

Cannabis Derivatives Could Provide New Ovarian Cancer Treatments

Ovarian cancer is characterized by late diagnosis, high recurrence rates and limited treatments. Can THC and CBD improve the options?

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Ovarian cancer is dangerous and difficult to treat, partly because it's hard to diagnose early, and partly because it's often resistant to existing drugs. Now scientists looking for new treatments have identified two promising compounds in cannabis. Both THC (delta-9-tetrahydrocannabinol) and CBD (cannabidiol) can stop ovarian cancer cells reproducing, and a combination of both compounds kills existing cancer cells. More research is needed to see if these compounds work as well outside the lab, but if these findings are confirmed they could become a source of new treatments for patients, less toxic and more effective than current options.

In the future, scientists could use drugs made from cannabis to fight ovarian cancer. A team of scientists testing the effects of two chemical compounds sourced from cannabis on ovarian cancer cells have found that both show promising anti-cancer effects. While more research will be required to turn these results into drugs which can be delivered to patients, these findings are an important opportunity to develop effective new therapies for a cancer which is hard to diagnose and even harder to treat.

"Ovarian cancer remains one of the deadliest gynecological malignancies, characterized by late diagnosis, high recurrence rates, and limited effective treatment options," said Dr. Siyao Tong of Khon Kaen University, lead author of the article in [Frontiers in Pharmacology](#). "Our goal is to find alternative drugs that can improve efficacy and potentially reduce toxicity, ultimately bringing new hope to patients facing this challenging disease."

A deadly illness

Of all the gynecological cancers, ovarian cancer kills most patients. Although there have been advances in treatment strategies, available drugs are not always effective and come with formidable side effects. New options are desperately needed. Since CBD (cannabidiol, which is not psychoactive) and THC (delta-9-tetrahydrocannabinol, which is) have shown potential against other cancers, the research team decided to test them against ovarian cancer cells.

They took two different lines of ovarian cancer cells, one of which is sensitive to platinum-derived drugs and one of which is resistant, and challenged the lines with CBD, THC, or both, to see if the cells could survive and reproduce after exposure. The scientists also challenged a line of healthy cells, to see if the compounds damaged them.

They found that cells for both cancer lines which had been treated with CBD or THC formed fewer and smaller colonies of cells. Though both compounds worked to prevent cancer cells reproducing, combining them gave particularly good results. And although neither compound alone killed a large proportion of cancer cells, a combination of the two was very successful. It's possible that THC and CBD act on the cancer cells in different ways, and when used together, their effects are amplified.

“Notably, the inhibitory effect was most pronounced when CBD and THC were used in a 1:1 ratio,” said Tong.

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Additional assays showed that the compounds prevented cells from migrating, which means they might be able to stop ovarian cancer spreading to other parts of the body. Many patients die of metastases, so a treatment which prevents metastasis could save lives.

Both cell lines were similarly affected, suggesting that the compounds could work equally well for different types of ovarian cancer. The compounds and their combinations also had minimal effects on healthy cells, which suggests that patients might find treatments made from them less toxic and easier to tolerate than current drugs.

To understand the mechanism behind these anti-cancer effects, the scientists looked at cell signaling pathways. The PI3K/AKT/mTOR pathway is overactivated in ovarian cancer cells, which contributes to tumor development and treatment resistance. The CBD and THC compounds seemed to restore normal regulation of the pathway, which could explain why the cancer cells couldn't reproduce and began to die off after treatment.

Looking to the future

But much more work remains to be done before these results can be translated into practical treatments. The scientists call for further research which can establish if and how these compounds can be used as effective new ovarian cancer therapies.

“Although our study is still preliminary, it lays an important foundation for future research into the potential applications of CBD and THC in ovarian cancer treatment,” said Tong. “By confirming their anti-cancer activity and identifying key molecular mechanisms, our findings are expected to drive further preclinical research. If future studies confirm these effects, CBD-THC combination therapy may ultimately contribute to the development of new treatment strategies.”

“However, this study has some limitations,” Tong added. “All experiments were conducted in vitro, so the results may not fully reflect the complexity of tumor behavior in living organisms. We did not include in vivo models and pharmacokinetic data, which are crucial for determining whether CBD/THC can be safely and effectively used clinically. Finally, regulatory and legal issues surrounding cannabinoid therapy may also affect future translational research. While the results are encouraging, more studies are needed before these findings can be applied to patient treatment.”

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