

Science AMA series: I´m Guillermo Velasco, Associate Professor of Biochemistry at Complutense University in Madrid, Spain. I do research on the anticancer activity of Cannabis and its derivatives and I

Guillermo_Velasco¹andr/*ScienceAMAs*¹

¹Affiliation not available

April 17, 2023

[REDDIT](#)

Science AMA series: I'm Guillermo Velasco, Associate Professor of Biochemistry at Complutense University in Madrid, Spain. I do research on the anticancer activity of Cannabis and its derivatives and I

GUILLERMO_VELASCO [R/SCIENCE](#)

ABSTRACT

[removed]

[READ REVIEWS](#)

[WRITE A REVIEW](#)

CORRESPONDENCE:

DATE RECEIVED:
December 11, 2015

DOI:
10.15200/winn.144975.51013

ARCHIVED:
December 10, 2015

CITATION:
Guillermo_Velasco , r/Science ,
Science AMA series: I'm
Guillermo Velasco, Associate
Professor of Biochemistry at
Complutense University in
Madrid, Spain. I do research on
the anticancer activity of
Cannabis and its derivatives
and I, *The Winnower*
2:e144975.51013 , 2015 , DOI:
[10.15200/winn.144975.51013](https://doi.org/10.15200/winn.144975.51013)

© et al. This article is distributed under the terms of the [Creative Commons Attribution 4.0 International License](#), which permits unrestricted use, distribution, and redistribution in any medium, provided that the original author and source are credited.



Hi Guillermo, and thank you for doing this AMA.

My understanding of the clinical literature is that there is fairly robust evidence that Cannabis (or its derivatives) has antiemetic properties and is also useful in pain management and appetite stimulation. The clinical evidence that it has anti-tumor effects, however is almost completely lacking.

I was surprised, however, to see that there was *one* [clinical trial](#) from about ten years ago looking at the anti-tumor effects of Delta9-tetrahydrocannabinol in patients with recurrent glioblastoma multiforme. It appears that you are an author on that study. I was hoping you could comment on how you interpret the results of the study, why the study didn't progress to phase II trials, and why there are so few clinical trials studying Cannabis in cancer therapy. Thanks!

[SirT6](#)

Thank you for your question. Yes there was a first clinical study where THC was administered to Glioblastoma patients. This was just a pilot study (only 9 patients) and the results were encouraging as cannabinoid administration was safe. Moreover, many of the patients seemed to respond to the therapy at least initially. In any case, it was clear that additional studies were necessary. During this time we have been working on the optimization of cannabinoid-based anticancer therapies. Specifically investigating whether the combination of cannabinoids with other anticancer agents could be useful for the treatment of gliomas or other types of cancer. At the moment there is one ongoing clinical study in UK and other European countries (on patients with recurrent glioblastoma that are being treated with the cannabinoid-based medicine "Sativex" and temozolomide).

<http://clinicaltrials.gov/ct2/show/NCT01812603?term=sativex+glioma&rank=1> There is also another clinical study that we hope will start soon in Spain to test the combined effect of cannabinoids, temozolomide and radiotherapy in recently diagnosed GBM. One of the reasons why is so complicated to promote clinical studies is that the active components of marijuana are natural products that cannot be patented and therefore there are few pharma companies interested in their clinical development.

In what form have your tests found to be the best way to administer the THC or CBD etc... into a patient?? Is smoking potent cannabis more effective than an oil extract processed by the digestive tract ?

- edit - By best way, I mean the most effective way the body can use the medicine, seeing as though there are multiple ways to administer to the body, what is the most efficient and effective way for the body to process the medicine ? I am curious how to gain the most effective administration for the medication.

[Johnnyfiftyfive](#)

In principle smoking is not a good way of administer cannabinoids to patients and doctors prefer other vias of administration such as oromucosal sprays/pills/capsules/tablets or even oils that can be taken orally. In any case the via of administration to patients is an important issue in the case of cannabinoids as there are very lipophilic compounds and therefore in my opinion there still room for improvement.

Are there any studies, any at all, that demonstrate anti cancer properties of THC, CBD or any other cannabinoid at PHYSIOLOGICALLY ATTAINABLE concentrations?

Every publication I've investigated so far demonstrates anti cancer activities of cannabinoids at extremely high concentrations, much higher than achievable using ordinary drug delivery methods, and probably higher than the body could tolerate.

[OldGuyzRewl](#)

This is obviously a very important point. We have performed in the lab many dose-response studies in order to look for the optimal doses of THC and CBD that could be achievable in humans. In any case pharmacological doses in mice and human are frequently different and no study performed in animal models can predict with absolute certainty that a drug that has worked on animal models will do it also in human patients. Having said that, there are many clinical studies performed with cannabinoids that have demonstrated that therapeutically-relevant doses of these compounds can be achieved for the treatment of different diseases. Specifically in the case of cancer, analyses of samples from patients in which THC was delivered locally to patients with Glioblastoma suggested that this compound was reaching tumour cells and was able to activate the same anticancer mechanism that we found in animal models.

We have also found that the combination of submaximal doses of THC and CBD with temozolomide still produces a strong anticancer activity in animal models of glioma (<http://www.ncbi.nlm.nih.gov/pubmed/21220494>).

Taking everything into account, I believe that there is enough preclinical evidence as for taking the risk of moving into clinical studies. Of course cannabinoids may fail in these studies but I really believe that they could be useful at least for a fraction of patients with certain cancer types and that (particularly for those cancers, such as glioblastoma, in which all therapies have failed) is worthwhile to try.

Hey Guillermo

My father has been in remission from a stage 4 cancer for a little over a decade now. What saved his life was an experimental chemotherapy pill. What's interesting is that most people who take this pill build an immunity to its effects within a few years and then the cancer usually returns.

Is it possible that Cannabis could be prolonging the effects of this pill? As far as I know, no one has ever gone as long as my father on the pill and his doctors have jokingly asked what his secret is. It's my

pet theory that his recreational use of marijuana may have something to do with it. He's debated telling his doctors, just in case. But, I don't think the legal framework is really there in most states to do a study.

Edit: he takes gleevec

[enlightenedmark](#)

I basically agree with what has been said below. In general there are many anecdotal reports suggesting that cannabinoids can cure cancer. However there could be many reasons why someone could get his/her cancer cured that could be related with the therapy is undergoing, the environment or other factors. Whether in this specific case smoking marijuana could have helped your father is just an speculative hypothesis (it might have helped but it is impossible to prove it). This is one of the reasons why it is so important to perform clinical studies on a controlled manner to prove the therapeutic efficacy of a certain compound/agent in a way that can be accepted by the scientific and clinical community.

Hello Professor Velasco, I believe the work you do is incredibly important and thank you for dedicating your time and efforts into this field. I've read Dr.Klein's study 2003, on CB1 receptors which if I recall correctly are more commonly found in the lymbic system and CB2 receptors are found in the peripheral system. Certain cancer cells react differently to these ligand bonds based on the composition of the cancer cells. The resulting chemotaxis can be either beneficial or detrimental depending on how the biochemical coupling occurs. So based on what kind of cancer and where the cancer is located, while modulating the immune response it can also cause these cancer cells to migrate and possibly spread rather than just inhibit their growth. So my two questions are. Has your research identified the oncological aspect of which of these ligands are most beneficial to the different varieties of cancer cells? The other. Has your research identified certain strains of cannabis to be more effective for cytokine growth and T cell production? Thanks again for taking time out to do this.

[KANNABULL](#)

Thank you for your kind words. Regarding your questions. 1) we have not studied this in detail. In any case, cannabinoids can reduce the migration of cancer cells and can also interact with cannabinoid receptors present in cancer cells, the stroma and the immune cells...it is an issue that it would be worthwhile to investigate. 2) we believe that most of the anticancer effects of cannabinoids are due to THC and CBD, therefore we have mainly focused on pure active principles.

What is your take on a recent study in UK finding that marijuana impares mental ability on chronic use? Has it ever been studied during any of your research projects?

[Ridiculouspasta](#)

Thank you for your question. As it occurs with all medicines (and specifically with anticancer agents) cannabinoids have side effects. I am not aware of this study specifically but obviously cannabinoids can frequently affect memory, attention, mood etc...this is something that cannot be denied. Nevertheless, from my point of view, the point here is whether the benefits derived from the use of a certain drug/medicine overcome the disadvantages of its side effects...therefore the answer could be different depending of the disease...Obviously is not the same having a headache than a brain cancer with an average life expectancy of 14 months and therefore the threshold of exigency for a drug to treat one or the other situation would be completely different.

The side effects/risks of cannabinoids are very mild when one compares them with most of current chemotherapeutic agents.

Thank you so much for doing this, and for doing the research you do, which helps people receive medication and enhance their quality of life. How do you feel about companies like Tweed, which are publicly traded, large scale grow operations, effectively creating a standard protocol for the growth of cannabis, and do you think that the use of this cannabis will help reduce cancer and cancer related reliance on traditional chemo and aggressive medications?

[adognamedpenguin](#)

Thank you for your kind words. Regarding your question, in my opinion, the ideal situation for patients is (as for any other medicine) having standardized cannabis active principle-containing medicines or extracts that are easily accessible at pharmacies and that contain controlled amounts of the active principles. I think that the only way of being able to have this type of cannabis medicines is having specialized private (or public) companies that can produce them. Obviously the public health systems must guarantee that the medicines have the required quality and that they are available at a reasonable price to all patients.

I am aware of that many people are using home-made marijuana extracts (and actually in many places this is the only way of having access to cannabinoids for the treatment of their diseases). However, in my view this is not the optimal way of having access to a medicine.

In short, I am not against companies producing standardized cannabinoid extracts/medicines if they provide them with a high standard of quality and a reasonable price.

I believe that once the therapeutic properties of marijuana have been demonstrated for a certain application(s) they should be treated as any other medicine.