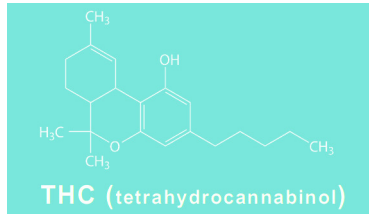


# THC Research



## Abstract

Defining THC in medical marijuana, scientifically. A research study for consumers who search to understand what THC is and how it works with the body's endocannabinoid system, how THC helps medical marijuana patients, and how to manage side effects of THC.

Explore the THC molecule in our research study overview. THC is the main active ingredient in cannabis, THC is known to get users "high", but how does THC do so?

## Defining THC

THC is short for Tetrahydrocannabinol, also known as Delta-9-tetrahydrocannabinol or Delta-9-THC. There are a few different scientific names, but the large scientific community refers to it simply as THC. THC is the main psychoactive ingredient in cannabis, THC is known for getting users "high" or "stoned".

## THC Science

To understand how marijuana (and THC) interact as is the case in the human body, it is important to understand what is THC and how it interacts with the brain, both alone and in combination with the other ingredients of cannabis with the body's endocannabinoid system.

Over the years, researchers have learned a lot about the effects of THC. The first part of this great knowledge base developed in the 1960s was led by an Israeli researcher named Raphael Mechoulam.

At a time when the use of marijuana has become more popular, the recognized Dr. Mechoulam saw that no one knew how the drug works. People use cannabis often euphoric and hungry, but why? The researchers had the active substance in opium (morphine) and cocoa leaves (cocaine) isolated, but scientists did not know why the people were

high off of cannabis.

Mechoulam was determined to discover the reasons behind such effects. The first drug that he and his team had discovered in cannabis was the prominent cannabinoid CBD. Although CBD has very interesting effects of its own, CBD does not cause strong psychoactive effects, so onward went the research team.

A year later, the researchers isolated the substance they were looking for as Delta-9-tetrahydrocannabinol (Delta-9-THC). How THC and CBD compounds in the plant are produced are in the sticky cannabis resin, and for a smaller part though the plant matter. THC is the psychoactive ingredient, it interacts with endocannabinoid receptors that create the high effect.

## **How THC works?**

To understand how THC works, knowing what cannabinoids are can help. What are the active ingredients of marijuana? THC is one of the compounds represented by ~480 chemicals documented in marijuana plants. Dozens of these compounds (including THC) are classified as cannabinoids.

Each cannabinoid works in different ways. Cannabinoids alter the body by imitating natural chemicals in the brain, taking the cannabinoid receptors in the brain. TCL, for example, mimics the action of anandamide neurotransmitters, which kills the processes linked to pain and depression.

While THC affects CB1 receptors, CBD is linked to the CB2 receptors of the endocannabinoid system which have shown to be effective in reducing anxiety, promoting relaxation and as a painkiller. CBG prevents the CB1 receptor from overacting effects. THCV, another cannabinoid, usually assists neurological effects such as suitable for treating epilepsy, perhaps. CBN is attributed to bone growth and muscle cramps and for prevention of diseases, such as multiple sclerosis.

Cannabinoids such as THC include cannabinoid receptors associated with producing various effects throughout the body.

The effect is more than just a theory. Medical marijuana cannabis patients try to treat their disease by various methods prior to medical marijuana use often report on the benefits of medical marijuana. While some patients only use CBD to treat certain symptoms and disease, others believe that they illuminate the benefits by using the whole plant of cannabis. These people prefer to smoke or otherwise take marijuana as the full range of cannabinoids is still intact, instead of a single concentration of cannabinoids.

## **THC side effects**

Because the brain of each person is different, the effect of THC may vary from person to person. When THC is in the brain, it is connected to the same cannabinoid receptors that are responsible for such things as thinking, remembering things, feel pleasure, coordination and perception of how much time has passed.

Many people find the effects of THC to be nice, but the effects can be unpleasant and even dangerous in high doses or for people with certain diseases. Although there is no guarantee that how THC affects each user, here are some of the side effects often associated with the connection.

THC side effects may include:

- euphoria
- relaxation
- drowsiness
- effects on the auditory / visual system
- delay of time
- hunger
- dry mouth
- memory problems
- dizziness
- fear
- paranoia
- increased heart rate

## **Tips for the first time THC user**

What makes user of THC feel high? Some people feel no effects from the first time they try marijuana, while others uncomfortable surge of high feelings. For those who wish to use THC, but do not know the outcome, it may be best to start with a very low does of THC. Compared to edibles, smoking or vaping is the best way to control the dosage and quickly feel the effects. It is best to start with only one or two inhalations. Effects of THC start generally in a few minutes.

Edibles are often difficult because the effects longer to set up and can difficult to get a small dosage. For this reason inexperienced users to tread carefully when cookies infused with marijuana food or candy. New York Times columnist Maureen Dowd discovered this the hard way when she got too high after drinking too much of a chocolate bar infused hash one brutally bad night at home.

In short, the rule of marijuana beginners is to always start low and slow, then move up in THC dosage as needed.

## **Who should avoid THC?**

Women who are pregnant or breast feeding: The ingredients in marijuana can cross the placenta and slow the growth of the fetus. It can also cause damage or cause childhood leukemia. THC in breast milk can also slow down the development of the child.

People with heart disease: Since THC increases the heart rate and blood pressure, prevent people at increased risk for heart attack and stroke.

People with epilepsy: While some patients use cannabis (often high CBD strains) to control their epilepsy may fear that cannabis reduce the seizure threshold in some people. People with epilepsy should work closely with their doctor to determine if THC is a health risk.

People with a predisposition to mental disease: Studies have shown a link between cannabis use and the development of psychotic disorders such as schizophrenia shown to people who have a personal or family history of the disease. Even for those who are prone to anxiety be careful, paranoia, and increased heart rate, THC can often aggravate effects of this condition.

## **Which diseases are treated with THC?**

For years, people have used cannabis around the world for the treatment of common diseases and conditions. As in many places, patients often use marijuana on the black market for medicine.

Recently, a number of legislative changes have access to marijuana for medical purposes easier for people. Even before the law began to legalize recreational marijuana to take control, many places have the right to get used to people and medical marijuana to certain conditions. In 2019, medical marijuana legal for patients in dozens of countries and at least 30 countries worldwide.

THC medical services help legalized medical marijuana as it allows THC patients to access the drug.

## **Approved Medical Conditions**

Patients can help a wide range of diseases THC without the side effects of conventional medicine. But it is important for patients to discuss with their doctor and do research to confirm that marijuana is useful for the state where they want to target. In recent years has been touted as a cure for everything from cancer to glaucoma and Alchemies's disease cannabis. Because of the limited research, due to the legal status of THC in countries like the US, the evidence is too limited to support its use for specific diseases.

As more and more data sets on THC are available, an increasing number of patients with access to THC can apply it to their situation. It is clinically tested (the synthetic form) under certain conditions in some of the most common diseases for medical use of cannabis in countries where the law is adopted.

### **THC for loss of appetite, nausea and vomiting?**

Patients with AIDS or cancer undergoing chemotherapy often deal with nausea, vomiting and weight loss. In several clinical studies of THC was effective in the treatment of these ailments. It is actually so effective that pharmaceutical companies have used the knowledge prescribed dronabinol, a synthetic THC regularly in patients with cancer or AIDS.

### **THC for chronic pain?**

THC has also been shown to be effective as an analgesic. Therefore, often used to treat cancer patients and those with severe illnesses and chronic pain, such as fibromyalgia.

### **THC for muscle spasms?**

Multiple sclerosis causes muscle spasms that cause stiff, pain and severe pain. THC acts in the part brain that affects this movement to help to relieve painful muscle spasms. Many patients find that marijuana is preferable to conventional antiepileptic drugs which can make you feel weak and sleepy.

### **THC for all types of pain?**

THC may show statistical advantages in medical marijuana use cases, especially when combined with CBD, which can help people with pain or spasticity.

Although research has suggested that THC for many different diseases can be helpful, the researchers are quick to note that the connection is not a panacea, and there is more evidence is needed to confirm the benefits. There are some promising studies appearance was in cannabis as a potential treatment of many different diseases.

### **THC for depression?**

When one of the effects of THC protects the brain? Although many drugs inhibits the ability of the brain to form new cells, studies have shown cannabinoids such as THC to

stimulate the production of brain cells that are capable of neurogenesis. The researchers tested this theory by using HU-210, a synthetic substance that is 100 times stronger than the standard THC. They believe that further research is needed for useful examined treatments in use with people suffering from mood disorders like depression.. Medical experts now believe that many people, depression is triggered when there is not enough new brain cells are generated in the hippocampus.

## **THC for brain injuries?**

Another positive result researchers found is that THC may be a neuroprotective. This makes cannabis among many other substances that protect rather than harm brain cells. A study by researchers at Tel Aviv that THC was useful to be protected from lack of oxygen, toxic substances or seizures caused brain cells from damage. While previous studies, high doses of THC data was used in a very short time, this study showed that a low dose is effective for a period of days.

The researchers also found that exposure to brain damage in mice was later surpassed when they received doses of THC before or shortly after their injury. Researchers are still working to see if THC (like epilepsy can occur are subject to a high risk of heart attack or heart surgery have their blood supply may be interrupted by the brain) is a good preventive medicine for people at high risk of damage to the brains.

## **THC for cancer?**

Researchers are also trying cannabis as a potential cancer fighter. A 2016 study of the large amount of evidence that cannabinoids reduce tumor growth, prevent new blood vessels and cancer metastasis discussed various types of tumors reduce growth. It is important that these results should be observed in a laboratory environment and not in human studies.

## **THC for other ailments?**

The researchers also hope that THC and other cannabinoids are useful for diseases such as Alzheimer's disease and dementia, Tourette's syndrome, Huntington's disease, post-traumatic stress and treatment of Parkinson's disease, among others. Some sites approval of medical marijuana has given the disease had not yet been established, while others are more evidence necessary conditions added to the list.

While studies have had promising results for many diseases, it is important to work with cannabinoids and concentrated cells in a laboratory results are often very different from the results obtained to notice or consume marijuana during normal breathing. Therefore it is important for people to consult their doctor before deciding whether or not to use THC for treatment of a medical condition.

Scientists believe that THC is beneficial to those who may suffer from brain damage.

## **Drugs based on THC**

Many places have marijuana laws giving patients the ability to receive treatments that include THC. Pharmaceutical companies have worked to create synthetic drugs based on THC.

The idea behind the development of this drug is an alternative medicine for people living in places where medical marijuana is legal to offer. Products that are consumed in the form of cannabis is not practical for certain people. Another advantage of THC-based medications is that they are often seen less as “taking marijuana” and given the associated “drug” stigma.

### **Dronabinol, Marinol, Syndros**

The first drug to be, and the structure of THC, dronabinol (Marinol marketed as in tablet or liquid form Syndros). Tetrahydrocannabinol may help nausea and vomiting suppression and also stimulates the appetite. Doctors often prescribe medical cannabis solutions to patients undergoing chemotherapy and AIDS.

### **Sativex, Sativex**

Sativex (Sativex) appears as a 1:1 mixture of THC to CBD. It also contains the concentrated and purified cannabinoids, which are obtained from all the cannabis plant (rather than a synthetic material). The orally administered in vapor form and is approved for multiple sclerosis, spasticity in patients. Sativex is approved for neuropathic pain in MS and cancer pain.

While cannabinoid-based drugs that may be useful, they also have their drawbacks. For example, some patients report that the effects of dronabinol is far more powerful than THC psychotropic side effects, so they will not be able to function after a single dose. With Sativex, nearly a quarter of the patients have dizziness after taking the drug.

Many patients prefer to get a small dose of marijuana flexibility, as they say, they are better able to continue working. Some people start to hate waiting for medicine but rather feel a small amount of marijuana vape or joint provides immediate relief. Others believe that the pharmaceutical industry does not work as well as traditional cannabis.

The reports of these substances not only serve to confirm the theory of the effect of the environment and cannabis. It may be that all the marijuana plant, but the full range of cannabinoids and terpenes exceed the medicines that act only one or two of these com-

pounds.

Pharmaceutical companies have worked in favor of THC in synthetic drugs, as no surprise.

## **THC in marijuana strains**

Another factor that can affect learning what the consumer feels from the intensity of THC and resulting side effects is attributed to the individual strain of marijuana used. Various strains of cannabis give various concentrations of cannabinoids. Therefore each strain may produce a different mix of cannabinoids and effects.

Generally a higher THC strain gives the user a strong euphoric high. Marijuana that has a high THC content is often described as “racy” and “powerful”. That's why there are people who are new or marijuana, tend to fear the high that comes with more THC.

People looking for high-THC marijuana strains are usually experienced in using marijuana and know the high they are looking to obtain. In legal states in the United States, high THC cannabis strains are popular. The mean THC content from cannabis sold in Colorado dispensaries, for example is at about 25%. By comparison, the black market was often marijuana in the 70s was around 2-5% THC.

The effects of THC may come as a surprise to those who have never used cannabis or tried it for the first time in many years. Specialization in the medical and recreational marijuana industry tends to emphasize a wider range of high THC strains being grown.

## **Culture and THC**

Marijuana farmers often opt to grow high THC strains, as the high effect is desired by most users of recreational cannabis. Breeders can selectively pick the most productive THC-rich plants for making the next generation of cannabis seed stock.

Cannabis cultivators discuss how growing techniques may affect THC production in plants. Is marijuana grown outdoors in the natural sunlight going to contain a higher THC content than marijuana grown indoors? Does hydroponics or other advanced cultivation methods attribute to an increased THC production? The answers may become revealed in future research.

## **Activating THC**



THC side effects may vary depending on the strain of marijuana used and consumption method.

A quick lesson on the methods of taken to activate THC in cannabis will help to explain the different ways that people benefit from THC.

To understand THC, the early marijuana users must understand decarboxylation. In cannabis, this term heat solely the starting material to the point of cannabinoid activation.

It may come as a surprise to many learning that you do not get high from raw marijuana. In fact, raw cannabis contains little to no THC. Instead, raw buds contain THCA, tetrahydrocannabinol (acid) that is not psychoactive. This means that, in scientific terms, that it is necessary to remove the acid with a carboxyl group in the molecule to transform THCA into the THC structure. Should cannabis be heated long enough (and at a suitable temperature), THCA converts to tetrahydrocannabinol (THC). The new psychoactive substance THC, contains much more psychoactive affects on the body.

Cannabinoids in marijuana decarboxylate at different boiling points, THCA usually begins after about 30 to 45 minutes at 230 ° C to be heated into THC.

## **Smoking THC**

Decarboxylation is why smoking cannabis is an effective method for medicating. By burning the marijuana, the THC is rapidly activated and other cannabinoids. Also smoking creates an inhalation rush of chemicals in the body and brain. It is a quick, easy and efficient way consume THC.

Smoking not only activates the THC in cannabis, it also provides THC a way to enter the body.

## **Vaping THC**

For those who do not want to breathe the smoke (either because it makes them cough or for health reasons), vaporizing marijuana is a popular way to activate THC (Delta-9-tetrahydrocannabinol). Vape pens work by heating of the material of cannabis to a temperature at which the decarb process happens but not by burning the cannabis material, rather the creation of a cannabinoid-rich vapor. The heating process in vaporizing marijuana activates the cannabinoids and helps them to quickly react with the body's endocannabinoid system.

## **Eating THC**

Eating THC is another popular method in culture from “weed brownies” to “cannabutter”, “space cake” and more. Marijuana edibles can contain infused THC to make incredibly powerful medications.

The rule of low and slow is especially important with edible marijuana. On the one hand the necessity of cannabis on the right amount of time dicarboxylate cooking or frying at a low temperature. And more importantly, it is a reminder for beginners to start with a very low dose (10 mg is a good starting point), and wait to eat more.

## **THC topicals**

Cannabinoid receptors work to absorb cannabinoids not only in the body but also outside the body, on your skin. THC is absorbed by the skin, can be put on in creams and conditioners to relieve pain or in other applicable medical use cases.

## **THC FAQ**

The next section is for those who are looking for a short Q & A or questions about marijuana and THC.

### **What is THC?**

THC tetrahydrocannabinol (delta-9-tetrahydrocannabinol), is the most well-known active ingredient in marijuana. THC is responsible for the psychotropic effects of marijuana, such as euphoria, dizziness, and improve the sound and visual sensations. It achieves these effects by interacting with the cannabinoid receptors in the brain.

### **The effects of THC feel like?**

THC side effects may be energetic, silly, happy, relaxed and sleepy. The colors and sounds may lead to intense gazing and visual pathways that appear to be behind moving objects. Time may feel that it is moving slowly. THC can intensify hunger and the joy that comes from eating food.

Since THC is a psychoactive chemical, there is no way to know how THC will make users until they try it. Some people love it, and “smoke weed everyday” but for others, the effects of THC is anything but pleasant. Dry mouth is not comfortable, but generally not problematic. The interference effects are rapid heartbeat and anxiety. Some people feel very paranoid under the influence of THC. THC could also affect short-term memory.

## **How long are THC side effects?**

THC effects seem to be for varying amounts of time, depending on the method of ingestion and metabolism in the body. Effects of smoking marijuana or fog tends to wear off within 1-3 hours. Meanwhile, the effects of cannabis from THC administered orally as food or capsules may be longer.

## **An overdose possible from marijuana?**

There is no documented case of a person dying as a direct result of the excessive use of marijuana. It is possible to consume enough THC to create very unpleasant effects however. In high doses, the effects of THC to very unpleasant and even frightening. You could have a rapid heartbeat, anxiety and paranoia, nausea and vomiting and hallucinations.

## **What should I do when I get high on marijuana?**

If the effects of THC is too intense, it can help to drink water and eat food. Exercise may prove helpful in reducing the high effect.

## **How long does marijuana stay in your system?**

While THC side effects disappear after a few hours, the compound may also linger in the body for a few weeks of use. How long can it be found? It depends on the quantity and frequency of use along with the type of drug testing (and sensitivity testing). Blood tests can detect THC to be used for several hours to one day after marijuana. Urine tests may indicate that there is to recognize a maximum of 90 days to 30 days after the THC usability tests.

## **Is there a way to get THC in your system?**

THC can be found the body depending on the amount of consumption, frequency, and individual metabolism. Some people may speed up the cleaning process by drinking plenty of water, but as a sign of delta-9-tetrahydrocannabinol displayed on a drug test, will take some time to remove it completely.

## **Can THC second hand smoke fail your drug test?**

It is unlikely. Studies have shown that exposure to second hand smoke marijuana for three hours people are not dosed with enough THC to make them fail a drug test.

## THC Research Conclusions

THC has shown to be the foremost psychoactive cannabinoid in medical and recreational marijuana research around the world.

For the future of the scientific community, THC stands to be analyzed in combination with other cannabinoids as part of potential medical applications. Research shows the adaptation of former and present THC studies regarding the delta-9-tetrahydrocannabinol effects as a net positive.

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