

# Example of research paper on cannabis and cancer

[Literature](#), [Russian Literature](#)



## **Abstract**

The research paper deals with the problem of whether or not cannabis and cancer are interrelated. There are arguments provided in favor of cannabis stimulating the growth and proliferation of cancer and counterarguments, claiming that not only has marijuana consumption no negative impact on human health, but it also has the potential of being used for medical purposes for treating brain, breast, lung, prostate, blood, oral, liver, and pancreatic cancer inasmuch as it serves as a natural inhibitor of tumor growth as well as providing apoptosis of malign cells. Cannabis treatment may also be used as a legitimate, harmless and far more efficient replacement of chemotherapy. The assumptions, arguments and counterarguments are proved by prominent medicine experts as well as published in the leading state-financed scientific journals and authoritative newspaper articles.

Key words: cannabis, marijuana, cancer, treatment, cannabinoid

The interrelation of cannabis and cancer has been unsure in human prejudices-ridden society that has the number of substance abusers and cannabis-related decease, such as cancer, increasing with every passing year. It common knowledge that cancer has come to be known as the pest of the 21st century that decimates human population in numbers regardless of age, sex or social standing, being sexless and international of nature.

Humankind is currently being employed in elaborating a nostrum against this hard decease. As recently as this past decade marijuana, referred to as cannabis, in medical parlance, has been thought of as a possible cure-all against this terrible illness, whatever public opinion, which happens to be

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firmly against marijuana proliferation and use. Public opinion has marijuana abusers developing cancer. Nor are medical illuminati fully convinced substance medical use has no side effects, with opinion split into the adversaries and the advocates of cannabis healing properties. It is clearly well-documented that the substance is being applied for medical purposes as a prescribed remedy against a good number of deceases, of which cancer takes the lead. The advantages of cannabis being used for cancer treatment purposes as well as it being harmless are yet to be examined and collated with disadvantages.

According to Hoffmann, Brunnerman, Gori, and Wynder (n. p.), Rickert, Robinson, and Rogers (n. p.), Tashkin, Gliederer, Rose, et al. (n. p.), and Wu, Tashkin, Djahed, and Rose (n. p.), those smoking cannabis has more chances of developing cancer than nonsmokers do (qtd. in Aldington, Harwood, Cox, Weatherall, Beckert, Hansell, Pritchard, Robinson, and Beasley 1).

Brunnerman Gori, and Wynder (n. p.) suggest that the qualitative side of cannabis smoke is similar to that of tobacco; however, if truth be told, the former has twice as much the concentration of the carcinogenic polyaromatic hydrocarbons than the latter does, thus differing in toxicity (qtd. in Aldington et al 1). According to Rickert et al. (n. p.), Tashkin, et al. (n. p.), and Wu et al. (n. p.), cannabis tends to be less densely packed, being smoked without any filter to a much smaller stub size, which causes higher concentrations of smoke to be inhaled by a smoker. Once inhaled, smoke, containing carcinogenic products gets deposited in the lower respiratory tract, which is particularly facilitated by a smoker's holding his or her breath, while in the process of smoking (qtd. in Aldington et al 1). Wu, Tashkin,

Djahed, Rose (n. p.), Fligiel, Roth, Klerup, Barsky, Simmons, and Tashkin (n. p.), Gong, Fligiel, Tashkin, and Barbers (n. p.), and Barsky, Roth, Klerup, Simmons, and Tashkin (n. p.) have conducted a number of researches that give reason enough to claim cannabis smoking to be instrumental in letting an individual inhale and absorb 5 times the amount of carbon dioxide received by an average tobacco smoker. As per observations, the respiratory tracts of marijuana smokers have shown the signs of precancerous and molecular abnormalities (qtd. in Aldington et al 1-2). Contrariwise, in accordance with Bifulco, Laezza, Pisanti, and Gazzo (n. p.), cannabis delta-9-tetrahydrocannabinol has been found to also possess obvious anti-carcinogenic effects (qtd. in Aldington et al 2).

There are also no legitimate grounds that my evidence any possible association between lung cancer and cannabis. New Zealand was chosen for conducting the research aimed at learning the connection between respiratory tract cancer and cannabis. The age of those examined did not exceed that of 55 years while the number of districts was 8 (Aldington et al 1). Chadwick (n. p.), Wilkins, Girling, Sweetsur, and Butler (n. p.) note that it is in this region, that high rates of marijuana has been recorded, with tobacco concentration in joint mixture being at its lowest (qtd in Aldington et al 2). As per observations, there were neither differences recorded in association between age and cancer, nor in association between lung cancer and diet, passive smoking, income, occupation, the level of education, or alcohol use of the studied (Aldington et al 4).

More than that, study results clearly demonstrated that each additional year of exposure to cannabis was sure to increase lung cancer possibility by 8%.

Risk difference between marijuana and tobacco smoking was 20 to 1 respectively, in other words, 1 cannabis joint was 20 cigarettes' worth in the scope of negative health impact. Smoking several marijuana joints over a day's period can produce about 20-30 times impact of tobacco cigarettes, causing histological or tissular modifications in the tracheobronchial epithelium (Aldington et al 5). Observations conducted by Roth, Arora, Barsky, Kleeup, Simmons, and Tashkin (n. p.) clearly showed that cytomorphological abnormalities in the sputum equal to those produced by 30 cigarettes per day were to be observed (qtd. in Aldington et al 5). Wu, Tashkin, Djahed, and Rose (n. p.) admit, " These differential risks are greater than the 1: 5 dose ratio between cannabis and tobacco for carbon monoxide levels and the 1: 3 dose ratio for amount of tar inhaled" (qtd. in Aldington et al 5). Also, Hoffmann, Brunnerman, Gori, and Wynder (n. p.) observations proved cannabis smoke to have higher concentrations of such substances as carcinogenic polyaromatic hydrocarbons benzopyrene and benzaanthracene than tobacco smoke does, especially considering zero filter use, deep inhalation techniques, and different smoke chemical composition of marijuana smoking (qtd. in Aldington et al 5).

The British Lung Foundation has found out that the smoking combination of tobacco and cannabis is much worse than consuming both substances separately with extensive intervals between the smoking of both. Even if smoked separately marijuana has the potential of causing people to develop throat and gullet cancers due to it having 50% more toxins, causing cancer. To put a simple example, as many as 8 million individuals in Britain are used to smoking cannabis, which is considered to be a sure transitioning path to

heavier drugs, such as cocaine and heroin (Hope n. p.) According to Dame Helena, the nowadays' cannabis exceeds that in 1960s by 15 times while puffing and inhalation intensity and volume make more smoke, containing substance, such carbon monoxide that enters human lungs and takes its ultimate toll on human health. more than that, habitual marijuana smokers develop unsatisfactory such chronic and respiratory conditions as bronchitis and coughing wheezing. Combining cannabis with tobacco increases the gravity of health consequences twofold per estimations. Scientific researches tend to associate marijuana smoking with chronic obstructive pulmonary decease, exterminating people by thousands on a yearly basis. Though conflicting and somewhat vague, research findings suggest there is a great possibility of a smoker's developing respiratory cancer through habitual consumption of the substance. The whole matter is that unlike in tobacco there are more carcinogens in cannabis chemical composition. Found in cannabis joint tar benzyprene is reported to modify the make-up of genes that are tasked with suppressing tumor. As per 75 case studies, young marijuana smokers tend to develop gullet and throat cancer, which is uncharacteristic of people under the age of 60 (Hope n. p.).

As may be deduced from the above, cannabis smoking has a far bigger potential of producing lung cancer as compared to cigarette, which smoke chemical composition has not come even close to matching that of marijuana; however, according to American Association for Cancer Research (n. p.) Harvard university scientists' observations have it that the mentioned vegetable substance ingredients is capable of reducing cancer tumor by a half by hindering any further growth. American Association for Cancer

Research reports, “ the compound Delta-tetrahydrocannabinol (THC) inhibits EGF-induced growth and migration in epidermal growth factor receptor (EGFR) expressing non-small cell lung cancer cell lines”. Overexpressing EGFR, lung cancer is thought to be extremely aggressive as well as resistant to chemotherapy conducted as one of anti-cancer remedies available. The Doctor of Philosophy and a leading researcher in the Division of Experimental Medicine, Anju Preet mentioned that if people were to use marijuana without excess, it would become a brand-new mode of lung cancer therapy.

Currently, there is no agreement on the reason why THC tends to hinder the growth of tumor; however the assumption is that cannabis may activate molecules that have the potential of arresting cell cycles. THC interference with cancer growth stimulating angiogenesis as well as vascularization (American Association for Cancer Research n. p.). With that in mind, cannabis proper and regulated application or use are highly unlikely to produce a debilitating impact on smokers or those resorting to it for medical purposes, much less cause any long-term repercussions.

Senior policy analyst, Paul Armentano (n. p.) suggests that a case-control study conducted back in 2004, with 407 individuals previously diagnosed with squamous cell carcinoma handpicked, demonstrated that there was no connection between the use of cannabis, including smoking the substance and developing oral cancer irrespective of the duration and the frequency of marijuana consumption. Yet another study of 116 individuals conducted the same year did not let find the mentioned interrelation that might reveal smoking practices as being harmful. The studied were 45 years of age or below, with 10% of them being heavy and habitual smokers. Also, there was

no causal connection found between both processes in the course of scientific investigations launched by the government of the USA (Armentano n. p.). More than that, there are mounting allegations that, besides curing lung cancer, cannabis can treat oral cells smitten by this disease.

Whyte, Al-Hammadi, Balhaj, Brown, Penefsky, and Souid (328) suggest that cannabinoids has the capability of hindering cellular respiration of oral cancer cells. Tetrahydrocannabinol is known for disturbing mitochondrial function as well as having antitumor activities. McKallip, Lombard, Martin, and Nagarkatti (n. p.) claim THC to stimulate apoptosis or natural cells necrosis that is all about destroying cancer cells and deterring their further growth (qtd. in Whyte et al. 328). THC being added to cells showed swift decline in respiration rate, which, of course, depended largely on the concentrations of the substance added. THC is reported to diminish the cellular bioenergetics of Tu183 cell line. Final results demonstrated that cannabinoids were powerful inhibitors of Tu183 respiration, being detrimental to extremely malignant tumor. Light microscopy along with TUNEL assay gave evidences to confirm there are toxic effects of tetrahydrocannabinol on the above-mentioned Tu183 cells accountable for spreading cancer (Whyte et al. 329). That being said, not is cannabis capable of curing lung cancer, but it also has the potent potential of treating oral cancer.

Walia (n. p.) admits that as many as 20 researches showed that cannabis was capable of curing multiple diseases. Certain American states have signed marijuana legislation into law, lifting previously enforced restraining acts while Uruguay is about to create the first-ever cannabis market, which



signifies little harm of the substance, if any, as well as the newly-emerged possibilities for people to use cannabis as a medication. Scientists are inclined to consider cannabinoids the best cancer combating treatment of them all. The above-mentioned cannabinoids is a group of compounds, including cannabidiol and cannabis active components that activate the so-called cannabinoid receptors in human body. Body, in turn, generates such compounds as endocannabinoids, being the active of processing, securing healthy environment. Cannabinoids are accountable for generating as well as regenerating human immune system. The process is much more efficient, given high concentrations of phyto-cannabinoids, which is to be found in high concentrations in cannabis or marijuana as well as hemp. Still, cannabis does have higher concentrations of cancer growth inhibiting tetrahydrocannabinol, namely 0, 4% or higher, compared with 0, 3% hemp biological composition (Walia n. p.).

Walia (n. p.) makes a worthy observation that cannabis may be of a lot greater medical use to people, if eaten, rather than being assimilated in the process of smoking. Members of the Department of Biochemistry and Molecular Biology at Madrid Complutense University have studied the healing properties of cannabis in its treatment of brain cancer. Cannabinoids, keeping tumor from growing, was found to have reduced tumor cells in 2 cases out of 9 examined in a study that had no psychoactive effects. In The Journal of Neuroscience, it was published that a magnetic resonance imaging examination, studying cannabis THC compound, clearly showed that the substance is capable of protecting brains against neuro-degeneration following neuronal injuries. The Journal of Pharmacology and Experimental

Therapeutics scientists conclude that CBD or psychoactive cannabinoid compound can treat cell lines of glioma, or brain and spinal cord tumor as well as producing antitumor activity (Walia n. p.).

According to Walia (n. p.), cannabis possesses a vast potential that can be used for treating blood cancer. In a study promulgated in the Molecular Pharmacology it was asserted that cannabinoids stimulated the retarding of growth as well as spurred apoptosis or necrosis in mantle cell lymphoma. International Journal of Cancer cannabis anticancer properties study researchers received plethora of evidences that cannabinoids had proapoptotic and anti-proliferative effects on cancer and mantel cell lymphoma, killing malign cells or halting their growth respectively. According to a research conducted by Pharmacology and Toxicology Department of Virginia Commonwealth University, cannabinoids stimulates leukemia cells apoptosis. Apart from blood cancer, cannabis components may well serve as a nostrum against liver cancer. The matter is that THC can decrease the vitality of human hepatocellular liver carcinoma cell lines by curtailing their growth. There was also a study published in The American Journal of Cancer, according to which the receptors of cannabinoid are thought to be expressed in pancreatic tumor cell lines as well as biopsies at far higher levels as compared with average pancreatic tissue. Once again malign cells apoptosis as well as pancreatic tumor cells proliferation inhibition was observed occurring following cannabis treatment (Walia n. p.).

McAllister, Murase, Christian, Lau, Zielinski, Allison, Almanza, Pakdel, Lee, Limbad, Liu, Debs, Moore, and Desprez (1) claim that cannabidiol, one of 85 cannabinoids found in cannabis biological composition, has the mighty

potential of curing breast cancer by reducing the proliferation of malign cells, their invasion, and metastasis, which are thought to be the final and the most violent stages of cancer progression. Cannabis curing is especially valuable, considering the fact that conventional medical treatment or therapeutic intervention yields mediocre results, adding to the already huge potential of cannabis as a non-toxic therapy. Metastatic potential of breast as well as other types of cancer can allegedly be regulated by Id-1, an inhibitor or anticatalyst, the substance that retards the growth of the so-called helix-loop-helix transcription factors (McAllister, Murase, Christian, Lau, Zielinski, Allison, Almanza, Pakdel, Lee, Limbad, Liu, Debs, Moore, and Desprez 1-2). McAllister, Murase, Christian, Lau, Zielinski, Allison, Almanza, Pakdel, Lee, Limbad, Liu, Debs, Moore, and Desprez (1) also go on to state, “ CBD inhibits human breast cancer cell proliferation and invasion through differential modulation of the extracellular signal-regulated kinase (ERK) and reactive oxygen species (ROS) pathways, and that both pathways lead to down-regulation of Id-1 expression.” However, there is more to it than that. It was discovered that cannabidiol is responsible for the regulation of the pro-differentiation factor, ID-2. Mice being treated with CBD showed that primary tumor gets reduced along with the number and size of lung metastatic foci. Also, the data received in the course of the research has provided scientific proofs to assert that CBD is highly efficient by pre-clinical treatments of breast cancer. Research results let further examination be conducted for elaborating non-toxic compounds since their treatment of breast cancer metastasis has been declared to be of great medical value (McAllister,

Murase, Christian, Lau, Zielinski, Allison, Almanza, Pakdel, Lee, Limbad, Liu, Debs, Moore, and Desprez 1).

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