

The Truth about Cannabis (Overview)

James Manos*

Private Section Laboratory Medicine Doctor, Expert on Infectious Diseases, Hematology, Serology and Biochemistry, Australia

***Corresponding Author:** James Manos, Private Section Laboratory Medicine Doctor, Expert on Infectious Diseases, Hematology, Serology and Biochemistry, Australia.

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Overview of cannabis

Recreational (vs) medical use

The fact that cannabis is studied for several diseases does not mean that a healthy person who smokes marijuana will gain something. But even a patient may not, as every drug needs to have an optimal blood concentration to treat a disease. Contrary to weed, a cannabinoid drug is a pharmaceutical product standardized in composition, formulation, and dose. Importantly, many people need to distinguish the medical with the recreational use of cannabis!

Has medical cannabis health effects?

Cannabis may modulate pain as cannabinoid receptors exist in our body and are part of the endocannabinoid system, which is involved in a variety of physiological processes including appetite, pain-sensation, mood, and memory. However, many of its attributed benefits, often advertised by lay people and not experts, are unproven or anecdotal.

What scientific studies demonstrate regarding medical cannabis effectiveness?

Currently, cannabinoids are studied for a variety of medical conditions including obesity and neurological diseases. Many studies have demonstrated its modulatory role in pain. You may have a look at the Cochrane Library on <https://www.cochranelibrary.com/> for various meta-analyses using the keywords «cannabis» and also «cannabinoids» as a single study says nothing, as evidence-based medicine relies on meta-analyses and systematic reviews of multiple studies.

A 2017 systematic review of the effectiveness of medical cannabis for psychiatric, movement and neurodegenerative disorders concluded that more adequately powered controlled trials that examine the long and short-term efficacy, safety and tolerability of cannabis for medical use, and the mechanisms underpinning the therapeutic potential are warranted.

A 2018 report for therapeutic effects of Cannabis and cannabinoids from the National Academies of Sciences, Engineering and Medicine that conducted a rapid turn-around comprehensive review of recent medical literature concluded that there was conclusive or substantial evidence that cannabis or cannabinoids are useful for the treatment of pain in adults; chemotherapy-induced nausea and vomiting and spasticity associated with multiple sclerosis. Moderate evidence was found for secondary sleep disturbances. The evidence supporting improvement in appetite, Tourette syndrome, anxiety, posttraumatic stress disorder, cancer, irritable bowel syndrome, epilepsy and a variety of neurodegenerative disorders was described as limited, insufficient or absent.

A 2015 systematic review and meta-analysis concluded that there was moderate-quality evidence to support the use of cannabinoids for the treatment of chronic pain and spasticity. There was low-quality evidence suggesting that cannabinoids were associated with

improvements in nausea and vomiting due to chemotherapy, weight gain in HIV infection, sleep disorders, and Tourette syndrome. Cannabinoids were associated with an increased risk of short-term adverse effects.

The four cannabinoid drugs approved by the FDA

At present the FDA has approved four cannabinoid drugs. It recently approved the cannabinoid manufactured synthetic drug Epidiolex™ containing cannabidiol (CBD). It is an oral drug for the treatment of seizures associated with two rare and severe forms of epilepsy, Lennox-Gastaut syndrome, and Dravet syndrome. It is licensed for use in patients two years of age and older. CBD is a chemical component of the cannabis plant that does not cause intoxication or euphoria (the “high”) that comes from tetrahydrocannabinol (THC). It is THC (and not CBD) that is the primary psychoactive component of marijuana.

The other three cannabinoid drugs approved by the FDA are dronabinol, nabilone, and nabiximols. Dronabinol (Marinol™ and Syndros™) is a synthetic form of tetrahydrocannabinol (THC) approved by the FDA as an appetite stimulant for people with AIDS and antiemetic for people receiving chemotherapy. As mentioned above, THC is the principal psychoactive constituent of cannabis. The pharmaceutical formulation dronabinol is an oily resin provided in capsules available by prescription in the US, Canada, Germany, Australia, and New Zealand.

Nabilone, (Cesamet™ and others) is a synthetic cannabinoid that is used as an antiemetic and as an adjunct analgesic for neuropathic pain. It mimics THC.

The FDA has approved nabilone for chemotherapy-induced nausea and vomiting. In other than the US countries, such as Canada, it is widely used as an adjunct therapy for chronic pain management. Notably, numerous studies have shown modest effectiveness for relieving fibromyalgia (although many believe that it is a psychosomatic disorder) and multiple sclerosis (MS).

Nabiximols (Sativex™) is a cannabis extract that in 2010 was approved as an herbal drug in the UK as a mouth spray to alleviate neuropathic pain, spasticity, overactive bladder, and other symptoms of multiple sclerosis. The drug is a pharmaceutical product standardized in composition, formulation, and dose. Its main active cannabinoid components are the cannabinoids THC and CBD.

Cannabis adverse effects and toxicity

Cannabis has many adverse effects. Acutely, the physiologic effects of cannabis use include decreased systemic vascular resistance, tachyarrhythmia (elevated heart rate), decreased intraocular (inside the eye) pressure, nystagmus, conjunctival injection, lethargy, reduced concentration, and generalized psychomotor impairment. Although tachycardia may occur in acute use, slowing of the heart rate has been reported with more chronic use.

Cannabis toxicity in children can be more concerning and can lead to decreased muscle coordination, lethargy (= a lack of energy and enthusiasm), seizures, and even obtundation (altered level of consciousness). Synthetic cannabinoid toxicity is associated with similar symptoms. However, sympathomimetic toxicity, acute psychosis, and agitation, as well as seizures and sedation can occur.

In severe cases, hyperthermia (= the condition of having a body temperature significantly above normal), rhabdomyolysis (a situation in which damaged skeletal muscle breaks down rapidly, something that may lead to kidney failure) and renal (kidney) failure have occurred. Synthetic cannabinoids are commonly adulterated (with other substances that may be noxious), leading to these worsened effects. Cannabis may also cause cannabinoid hyperemesis syndrome which presents with cyclical vomiting, usually reported to be relieved with warm showers and cessation of cannabis abuse. Other chronic effects of prolonged cannabinoid use include lung disease, increased risk of cardiovascular disease, reduced fertility, and deficits in cognition and memory.

Cannabis and cancer risk

Cannabidiol (CBD) and cannabidivarin (CBDV) are natural cannabinoids which are consumed in increasing amounts worldwide in cannabis. A study investigated their DNA-damaging properties in human-derived cell lines under conditions which reflect the exposure of

consumers. The study concluded that low concentrations of CBD and CBDV cause damage of the genetic material in human-derived cells, while earlier studies showed that they produce chromosomal aberrations and MN in bone marrow of mice. Fixation of the destruction of the DNA in the form of chromosomal damage is generally considered to be essential in the multistep process of malignancy. Consequently, this study is indicative for potential carcinogenic properties of the cannabinoids.

Cannabis smoke affects the lungs similarly to tobacco smoke. It can also cause serious lung diseases. Cannabis can weaken the immune system, leading to pneumonia. Smoking cannabis has been further linked with symptoms of chronic bronchitis, while heavy use of cannabis on its own can cause airway obstruction. Based on the immuno-histopathological and epidemiological evidence, smoking cannabis poses a potential risk for developing lung cancer.

Cannabis is also psychoactive and may cause physical and mental adverse effects, including psychosis. The psychoactive effects of cannabis are known to have a triphasic (three phases) nature. Primary psychoactive effects include a state of relaxation, and to a lesser degree, euphoria from its main psychoactive compound, THC. Secondary psychoactive effects have been reported among cases of anxiety and paranoia. Finally, the tertiary psychoactive effects include an increase in heart rate and hunger [1-17].

Conclusion

Everything considered, patients should wait for the medical community to conclude which diseases benefit from cannabis and in which dose. When this happens, then specific standardized drugs will be regulated by the U.S. Food and Drug Administration (FDA) and then prescribed for particular disorders.

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