent nausea, while in high doses, it can create nausea or make it worse.

Negative Side Effects

As reported by anecdotal evidence and scientific research, cannabis in all its forms is a very safe treatment. Usually, any negative side effects are easily tolerated and mild. Anxiety attacks, convulsions and temporary psychosis are very rare complications, typically caused by ingesting too much edible cannabis or smoking cannabis high in THC, and are more likely to occur in patients who have never used medical marijuana or novice or use it infrequently.. It is impossible to fatally overdose on cannabis. Over time with regular use and dosage adjustments, many of the psychoactive effects are decreased. The possible negative side effects of cannabis usage include:

- Decreased sperm count (seen only in animal experiments and not yet in humans, but worthy of noting)
 - Drowsiness;
 - Eye redness;
 - Impaired psychomotor performance;
 - Hunger;
 - Short attention span;
 - Short-term temporary memory loss;
 - Thirst;
 - Uneasiness.
 - Euphoria
- Decreased REM sleep patterns

Precautions

Long-term, heavy cannabis use may impact reproductive hormones, possibly causing decreased sperm counts, however, it does not cause infertility. There is evidence in animals that fetal exposure to cannabis may carry a higher risk of cognitive deficiencies, small birth weight and premature delivery, but there is no research evidence of similar effects in humans. Nonetheless, it is important for women who are pregnant or may become pregnant to avoid using cannabis until scientific research can definitively determine whether its use in pregnancy also has negative effects in humans.

While cannabis is shown to improve mental conditions, such as ADHD, PTSD, bipolar disorders, depression and anxiety, some patients may find that cannabis aggravates the symptoms of their disorder. Therefore, patients who have been diagnosed with a mental illness are encouraged to consult with their doctors before using medical cannabis, and regularly while using it

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Although there is conflicting research on whether cannabis use in hepatitis C is beneficial or detrimental, patients diagnosed with hepatitis C should be judicious in their use of cannabis

Patients who smoke cannabis from a water pipe on a regular basis should change the water often to reduce the accumulation of bacteria and viruses.

Cannabis patients should refrain from driving for a minimum of two hours after using marijuana by inhalation, and should carefully assess their ability to drive or carry out complex tasks after using tinctures or especially ingested cannabis products. Keep in mind that cannabis can cause impairment of motor skills that may last for several hours, and that driving under the influence of cannabis, especially THC, is considered a crime in most states.

Drug Interactions

There are no major interactions between any drugs and cannabis. However, cannabis may intensify the effects from opiate and hypnotic medications. Initial studies have found cannabis to interact with medications such as antihistamines, barbiturates, disulfiram, fluoxetine and theophylline, and may alter the metabolism of antiepileptic medications. Caution should be used when mixing cannabis and alcohol due to the combination's ability to amplify the effects of both substances, known as a synergistic effect. Research in France has shown that the degree of impairment resulting from the combination is alcohol and cannabis is greater than either alone, and may last longer as well.