CANNABIS & CANCER

CONVENTIONAL MEDICINE

The treatment a MD will recommend will depend on the type of cancer and the stage of the cancer. Ther treatment may include surgery, or radiation therapy, or chemotherapy, or all of them. Both chemotherapy drugs and radiation therapy are powerful therapies that can cause side effects; immediate effects and long-term effects, ones that occur months or years after the cancer treatment. Some die during the treatments.

MEDICAL CANNABIS

Medical cannabis can be an effective treatment for cancer. Research was published in the *Journal of the National Cancer Institute Advance Access* on December 25th of 2007 in a paper entitled *"Inhibition of Cancer Cell Invasion by Cannabinoids via Increased Expression of Tissue Inhibitor of Matrix Metalloproteinases."*

The American Cancer Society is one of dozens of national and international health organizations that have voiced support for further research on the medical use of cannabis in cancer chemotherapy treatments.

In 1991, 44% of oncologists surveyed said they had already recommended cannabis to their patients, and 56% said that marijuana should be legally prescribable. As early as 1975, the *New England Journal of Medicine* reported that, *"THC is an effective anti-emetic for patients receiving cancer chemotherapy."* Since then, dozens of scientific studies recognized by the US FDA and the National Cancer Institute have shown that the use of natural cannabis is a preferable remedy for adverse effects of the cancer-killing poisons employed in oncology.

Tetrahydrocannabinol (THC) **and natural cannabinoids counteract cancer and chemical toxicity from drugs and environmental sources thus helping to preserve normal cells. "*The active ingredient in marijuana cuts tumor growth in common lung cancer in half and significantly reduces the ability of the cancer to spread.*" –Research Laboratories, Harvard University**

Dr. Donald Abrams, a cancer specialist at San Francisco General Hospital says, *"Every day I see people with nausea secondary to chemotherapy, depression, trouble sleeping pain. I can recommend one drug* *(marijuana)* ***for all those things, as apposed to writing five different prescriptions."* Marijuana stems the nausea if one is inclined to go through chemo and radiation therapy. At the same time, it treats their depression and makes the patient feel better. On top of this, it can actually treat cancer, reduce tumors and help affect a complete cure.**

Delta-tetrahydrocannabinol (THC) **was found to inhibit EGF-induced growth and migration in epidermal growth factor receptor** (EGFR) **expressing non-small cell lung cancer cell lines. Lung cancers that over-express EGFR are usually highly aggressive and resistant to chemotherapy. THC that targets cannabinoid receptors *CB1* and *CB2*, is similar in function to endocannabinoids, which are cannabinoids that are naturally produced in the body and activate these receptors.**

Acting through cannabinoid receptors CB1 and CB2, endocannabinoids, as well as THC, play a role in a variety of biological functions, including pain and anxiety control and inflammation. *"Cannabis extracts can shrink brain tumors by blocking the growth of blood vessels that nourish them."*—Scientific American 2004

Researchers reported in the August 15, 2004, issue of *Cancer Research*, that marijuana's constituents inhibited the spread of brain cancer in human tumor biopsies. A research team from the University of South Florida noted that THC can also selectively inhibit the activation and replication of gamma herpes viruses.

THC can selectively induce programmed cell death (apoptosis) **in brain tumor cells without negatively impacting surrounding healthy cells. Then in 2000, the journal *Nature Medicine* reported that injections of synthetic THC eradicated malignant gliomas** (brain tumors) **in one-third of treated rats and prolonged life in another third by six weeks.**

The team announced they had destroyed incurable brain cancer tumors in rats and extended their lives when they and cancer, also irrigated healthy rats' brains with large doses of THC for seven days to test for harmful biochemical or neurological effects. They found none. Careful MRI analysis of all those tumor-free rats showed no sign of damage related to necrosis, edema, infection, or trauma.

In both tumor-free and tumor-bearing rats, cannabinoid administration induced no substantial change in behavioral parameters, such as motor coordination or physical activity. Food and water intake as well as body weight gain were unaffected during and after cannabinoid delivery. The general hematological profiles of cannabinoid-treated rats were normal. Neither biochemical parameters nor markers of tissue damage changed substantially during the seven-day delivery period or for at least two months after cannabinoid treatment ended.

The cannabinoids inhibited the expression of several genes critical to angiogenesis, known as the VEGF *(vascular endothelial growth factor)* **pathway. Blockade of the VEGF pathway constitutes one of the most promising antitumoral approaches currently available. The cannabinoids work by increasing the potency of a fat molecule known as *ceramide*. Increased ceramide activity, in turn, inhibits cells that would normally produce VEGF and encourage blood vessel growth.**

The findings from Spain were first published in the April 2009 issue of *The Journal of Clinical Investigation*. The study showed that THC caused brain cancer cells to undergo a process called *autophagy*. This process causes cells to feed upon themselves, thereby destroying them, and not only did researchers witness this process, the specific route by which the autophagy process unfolds was isolated as well.

Although this study involved injecting mice with live human brain cancer tumors, the study also involved two human patients who both had highly-aggressive forms of brain cancer. When both the mice and the humans received THC, the tumors shrank in size.

Combining the two most common cannabinoid compounds in cannabis boosts the effectiveness of treatments to inhibit the growth of brain cancer cells and increase the number of those cells that die off. Researchers combined the non-psychoactive cannabis compound cannabidiol (CBD)**, with *delta-9-tetrahydrocannabinol*** (Δ9-THC)**, the primary psychoactive ingredient in cannabis. They found that the combination boosts the inhibitory effects of Δ9-THC on glioblastoma, the most common and aggressive form of brain tumor.**

Non-phychoactive compounds in marijuana inhibited the growth of glioma cells in a dose-dependent manner, and selectively targeted and killed malignant cells through apoptosis. Non-psychoactive CBD (cannabidiol) **produces a significant anti-tumor activity both in vitro and in vivo, thus suggesting a possible application of CBD as an antineoplastic agent. The first experiment documenting pot's anti-tumor effects took place in 1974 at the Medical College of Virginia at the behest of the US government.**

The results of that study were that marijuana's psychoactive component, THC, slowed the growth of lung cancers, breast cancers and a virus-induced leukemia in laboratory mice and prolonged their lives by as much as 36%. These researchers from Virginia found instead that THC was astonishing in helping fight the war against cancer. The DEA quickly shut down the Virginia study and all further cannabis/tumor research.

***"Antineoplastic Activity of Cannabinoids,"* an article in a 1975 *Journal of the National Cancer Institute* reported, Lewislung adenocarcinoma growth was retarded by the oral administration of *tetrahydrocannabinol* (THC) and *cannabinol* (CBN)—two types of cannabinoids, a family of active components in marijuana. Mice treated for 20 consecutive days with THC and CBN had reduced primary tumor size.**

Ironically, the government's own National Toxicology Program study indicated that cannabis might actually help prevent cancer. In the mid-1900s, the US federal government funded a two-year and two-million-dollar study by the National Toxicology Program under the review of the FDA, the National Cancer Institute, and other federal agencies. The study was designed to determine the cancer rate induced by injecting high doses of THC in the bodies of mice, then injecting them with cancerous cells. The mice injected with THC had a far lower incidence of cancer than did the control group.

The profound implication that cannabis uses helps prevent and treat cancer was never officially released to the American public. There's no reason why this shouldn't have been published. Compounds found in cannabis have been shown to kill numerous cancer types, including lung cancer, breast cancer, prostate cancer, leukemia, lymphoma, glioma, skin cancer, and pheochromocytoma, meaning many lives could have been saved if the government would have been fair with its own employers.