



CBD Tumors & Cancer

CBD RESEARCH
OVERVIEW

Overview of Tumors

- ▶ A tumor is an abnormal mass of body tissue that can be cancerous or noncancerous. Tumors develop as a result of cells dividing and growing excessively. Cell growth and division is normal, and typically the body manages the creation of new cells to replace older or damaged ones. When proper cell growth and death is disturbed, however, a tumor can result.
- ▶ The underlying cause of a tumor can be related to a problem with the body's immune system. Drinking too much alcohol, exposure to environmental toxins, excessive sunlight exposure, genetic problems, obesity, radiation exposure and viruses are also risk factors of cancerous tumors.
- ▶ The symptoms associated with tumors depend on the tumor's type and location. Tumors located in the colon, for example, can cause diarrhea, constipation, weight loss, blood in the stool, and iron deficiency anemia. Lung tumors can cause coughing, chest pain and shortness of breath. Other symptoms of tumors can include chills, fatigue, fever, loss of appetite, malaise, night sweats and weight loss. Some tumors, however, may not cause any symptoms until they're at an advanced stage.
- ▶ Once a tumor is discovered, a biopsy is used to determine whether the tumor is noncancerous or cancerous. If the tumor is noncancerous, treatment may not be necessary, but they may be removed for cosmetic reasons. Cancerous tumors, however, must be treated. Possible treatments include chemotherapy, radiation, surgery, biological therapy and targeted cancer therapy.

Effects of Cannabinoids and CBD on Tumors part 1

- ▶ Research has shown that cannabis can help inhibit the growth of, and even kill the cells of, cancerous tumors. One of the major cannabinoids found in cannabis, Cannabidiol (CBD), has shown to inhibit the progression of cancers located in the breast, lung, prostate and colon in several animal trials. CBD has also shown to cause a dramatic drop in both mitochondrial oxidative metabolism and the viability of the cells that make up brain tumors (glioma), thereby having an antiproliferative effect. The administering of CBD to mice has shown to significantly inhibit the growth of subcutaneously implanted human glioma cells. One study found that administering a combination of CBD and tetrahydrocannabinol (THC), another major cannabinoid found in cannabis, four hours before radiation treatment increased the radio sensitivity of cancer cells, which caused an increase in cell autophagy and apoptosis.
- ▶ CBD acid (CBDA), the acidic precursor of CBD, has shown to have the capability of down-regulating invasive human breast cancer cells and therefore preventing their growth¹¹. The same team of researchers later again found CBDA to effectively inhibit the migration of breast cancer cells and identified the cannabinoid's downregulation of the proto-oncogene c-fos and the enzyme cyclooxygenase-2 to be the mechanisms responsible for its anti-cancer effect.

Effects of Cannabinoids and CBD on Tumors part 2

- ▶ Cannabis can also help patients manage the symptoms associated with cancerous tumor treatments, such as nausea and pain. CBD has shown to be effective at treating the more difficult to control nausea, as well as in preventing anticipatory nausea in patients preparing for chemotherapy. One study found that THC reduced conditioned rejection and chemotherapy-induced nausea⁴. In cancer patients with intractable pain that had proven intractable to opioids, two weeks of THC and CBD treatments caused significant reductions in pain levels. A survey found that after six to eight weeks of cannabis treatments, cancer patients experienced significant improvements in all of the measured cancer-related symptoms, which included nausea, vomiting, mood disorders, fatigue, weight loss, anorexia, constipation, sexual function, sleep disorders, itching, and pain.
- ▶ The National Cancer Institute, an organization run by the U.S. Department of Health and Human Services, currently recognizes cannabis as an effective treatment for providing relief of a number of symptoms associated with cancer, including pain, nausea and vomiting, anxiety and loss of appetite.

Recent Studies on Cannabinoids and CBD's Effect on Tumors

- ▶ **CBDA inhibits the migration of breast cancer cells.**
Cannabidiolic acid-mediated selective down-regulation of c-fos in highly aggressive breast cancer MDA-MB-231 cells: possible involvement of its down-regulation in the abrogation of aggressiveness.
(<http://www.ncbi.nlm.nih.gov/pubmed/27530354>)
- ▶ **CBD produces significant antitumor activity in human brain cancer cells.**
Antitumor effects of cannabidiol, a non-psychoactive cannabinoid, on human glioma cell lines.
(<http://www.ncbi.nlm.nih.gov/pubmed/14617682>)
- ▶ **CBD inhibits the progression of many types of cancer (glioblastoma, breast, lung, prostate, colon).**
The Antitumor Activity of Plant-Derived Non-Psychoactive Cannabinoids.
(<http://www.ncbi.nlm.nih.gov/pubmed/25916739>)