

Senate Hearing

Thank you for your time in reading this letter, as well as for your aspirational guidance in the matter at hand. My formal studies as an undergraduate, Graduate and PhD have focused on cannabis, cannabinoids and their impact on health.

My education, and through a decade of experience presenting at conferences and interacting with other medical professionals on this particular subject matter, have given me a wealth of knowledge. I've been blessed and honored to have been surrounded by great scientific minds in the field of cannabinoid research. As such I have the honor of occasionally standing on those same shoulders to report their findings. In doing so, it is my personal hope that I might be able to confer some greater understanding of a misunderstood subject, to individuals like you who might make a real difference in the lives of severely ill residents.

The way that humans tend to *externally* stimulate their endocannabinoid systems is by taking (or applying) compounds produced by the *Cannabis* plant. First, unlike most other drugs and even a substance like water, these naturally-occurring *phytocannabinoid* compounds have **no achievable lethal dose**. They are amongst the safest compounds known to science. They are amongst the least physically addictive substances known.

For the State of Pennsylvania and it's esteemed legislators – A quick pharmacology lesson:

1. It is a fact that in your body – and in all of our bodies – *right now*, there is a biochemical system working away to keep you happy, calm, helping you fighting infection, digesting food properly, and helping you maintain healthy, regular sleep and brain function. The housekeeping properties of this system are vital to our very existence – built out of CB1 and CB2 “receptors” and the “endocannabinoids” that bind to them – it keeps our brain and body in order.
2. Animal genetic knockout studies suggest that *without* this biochemical endocannabinoid signaling system, we would die at birth.
3. Antagonist studies – in both animals and humans – shows that blocking this biochemical signaling with external drugs causes dreadful consequences, including but not limited to: major depression, post-traumatic stress disorder, nausea, vomiting, diarrhoea, anxiety and increased suicidality.
4. The only antagonist drug ever to be marketed to humans that blocked our cannabinoid receptors – Acomplia® (rimonabant, Sanofi-Aventis) – was quickly withdrawn from the market due to its negative health consequences (October, 2008).
5. Agonist studies – in both animals *and* humans – show that stimulating this biochemical system has both highly beneficial health effects and few negative side-effects. The scientific evidence to this effect is overwhelming.
6. No physiological system has ever been studied that hasn't been found to be, at least, positively modulated by the endocannabinoid system. It is inherent to our

proper functioning. It is key to human wellness. It is responsible for our *human-*ness.

7. To administer its active ingredients, *Cannabis* can be:

A). Dried, burned and inhaled – thereby "smoking" both the vegetable matter and the active compounds;

B). Heated, stopping short of producing smoke, with the resulting vapors inhaled – that's "vaporization". Common sense dictates that entirely avoiding the pyrolysis products of burning plant material is comparatively beneficial...smoking versus vaping.

Finally, *Cannabis* can be;

C). Extracted. By using propane or butane, vodka, grain alcohol, water or carbon dioxide; the natural resins found in *Cannabis* can be separated from the vegetable matter. The resulting material takes a few forms – some chunky, some gooey – depending on how it's treated. There may be a de-waxing step...but that only requires dry ice. There may be a filtering step...but that's just activated charcoal. Extraction processes are neither dangerous nor ecologically toxic when done appropriately, nor are any novel, more-dangerous compounds created by its extraction. All of the resulting extracts can be heated to their vaporization point and inhaled or can be taken orally, nasally, topically, rectally or vaginally, as they have been, safely, for millennia.

Packed with concentrated decarboxylated cannabinoids, mono- and sesquiterpenes, and flavonoids-- The evidence that these substances are medicinally useful is overwhelming.

The most common burden to medical cannabis patients are inconsistent, non-scientific **legal** regulations, which:

- .1 Prohibit physicians from recommending the proper administration form of a medicine,
- .2 Increasing the cost of a dose of medicine by a hundred fold or more.

This is in effect, what happened in 1937 with the passage of the *Marihuana Tax Stamp Act* and something similar may happen again, if SB3 does not help as many people as possible. We have an opportunity provide regulations for health care professionals and qualified individuals to medicate without further limiting the options of people desperate need for symptom management.

Oral-THC is very expensive can costs patients around \$5.00 per milligram.

While inhaled THC-preparations can cost patients around \$0.05-0.40 (5-40 cents) per milligram.

Desperate families of epileptic children are already experiencing the laws of economic botany, as a single day supply of an orally consumed CBD-tincture can cost hundreds of dollars.

The most effective, safe, and inexpensive way to consume medical cannabis is through **inhalation**. Even the federal National Institute of Drug Abuse (NIDA) found cannabis vaporizers to be effective in its limited clinical marijuana research.

The future for Pennsylvania's medical cannabis patients is a new and uncertain world. A world of endless possibilities, countless choices may determine the fate of each patient. Each choice can either improve lives or it will lead continual legal problems for sick people. I will testify in March at a court case in another State, for a patient that is a paraplegic veteran with multiple sclerosis. He is currently being kicked out of his assisted housing for inhaling cannabis to treat his symptoms. This is the world we are creating for Pennsylvanian's veterans. Most people hearing this would think, that this sort of thing is an insane waste of resources and could be easily avoided by letting qualified patients and their health professionals determine the best course of their treatment.

There are over 30,000 research publications on cannabinoids, and there several approved medicines and therapies that are inhaled. You can buy numerous other potent inhalable therapeutic agents over the counter in Pennsylvania. To say we need both more research on medical cannabis and to limit administration forms-- is tantamount to willful ignorance.

If someone proposed that asthmatics must swallow their medicine, we would laugh at the stupidity of requiring an inhaled medicine to administer as an oral drug. Yet, we keep a straight face while proposing legal barrier to keep a nauseated and vomiting cancer or AIDs patient in a state of needless suffering.

I hope none of have to watch a loved one go through a disease involving nausea and vomiting, which leaves them frail and racked by the pangs of hunger because politics doesn't let them inhale. There is nothing quite like the sound of prescription pills hitting a hospital floor along with the sparse contents of a patient's stomach.

I hope none of you have loved one with ALS. And someday have to watch them suffocate to death on their own mucous, when inhaling cannabis would have cleared their lungs due to the well-documented bronchial dilating effects. This fundamental effect of inhaled cannabis, happens everyday for my friend Cathy Jordan of Florida.

I spoke with my friend Cathy Jordan last week. Cathy has been living with ALS for 20 years; a disease that often kills people within 5 years. Published research shows that THC can slow the progression of ALS in mammals. It was mid-morning and she explained to me that she had earlier finished inhaling her first medicinal cannabis of the day. She needs to inhale cannabis in order to clear her lungs of the life threatening mucous that accumulates in her lungs. Of course there is another option; that is to be squeezed with a machine, and literally have the mucous ooze out of her lungs like a tube of toothpaste. Inhaling cannabis gets the job done without the risk of a mechanical squeezing-related injury on a frail body.

It has been a real honor to work with Senator Folmer, Senator Williams and others on educating people on cannabis research, and it is practically a dream come true for health professional that was minted at a Pennsylvania medical institution. I want to thank my State representatives and legislature for listening to the demands of its most vulnerable population and to the health professionals that are engaged in cannabis research.

Thank you,

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