Hemp CBD vs Whole Plant CBD

- Jude Thilman, December 2018

Hemp is in the News. What is all the excitement about?

> **"Why Hemp? For traditional farmers, rising costs and imports of foreign low-priced produce have made it difficult to turn a profit. There is currently a glut of recreational cannabis producers in Oregon driving down the wholesale prices so low most producers can't afford to continue to operate. Cannabis cultivation is also heavily regulated including the canopy size a grower can use. As a result, the switch to hemp is logical choice." -- Ben Condon, CBE Week – Cannabis Business Executive, 12/27/18.**

Most of the excitement about legalized hemp is centered around the economics of hemp legalization. The argument is made that growing hemp instead of whole plant cannabis could save the small farmer, and the U.S. cannabis industry as a whole. But what does this have to do with the health effects of hemp vs cannabis?

In a keynote speech to the 2015 Marijuana Business Conference and Expo, Ralph Nader called for the legalization of hemp as a significant way to reverse global warming, citing

> **"... the liberation of industrial hemp for its transformation into food, into fuel, into paper, into lubricants, into hundreds of other products, including parts of the interior of a motor vehicle. A degradable, recyclable product that is the dream of people who are worried about climate change."**

But what about hemp for human consumption? "It is analogous to consuming poppy seed bagels or nonalcoholic beer," quips Ralph Nader, Boston Globe, "Campaign Notebook" Sept. 6, 2000.

What to Know About Hemp vs Whole Plant Sources for Medicine

1) **Weak Medicine.** Hemp features a relatively weak chemical constituent profile, with very small of amounts of important cannabinoids such as CBD and THC and much smaller amounts of the important side cannabinoids and terpenes that interact with other compounds to produce the desired effects on our bodies. Industrial hemp typically contains far less cannabidiol (CBD) than CBD-rich whole flower.

2) **Hemp is a "bio-accumulator"** that draws toxins from the soil. Therefore, hemp is potentially dangerous as a source material for herbal health products, such as cannabis. As a bio-accumulator, hemp "sucks" toxins out of the soil and into its own structure. Huge amounts of industrial hemp are required to extract a small amount of CBD, thereby raising the risk of contaminants.

Conclusion: Hemp is NOT a good source for cannabis medicine.

Let's Look at the *Science* of Cannabis Medicine: The Endocannabinoid System and The Entourage Effect

The Endocannabinoid System (ECS) consists of cells, receptors and neurotransmitters. The ECS exists in most mammals, including humans. Its job is to maintain homeostasis – balance in all our body's systems. It does this by influencing metabolic pathways to redress "imbalances." The existence of receptors in the brain was established by two scientists at St. Louis University in 1988 (Alynn Howlett and William Devane). Later, other receptor sites were identified throughout the body and the entire ECS

was fully and "officially" described in 1993. The conditions most often treated in clinical cannabis practice include pain, mental disorders, cancers, spasticity, glaucoma, epilepsy, addictions, insomnia, and others.

The "entourage effect" refers to the dynamic, living interaction of chemical compounds in plants and in our bodies, whereby the therapeutic impact of the whole plant is greater than a single compound or even the sum of the plant's individual medicinal components. The entourage effect is either greatly diminished or negated entirely when the source material is derived from hemp or when single molecules are isolated from the rest of the cannabinoids in the plant.

Recent Studies of Whole Plant vs Hemp or isolated extracted molecules.

The interaction between cannabis components and the endocannabinoid system is not simply additive. By acting as receptor agonists, reuptake inhibitors, and allosteric modulators, plant cannabinoids elicit many effects that combine synergistically. Here are examples of a few studies documenting the superior potency of full spectrum cannabis extracts compared to single molecule applications.

- June 2018, Spanish scientists document the value of full spectrum THC oil in treating breast cancer. (Biochem Pharmacol. 2018 Nov;157:285-293. **Appraising the "entourage effect": Antitumor action of a pure cannabinoid versus a botanical drug preparation in preclinical models of breast cancer.** Blasco-Benito S[1], et al.)
- June 2018, Israeli study of how cannabigerol (CBG) and other cannabis compounds interact synergistically in a manner that confers anti-cancer activity against colon cancer. (Cannabis Cannabinoid Res. 2018 Jun 1;3(1):120-135. **Identification of Synergistic Interaction Between Cannabis-Derived Compounds for Cytotoxic Activity in Colorectal Cancer Cell Lines and Colon Polyps That Induces Apoptosis-Related Cell Death and Distinct Gene Expression.** Nallathambi R[1], et al.)

What Can We Conclude About Hemp-based Products?

Regulatory policy should not privilege single molecule cannabinoids over whole plant cannabis remedies. And consumers and health care providers must remain vigilant regarding any hemp and hemp-derived products they purchase for consumption or topical application.

The debate over sourcing CBD is quickly becoming moot, as plant breeders focus on developing high-resin cannabis varietals (marijuana) that satisfy the legal criteria for industrial hemp – with THC measuring less than 0.3 percent and CBD levels exceeding 10 percent by dry weight, allowing inter-state sales of these products.

Meanwhile, on the industry side, cultivators run huge risks of "pollen drift" if hemp is grown anywhere near pure, organic, whole plant sun-grown cannabis. Such an "infection" could cost us the finest herbal medicine ever produced in human history. Our craft cannabis market exemplified by Mendocino's unique, high quality strains and medicines is seriously jeopardized. We need to craft a county policy that carefully addresses the issue of hemp.

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