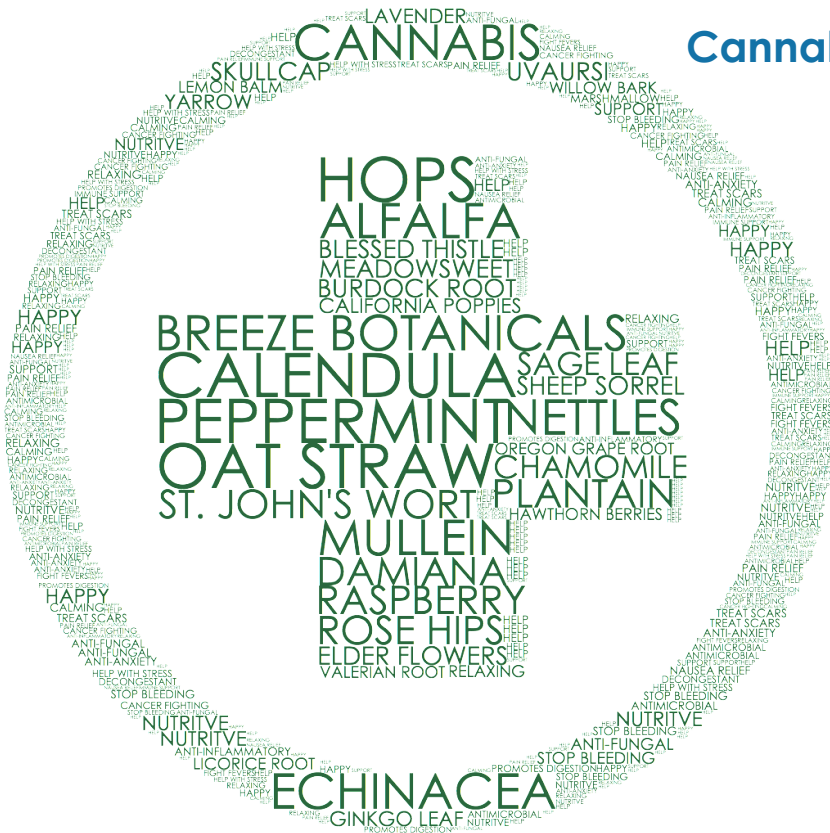


Understanding CANNABIS



Cannabis as a medicinal herb

How Cannabis Works

Terpenes

Cannabinoids

What You Should Know



the producer



the processor



the dispensary

A Family of Companies Working to Ensure Safe Access
to Quality Healing Herbs

Cannabis as Medicine

What You Should Know



Pal•li•ate: to reduce the violence of a disease; also: to ease symptoms without curing the underlying disease; adjective, palliative.



Medical science and history show that Cannabis is an effective palliative, a class of medicines that ease human suffering. Natural and gentle, Cannabis is used to treat symptoms of many diseases and conditions, and some of the side effects of pharmaceutical drugs.

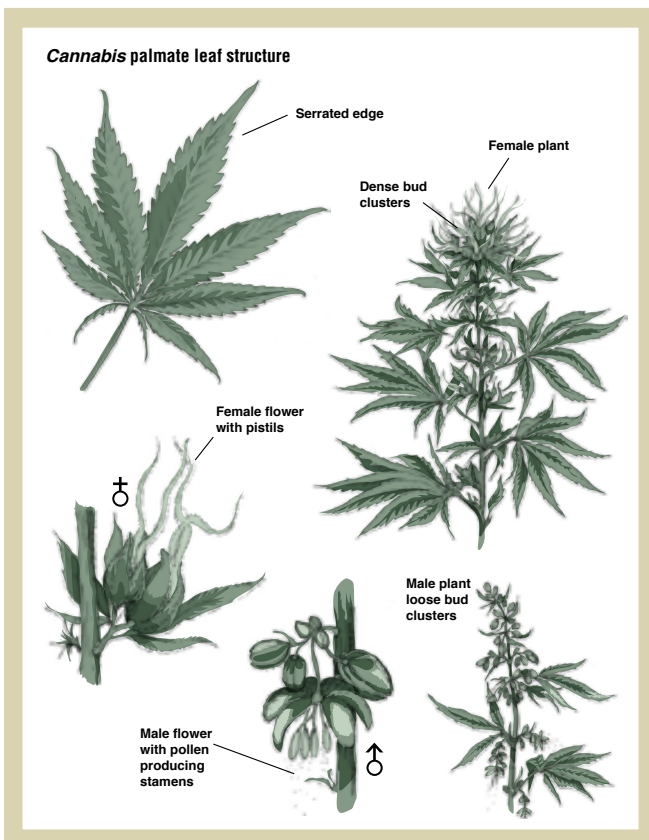
The science of medical Cannabis lags behind its use and more research is needed. Strong science supports the use of Cannabis as an analgesic painkiller, an anti-emetic for nausea and as an appetite stimulant. There is less scientific support for the use of Cannabis as an anti-inflammatory, despite significant anecdotal evidence. Scientists are also investigating whether it slows, or partially reverses, certain diseases such as cancer.

DISEASE-CONDITION

- Cancer
- Multiple Sclerosis
- HIV-AIDS
- Epilepsy and seizure disorders
- Glaucoma
- Rheumatoid Arthritis
- Crohn's Disease and Irritable Bowel Syndrome (IBS)
- Cachexia (wasting syndrome)
- Chemotherapy-induced Nausea and Vomiting (CINV)
- Pain-induced nausea
- Neuropathic Pain
- Disease-related anorexia (loss of appetite)
- Muscle spasms and spasticity

The medical benefits of Cannabis come from chemicals called cannabinoids and terpenes, which interact with the central nervous and immune systems. Best known is THC (delta-9 THC), the cannabinoid that produces the high, or the psychotropic effect. These calming and euphoric effects are therapeutic and THC has other medical benefits. However, the other cannabinoids and terpenes are also shown to play an important medicinal role and should be considered by patients.

Cannabis is a genus of flowering plants in the hemp family. Native to Asia, it has been cultivated worldwide over thousands of years. Traditionally, there were three classes: Cannabis sativa, Cannabis indica and Cannabis ruderalis. But these may be the most common of almost 700 variations of the genus. Sativas tend to be rich in THC while indicas tend to also be abundant in other cannabinoids. However, the distinct characteristics of each vary with environment, growing method and curing.



How Cannabis Works

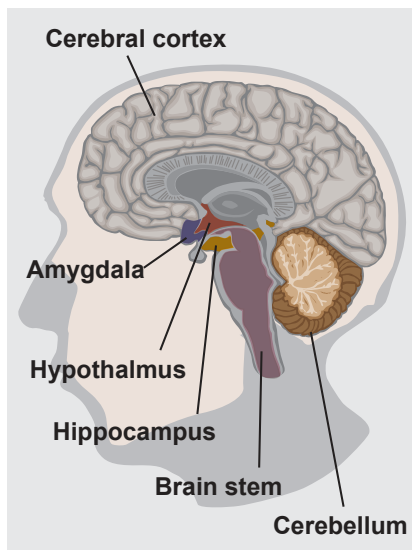
Biochemistry

The active ingredients in Cannabis – *cannabinoids* and *terpenes* – are delivered to the blood through the lungs (when inhaled), the digestive system (when consumed) or the skin (when applied topically). From the blood, they are available to the brain, central nervous and immune systems.

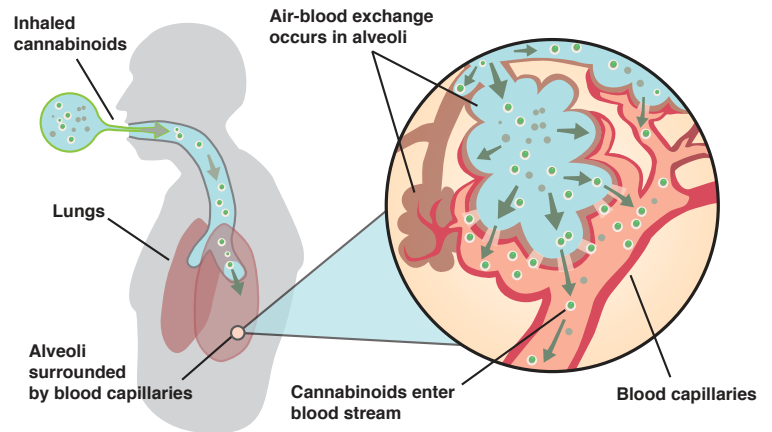
Humans are built to interact with cannabinoids, with endocannabinoid systems of special receptor molecules embedded in our brains and along neural pathways. The receptors influence the flow of chemical signals to the brain.

Cannabinoids bind with the endocannabinoid receptors, creating medicinal effects by suppressing signals such as pain, nausea and depression while boosting signals of appetite and euphoria.

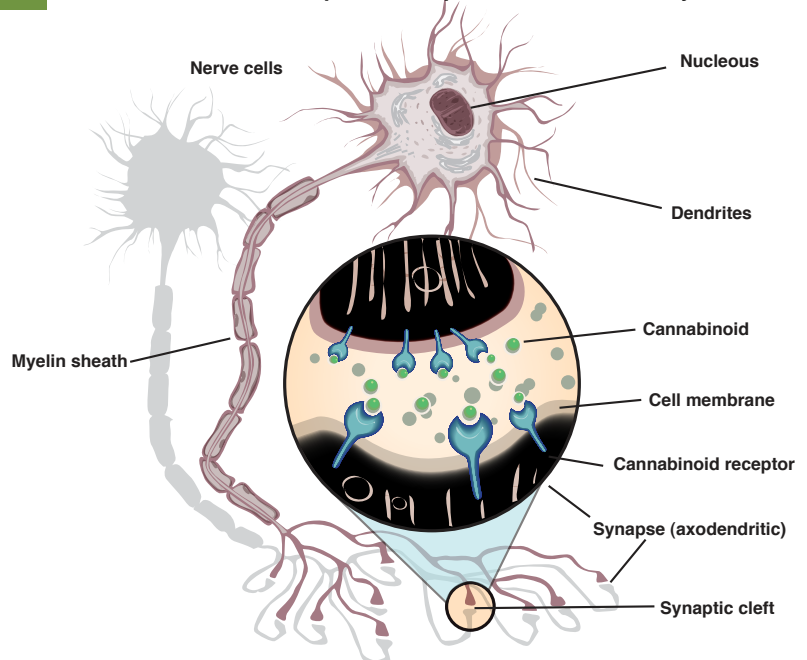
Areas of Brain with High Concentrations of Cannabinoid Receptors



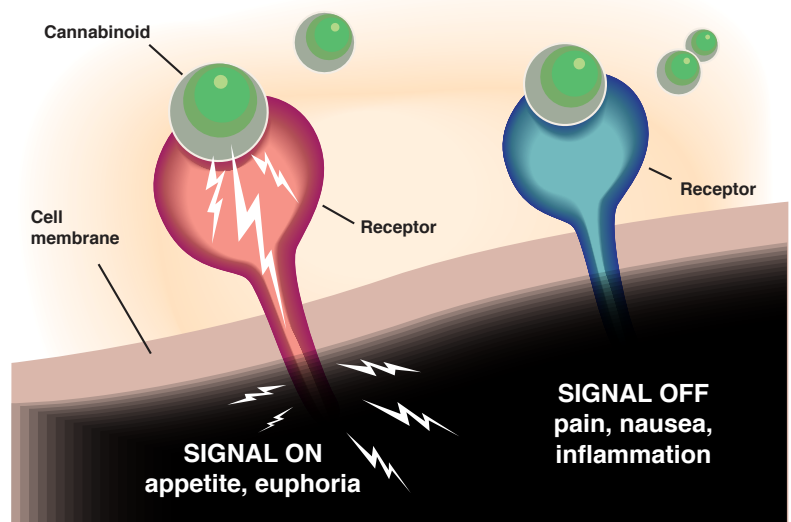
1 Inhaled Cannabinoids Enter Blood Through Alveoli in Lungs



2 Cannabinoids Bind with Special Receptors on Neural Pathways

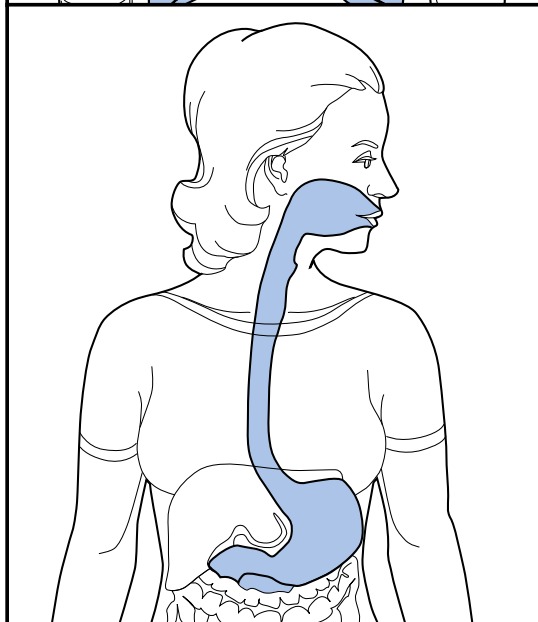
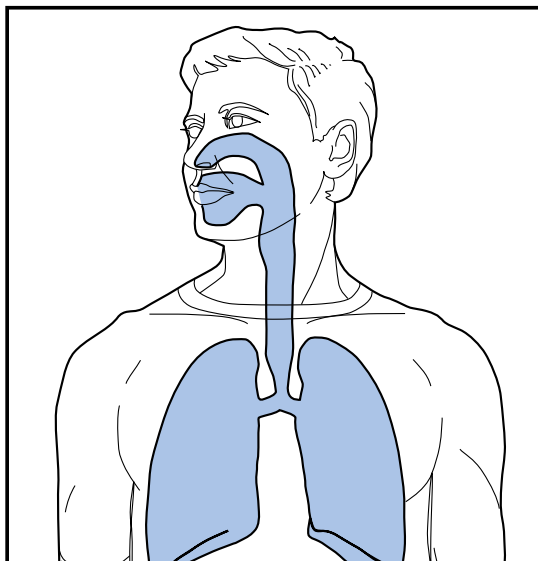


3 By Binding with Receptors, Cannabinoids Turn Signals On or Off to Create Medically-Beneficial Effects



How Cannabis Works

Administration



Inhalation is the fastest method after intravenous administration, with peak blood levels achieved within 5-20 minutes. Most common is smoking, which provides rapid onset of relief, but is hazardous to health. Combustion also burns active ingredients while others are lost in smoke. Using water to filter harmful compounds from smoke is unproven and may actually reduce the availability of active ingredients.

Vaporization provides the rapid relief of inhalation without the toxic and carcinogenic by-products of smoking. Heated to a point below combustion (390° F or 200° C), the plant boils and releases a mild, smokeless vapor. This activates a higher percentage of therapeutic ingredients and loses fewer than smoking.

Ingestion takes time because the active ingredients go through the gastrointestinal tract before entering the blood. They are also chemically altered during "first pass" metabolism (digestion). THC reaches the blood in the form of 11-hydroxy THC, which is highly psychotropic. Edibles may have longer-lasting effects for some patients.

Tinctures are alcoholic extracts of the active ingredients applied as drops to the membranes of the mouth. There is little science around this method, with estimates of efficacy ranging from immediate to several hours.

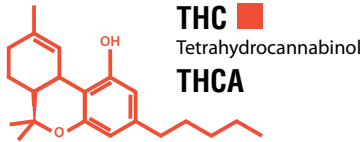
Topicals enter the blood relatively quickly through the skin. There is extensive anecdotal (not scientific) evidence that topical Cannabis has analgesic (painkilling) and anti-inflammatory effects, with psoriasis and skin tumor applications. More re-search needs to be done.

Cannabinoids

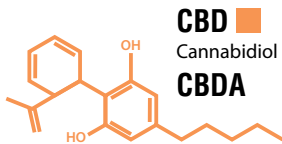
What You Should Know

CANNABINOID

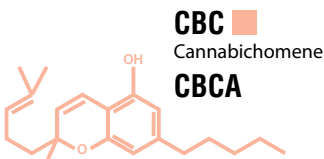
BENEFIT



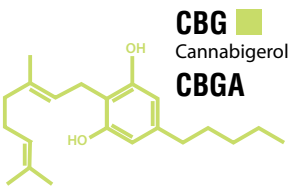
Psychotropic, painkiller, anti-inflammatory, anti-microbial



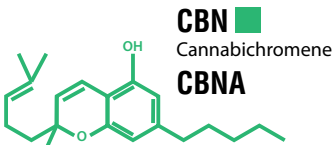
Relieve anxiety, convulsions, depression, inflammation and nausea sedative, sleep aid and muscle relaxant



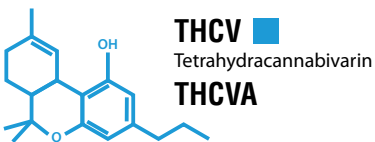
Anti-inflammatory, painkiller, treats acid reflux, anti-anxiety, antidepressant



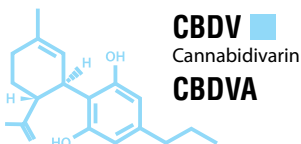
Painkiller, muscle relaxant, anti-erythemic analgesic, digestive aid, stomachic (stomach function)



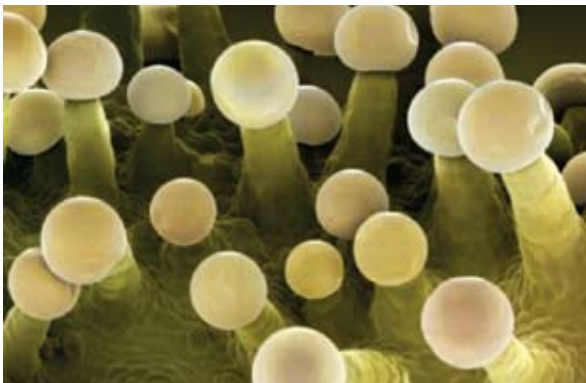
Mild psychotropic, may stimulate bone growth, anesthetic, anti-convulsive, analgesic, anti-anxiety



Anti-obesity, aids memory, calming aid, antibacterial, antiviral, immune system



Anti-inflammatory, analgesic, protects cells lining digestive tract



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While THC gets the attention, there are over 70 cannabinoids in Cannabis. The other cannabinoids – and terpenes – are believed to have therapeutic effects and must be considered by patients.

Among other effects, cannabinoids suppress pain and nausea while stimulating appetite, euphoria or calm. They are also thought to interact, with CBC enhancing the effects of THC, and CBD enhancing both THC and CBC.

Did you know that there is no THC in Cannabis?

Raw Cannabis contains the acidic compound THCA, not the neutral compound THC. THC-A is converted into THC by the heat of combustion, vaporization or cooking in a process called decarboxylation. This rule applies to all cannabinoids: naturally occurring acidic CBD-A converting to CBD, CBGA to CBG and etc.

The acidic versions have traditionally been considered biologically inactive. However, depending on the method of preparation and administration, not all of the acidic cannabinoids are converted during decarboxylation (particularly in edibles). Research suggests that these residual compounds may have medicinal effects. In edibles, they are psychotropic.

The presence of all the major cannabinoids should be taken into account by patients when evaluating a strain of medical Cannabis.

Terpenes

What You Should Know










Do you use smell when choosing your medical Cannabis?

Then you are familiar with terpenes – aroma and taste molecules in the essential oils of plants. Terpenes provide each plant's distinctive scent, or essence, and are used to attract pollinators, repel pests and discourage herbivores. Humans have used them for therapeutic purposes and in a wide range of products – from perfumes to soaps and pharmaceuticals.

Like roses or spices, different strains of Cannabis have unique odors ranging from sweet to acrid and skunky to floral – the chemical signatures of terpenes. Terpenes are also building blocks of chemicals such as THC-A, the acidic version of THC. They are major components of Cannabis resin and extracts produced from these resins. Up to 30% of the resin in Cannabis smoke consists of terpenes.

Scientists believe that terpenes account for some of the medical benefits of Cannabis including pain killing and anti-inflammatory effects. They also exhibit other useful effects. For example, terpene content is one of the biggest differences between Cannabis sativa and Cannabis indica. The general rule that patients often prefer sativas for daytime use and indicas for nighttime use suggests that the sedative effects of Cannabis are influenced by terpenes.

Patients should take into account the content of major terpenes when evaluating various strains of medical Cannabis. This information can help you select the best medicine, with your desired therapeutic effects.

TERPENE	BENEFIT	AROMA
 Pinene Also found in pine needles	Anti-inflammatory Anti-bacterial Bronchodilator Aids memory	Pine Earth
 Myrcene Also found in hops	Sedative Sleep aid Muscle relaxant	Flowers Pungent Earth
 Limonene Also found in citrus	Treats acid reflux Anti-anxiety Antidepressant	Citrus Fresh spice
 Terpinolene Also found in coriander	Analgesic Pain reduction Digestive aid Stomachic	Pine Herbal Anise Lime
 Linalool Also found in lavender	Anesthetic Anti-convulsive Analgesic Anti-anxiety	Flowers Lavender Citrus Fresh spice
 Terpineol Also found in mugwort	Calming aid Antibacterial Antiviral Immune system	Pleasant lilac Citrus Wood
 Caryophyllene Also found in black pepper	Anti-inflammatory Analgesic Protects cells lining Digestive tract	Citrus Spice
 Humulene Also found in basil	Anti-inflammatory	Robust Herbaceous Earth
 Ocimene Also found in thyme and alfalfa	Decongestant Antiseptic Antiviral Bactericidal	Citrusy green Wood Tropical fruit



What You Should Know

Safety and Efficacy



Risks

While relatively gentle, Cannabis has side effects -- anxiety, increased heart rate and changes in blood pressure. Regular use can lead to dependency and mild withdrawal syndrome. There is ongoing debate on possible long-term effects on psyche and cognition, immune system, fertility and pregnancy.

What's Inside

Look beyond THC potencies for all biologically relevant ingredients.

What's Not Inside

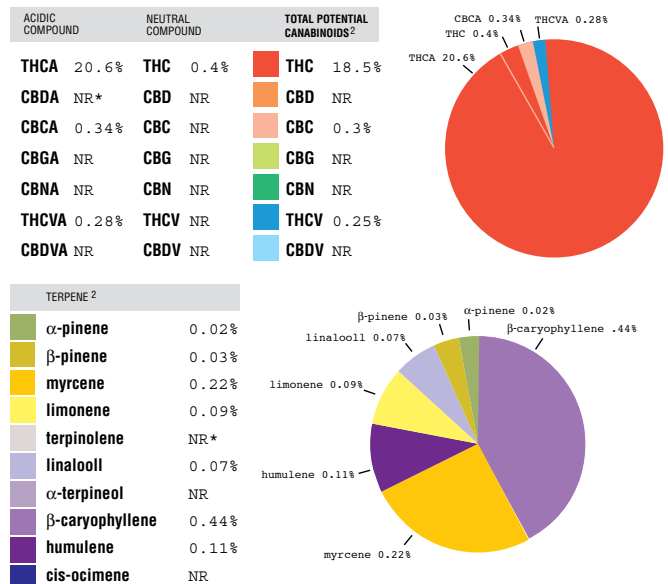
Cannabis should be free from dangerous levels of contaminants and pathogenic species—heavy metals, pesticides, herbicides, growth enhancers, microbes and fungi.

Chemical Fingerprint

Recognize the major cannabinoids and terpenes – the full chemical “fingerprint” that works for you.

Medical Cannabis should be used under the care of a physician. The information in this brochure is not medical advice. Talk to your doctor about physician-guided options available to you.

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* None Reported because the compound exists at or below the detection limit of the method.