



# THE ANTI-INFLAMMATORY PROPERTIES OF CANNABIS

Of all the reported healing powers of cannabis, none is more promising than its potential as an anti-inflammatory.

Research into the human endocannabinoid system explains how cannabinoids produced within the body activate specialized receptors, reducing the production of pro-inflammatory signaling chemicals, called cytokines. This suggests that plant-based phytocannabinoids introduced to the body, such as CBD derived from cannabis and hemp, may have similar, positive effects.

Studies of human populations support the claim that cannabis reduces inflammation, although findings indicate it is the anti-oxidant qualities of cannabis, and not its interaction with receptors, that actually reduces inflammation.

Clinicians hope that cannabinoids, such as CBD, may prove to be equal to or more effective in treating inflammation than over-the-counter NSAIDS, such as ibuprofen, which can have serious side effects.

Research into the effect of cannabis on a number of inflammatory conditions, such as arthritis, pancreatic inflammation (which leads to diabetes), cancer and irritable bowel diseases, is proving positive.

A recent study by Swiss scientists suggests that CBD and THC may not be the only active compounds in cannabis that affect inflammation: beta-carophyllene may play an important role as well. This corroborates what many call the “entourage effect”—the idea that whole plant solutions, such as cannabis, are more effective because they include a number of active elements that work together, rather than the traditional big pharma approach of isolating and patenting just one.

## How Cannabis Works To Reduce Inflammation

Inflammation is the body's natural response to physical trauma—our immune system sends protective cells to affected areas, and the battle with disease and damaged tissue causes inflammation to occur.

When this condition continues unabated, it's considered chronic, and can have negative impact due to the increased production of free radicals—unstable, oxygen-containing molecules, that, because they have an uneven number of electrons, easily bond with other molecules, and cause cell damage in the body. When there are a disproportionate number of free radicals to the body's protective anti-oxidants, a condition known as oxidative stress occurs.

CBD, THC, and terpenes such as beta-carophyllene act as anti-oxidants, helping reduce the number of free radicals, effectively returning the body to balance and reducing inflammation.

## Conditions Where Cannabis May Prove An Effective Anti-Inflammatory

A paper published by The National Institutes of Health, “Cannabinoids as novel anti-inflammatory drugs” reports on the diverse ways in which cannabinoids, such as CBD and THC, can treat chronic inflammatory conditions:

“Cannabinoids suppress inflammatory response and subsequently attenuate disease symptoms. Cannabinoids have been tested in several experimental models of autoimmune disorders such as multiple sclerosis, rheumatoid arthritis, colitis and hepatitis and have been shown to protect the host from pathogenesis through induction of multiple anti-inflammatory pathways. Cannabinoids may also be beneficial in certain types of cancers that are triggered by chronic inflammation. In such instances, cannabinoids can either directly inhibit tumor growth or suppress inflammation and tumor angiogenesis.”



This is one in an ongoing series of blogs posted to the Knowledge Center at [homegrowcommunity.com/learn](http://homegrowcommunity.com/learn)

The same paper reports that cannabinoids may help reduce inflammatory conditions common to asthma, arteriosclerosis and diabetes:

"While most studies have shown that cannabinoids, such as THC, facilitate a Th1 to Th2 cytokine switch, as discussed previously, it is surprising that cannabinoids can also suppress allergic asthma triggered primarily by Th2 cytokines. It is possible that THC may affect other cells such as DCs and B cells directly in this model. Previous findings indicated that aerosolized THC was capable of causing significant bronchodilatation with minimal systemic side effects, but had a local irritating effect on the airways."

"In a different experiment, HCAECs were stimulated with TNF- in order to mimic the inflammatory processes during atherosclerosis, and the effect of different CB2 receptor agonists on the activated cells was studied. It was demonstrated that activation of cells with TNF- led to increased expression of CB2 and activation of Ras, p38, MAPK, JNK and AKT pathways. In addition, proliferation and migration was markedly increased in activated cell populations. The use of CB2 agonists JWH-133 and HU-308 inhibited all activated pathways in a dose-dependent manner, establishing a novel use for these cannabinoid compounds."

"It was suggested that in this model, the autoimmune component was most effectively modulated by  $\Delta^9$ -THC treatment [126]. Similarly, CBD treatment has been shown to significantly inhibit and delay destructive insulinitis and inflammatory Th1-associated cytokine production in nonobese diabetes-prone (NOD) female mice."

## Research On CBD As An Anti-Inflammatory

Weedmaps reports on several studies that support the anti-inflammatory potential of CBD:

"A 2015 review published in Bioorganic and Medical Chemistry by Elsevier discussed the anti-inflammatory properties of CBD. The reviewers found that CBD reduces inflammation through several pathways in the body, and represents an effective potential treatment for a range of conditions characterized by inflammation."

"A 2017 study in the journal Pain by publisher Lippincott, Williams, and Wilkins examined the effects of CBD in male rats with osteoarthritis. After two weeks, acute inflammation of the joints was reduced by local CBD treatment applied to the area. The administration of CBD was also found to prevent the development of nerve damage and joint pain."

"A 2016 study published in Clinical Hemorheology and Microcirculation by IOS Press investigated CBD as a treatment for early pancreatic inflammation in diabetic mice. Pancreatic inflammation can lead to diabetes due to an invasion of immune cells that destroy insulin-producing cells. The mice who received 10 weeks of treatment with CBD developed diabetes later than the mice that didn't receive the treatment, and also showed a significant reduction in leukocyte activation. Leukocytes are an immune cell."

"A 2011 study published in PLoS One explored the effects of CBD on acute and chronic inflammation in the gut. This elegant research was conducted on animal models with intestinal inflammation and biopsies of human patients with ulcerative colitis. CBD was found to profoundly counteract the inflammation, and also reduced intestinal damage in the mice and human biopsies by decreasing the expression of inflammatory proteins."

## Side Effects

According to Healthline: "CBD doesn't pose significant risks for users, and most topical CBD products don't enter the bloodstream. However, certain side effects are possible, such as:

- fatigue
- diarrhea
- changes in appetite
- changes in weight

Healthline goes on to warn that CBD can interact with prescription, over-the-counter medications and dietary supplements. They suggest that you take care if "...any of your medications or supplements contain a "grapefruit" warning. Grapefruit and CBD both interfere with enzymes that are crucial to drug metabolism."

## Sources

Science Daily: "Why Cannabis Stems Inflammation"

National Institutes for Health: "Cannabinoids as novel anti-inflammatory drugs"

Marijuana Moment: "Terpenoids in Marijuana Also Help Reduce Inflammation, New Study Finds"

Weedmaps.com: "Scientists Unlock What Gives Cannabis Its Anti-inflammatory Qualities"

Project CBD: "Inflammation"

Healthline: "Using CBD Oil for Pain Management: Does it Work?"



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