

To: Senate Gov. Operations Committee

From: Monique McHenry, Ph.D., Executive Director, Vermont Patients Alliance Inc.

Date: March 20, 2015

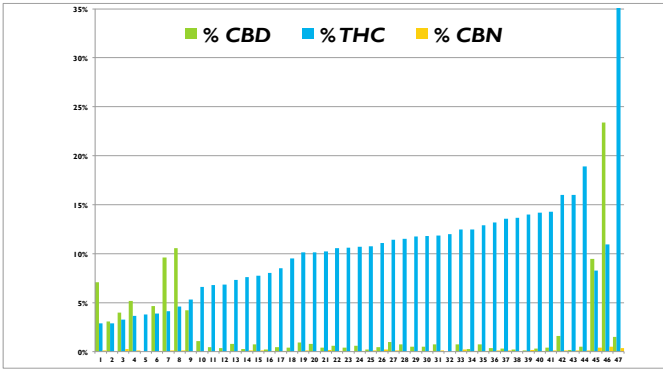
Thank you for the opportunity to testify. Written copies of these comments can be provided to the committee.

We would like to propose to the committee the following:

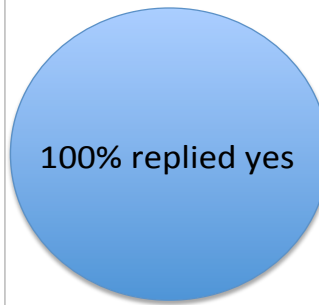
1. We would like to emphasize the need for the VT medical program to remain sustainable when adult-use marijuana begins in VT.
2. We would like to keep the committee informed on the successful track record of the VT medical dispensaries in the *Cannabis* industry over the past two years, including:
 - a. Excellent safety record, with strong working relationship with VT Department of Public Safety regulators.
 - b. Expertise in all industry processes, due to legislative requirements for a vertically integrated model (i.e. cultivation, retail, product development, diagnostic testing, labeling, and certification)
 - c. Ongoing education program for physicians and patients on plant-based medicines including *Cannabis*, as a safe alternative to conventional medications such as opioids for chronic pain. In particular, explaining dosage, delivery, and side effects based on published literature.
 - d. Dispensaries are teaming up to perform novel medical research (ongoing clinical trials of strain-specific therapeutic effects) and horticultural research (development of plant genetics and best practices for use of locally-sourced organic compost and natural pest-control to support *Cannabis* production).
 - i. Initial results of research. Example of results from patient survey, and plant-based pharmaceutical research completed by the Vermont Patients Alliance in the last two years (Figure 1). Example of results from horticultural research completed by the Vermont Patients Alliance in the last year (Figure 2).
 - ii. Support more state and private funding to do innovative research on *Cannabis* and other plant-based medicines. We believe that we are positioned to not only conduct this research, but also that the dispensaries could be a national *leader* in *Cannabis* research and development.
3. Given our experience, and our desire to keep the medical program sustainable, we would like to ask the committee to include us in future tax and regulation discussions that involve the *Cannabis* industry.

Figure 1. Example of medical research results

A. Gas chromatography analysis of dried plants (1-44) and extracts (45-47*) demonstrates a wide range of cannabinoids potencies across products.



B. *Cannabis* leads to reduced opiate use. Patients were surveyed, and asked if they were using *Cannabis* to replace their need for opiates.

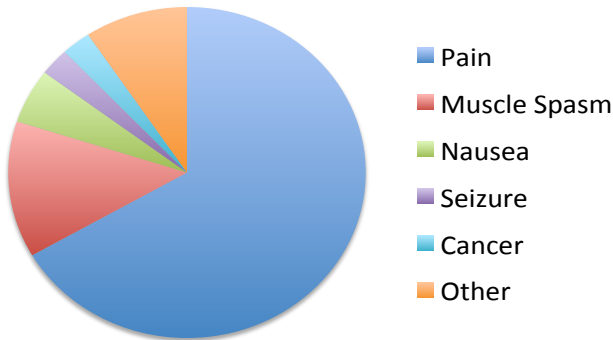


The reason why cannabis decreases opiate requirements can be explained by the pharmacology of cannabinoid opiate interactions as recently demonstrated in randomized study of patients with chronic pain, published in a top medical journal (1).

1. Abrams DJ, Couey P, Shade SB, Kelly ME, Benowitz NL. Clin Pharmacol Ther. 2011 Dec; 90(6):844-51. Cannabinoid-opioid interaction in chronic pain.

C. Target symptoms.

Patients were asked to report the primary symptom for which they were using medical *Cannabis*.



D. Effectiveness of symptom relief on a scale of 1 to 5 varies widely among different *Cannabis* varieties, but does not seem to be related to THC or CBD potency alone.

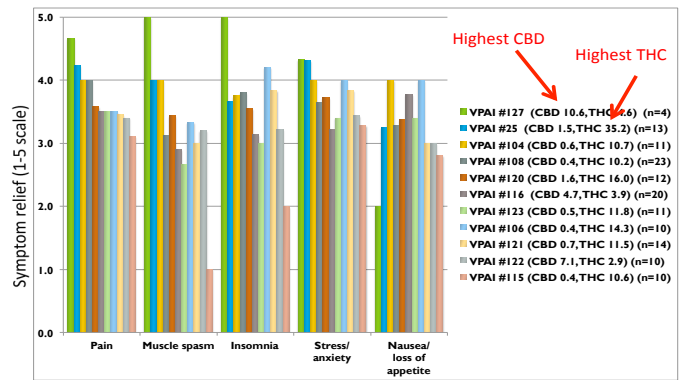
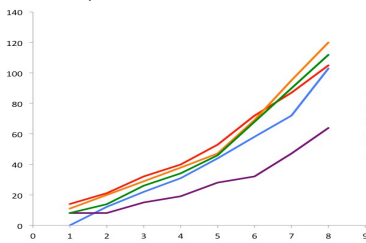
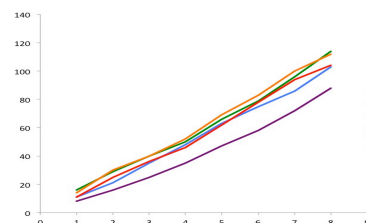


Figure 2. Example of horticultural research results

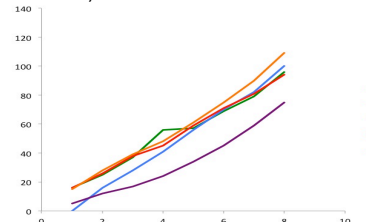
A1. Indica vegetative-growth curve for 5 different potting soil conditions (vertical height over time).



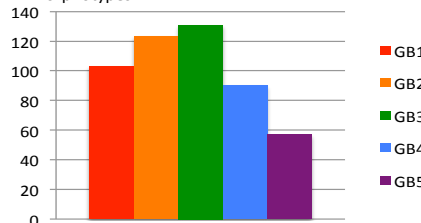
A2. Hybrid vegetative-growth curve for 5 different potting soil conditions (vertical height over time).



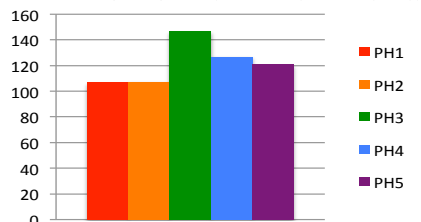
A3. Sativa vegetative-growth curve for 5 different potting soil conditions (vertical height over time).



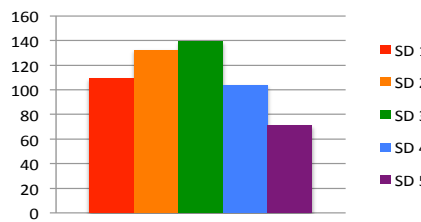
B1. Primary outcome of yield, measured as dried-flower weight in grams/plant, for Indica morphotypes.



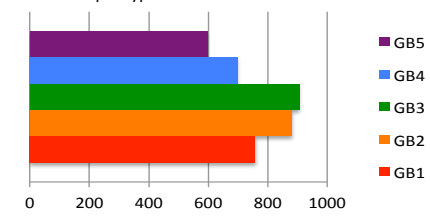
B2. Primary outcome of yield, measured as dried-flower weight in grams/plant, for hybrid morphotypes.



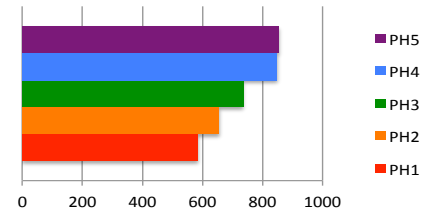
B3. Primary outcome of yield, measured as dried-flower weight in grams/plant, for Sativa morphotypes.



C1. Secondary outcome of yield, measured as total above-ground biomass (wet weight in grams/plant), for Indica morphotypes.



C2. Secondary outcome of yield, measured as total above-ground biomass (wet weight in grams/plant), for Hybrid morphotypes.



C3. Secondary outcome of yield, measured as total above-ground biomass (wet weight in grams/plant), for Sativa morphotypes.

