

CONVERSATIONS

Carl Germano, CNS, CDN: Simple Guide to the Endocannabinoid System, Hemp Phytocannabinoids/CBD and Your Health

Interview by Sheldon Baker

Carl Germano, CNS, CDN, is a New York Board Certified Clinical Nutritionist and Vice President for Verdant Oasis. He holds a masters in clinical nutrition from New York University and has over 37 years of experience in product development for several of the largest vitamin supplement companies in the trade including Solgar, Country Life, Bluebonnet, Nutratch, Ajinomoto, and others. His experience is vast in both the medical field, where he patented a novel supplement for immunocompromised patients, as well as in professional sports where he worked with several top athletes and US military. With hundreds of dietary supplement products developed, he continues his efforts in product development and research and is responsible for providing the dietary supplement, medical foods, and beverage industries with the next generation of clinically important phytocannabinoid ingredients. A prolific author with several bestselling trade books including *The Misled Athlete*, *Natures Pain Killers*, *The Osteoporosis Solution*, *The Brain Wellness Plan* and his most recent *Road To Ananda: The Simple Guide To The Endocannabinoid System, Hemp Phytocannabinoids & Your Health* (<http://www.roadtoananda.com>). Currently, Germano works with numerous dietary supplement and pharmaceutical companies assisting in the development of novel phytocannabinoid rich formulations and strategies for several distribution channels. In addition to his current position, he maintained a progressive nutrition practice at *The Nutrition Therapy Center* in New York for decades and is a frequent lecturer and radio guest. (*Altern Ther Health Med.* 2020;26(S1):32-34.)

Alternative Therapies in Health and Medicine (ATHM): You've just written a new book, *The Road to Ananda*. Please do a self-review for our readers.

Mr. Germano: My ninth book, *Road To Ananda*, was a necessary project to address the botanical travesty, mass confusion and misperceptions about the importance of hemp and its active class of compounds called phytocannabinoids. In addition, it was imperative to deal with the medical travesty and

help educate consumers about the most important physiological system in the body called the Endocannabinoid System (ECS)—a system that has been ignored due to the stigma regarding cannabinoids. We find ourselves in a precarious time between the government who lied to us for close to a century about hemp and now a cast of characters that have been lying to the industry about “single magic bullet” CBD being the only important component in hemp. Nevertheless, *Road To Ananda* focuses on understanding the various roles the ECS plays in health and disease and the attainment of internal bliss by manipulating and supporting the ECS. Knowing true happiness comes from within, achieving a state of internal bliss requires a physiological balance between body and mind, a state we call homeostasis. For the past 3 decades, research has established clear roles the ECS has on certain organ systems, but its global homeostatic role is attaining balance and health. In the *Road To Ananda*, you will find valuable insights and current scientific and medical information on the inner workings of the ECS and how best to support and nourish it using hemp phytocannabinoids.

ATHM: In your opinion what are the major benefits of phytocannabinoids?

Mr. Germano: The ECS is a collection of cannabinoids we produce (endocannabinoids such as anandamide and 2-AG) and the cannabinoid receptors they influence (CB₁, CB₂, and others). Our health depends on a good balance of endocannabinoids being present to target key organ systems to modulate their activity. Research has revealed the concept of Endocannabinoid Deficiency states that exist in many diseases such as migraines, fibromyalgia, irritable bowel syndrome, and many other neurological and inflammatory conditions that may be suitably treated with phytocannabinoids. Phytocannabinoids are a class of active compounds that naturally occur in hemp—the richest source. They work and complement each other by either attaching to or influencing the cannabinoid receptors as well as overall support of the activity of the ECS. Some are direct agonists to our receptors,

which others act indirectly. For example, cannabidiol (CBD) does not attach to the body's receptors, but indirectly supports CB₁ receptor activity by inhibiting the breakdown of anandamide (attaches to CB₁). On the other hand, another phytocannabinoid called beta caryophyllene (BC) is a strong agonist to the CB₂ receptor. Unfortunately, we have been focusing on CBD only which represents just one of over 100 phytocannabinoids found in hemp. Therefore, to truly benefit from supporting the ECS, taking CBD alone will not do. This brings us to the concept of full spectrum hemp oils that have all of the family of phytocannabinoids. Collectively, the entire class of phytocannabinoids synergistically gives rise to hemp's clinical importance in the body. Research demonstrates that this shared participation among the phytocannabinoids is responsible for optimal dose ranges and better clinical outcomes when compared to singling out any particular one cannabinoid such as CBD. It is important to underscore the intricate interplay of CBD with other important phytocannabinoids to attain full ECS support.

ATHM: To what extent do you see the growth of CBD market in the next 3-5 years?

Mr. Germano: Phytocannabinoids, as an entire class of active compounds, will dominate medicine and nutrition over the next few decades. So, I prefer to look at the growth of hemp as one of the most important botanicals on this planet as well as the whole category of phytocannabinoids over the long term market growth. My viewpoint on hemp's active class of compounds is no different when we look at any other botanical. It is the class of ginsenosides in ginseng, curcuminoids in curcumin, ginkgolides in ginkgo, etc. that are important and we do not single any one out. No different than with hemp. With that said, to truly understand the importance and appreciate the contribution of phytocannabinoids in health & disease, we must learn about the ECS and its vast roles in the body as the modulator of all physiological activity. Once you understand the enormous roles the ECS plays and how phytocannabinoids significantly contribute to its proper functioning, then you can understand why I make such a bold statement with respect to market growth. In addition, the deficiency states we see with low levels of cannabinoids in the body including fibromyalgia and other pain/inflammatory conditions, stress/anxiety, insomnia, ocular health, bone health, and numerous neurological conditions provides a glimpse of some of the most important categories in the trade that may be suitably treated with phytocannabinoids. These categories are enormous and will contribute greatly to market growth.

ATHM: In what direction do you see the supplement industry moving in regards to CBD and hemp?

Mr. Germano: I am both excited about where we need to go with this category, but horribly disappointed in the direction thus far. There seems to be a concerted effort to continue on

the 90 degree uphill battle with attention on getting CBD legalized as a dietary supplement. Those of us who have been around in this industry for a few decades understands and appreciates the federal law passed in 1994 called the Dietary Supplement health & Education ACT (DSHEA). If one were to look at this law, it is painfully apparent that CBD has two strikes against it. First, CBD was not in commerce prior to 1994, a major tenet of DSHEA if you want to have a substance approved as a dietary supplement. Second, if big pharma takes a natural ingredient and develops approved drugs from it, then it is hands off to the dietary supplement industry, strike two against CBD being a dietary supplement since GW Pharmaceuticals has approved drugs with CBD in them. While some argue the timing of the application submission by GW, we still have the first tenet that CBD was not in commerce before 1994. Now, if FDA wants to dismantle DSHEA and make exceptions, then we are awaiting their move. Unfortunately, they have not upheld DSHEA regarding CBD so far and it's anyone's guess as what they will do with the monster they let cultivate, illegal labeling by placing CBD on a product and calling it a dietary supplement, illegal sourcing from marijuana hybrid strains that have never been consumed by humans, and the use of CBD isolates which are clearly drugs and an infringement on GW's drugs. So, my hope would be for the industry to move away from the "single magic bullet" CBD story and embrace the more important story about hemp, its class of phytocannabinoids, and the effect they have on the ECS. .

ATHM: When will nutraceutical companies take an aggressive approach to funding CBD/hemp science?

Now that the 2018 Farm Bill removed hemp from the Controlled Substances Act, research is now allowed without many obstacles and absolutely necessary. I know that we are sponsoring trials as well as a small handful of others who are doing so as well. Unfortunately, what has plagued this industry since its inception is the fact that you cannot patent an ingredient or plant which prevents companies from spending money to do research. Companies need to be more creative in developing unique formulations with phytocannabinoids, varying their ratios, and potentially seek composition patents. In doing so, they will be able to protect their products and provide incentive to spend money to do research. In any case, research is necessary as we are only in the fetal stages of human studies to understand how phytocannabinoids work, proper dosing, clinical applications, and unraveling their potential in health and disease.

ATHM: Quality CBD products can be a major investment. How can consumers really know what's inside their CBD products?

Mr. Germano: The most disappointing aspect of what has been going on over the past three years is the blatant lying and deception on companies trying to peddle suspect or

illegal materials. I have witnessed this at shows and from direct communication with finished good companies. Lies pervade this sector as company's tout their material as true industrial hemp when in fact many come from marijuana hybrids. I tell retailers and consumers to ask for affidavits from companies that state their material is true industrial hemp and from strains that have been consumed by humans prior to 1994 (DSHEA). They need to also ask for DNA analysis showing that the material was processed from industrial hemp and not marijuana. Also, ask for complete chromatograms and assays as one can easily detect whether the material came from marijuana. In addition, make sure you get an affidavit stating that no CBD isolate was used in the product. If FDA does its job, this is the first material that should be banned as a drug. Unfortunately, lies pervade the trade as I see assays showing 70%, 80%, 90+% being touted as full spectrum oils. I cannot believe anyone would take this seriously. So, for now it's buyer beware Get as much documentation as you can, don't rely on a COA, stick with reputable companies that can provide such documents.

Lastly, knowing the contamination issues that pervade the cannabis market, insist on documents and certifications that that the hemp oil is certified organic (European or USDA), test results on pesticides, heavy metals, and micros and nonGMO status.

ATHM: The rise of biosynthetic cannabinoids stands to be among the most disruptive that that could pose a major competitive threat to medicine derived from the cannabis plant. Your thoughts.

Mr. Germano: In my view and those of several lawyers, synthetic cannabinoids are drugs. We know that pharmaceutical companies will fast track this sector by development of drugs with synthetic cannabinoids. This is something they have always done, so I don't believe it is a threat to our industry as we never followed this path. Research and botanical medicine tells us that the synergy of components in a plant are sometimes better than any single component isolated from it. This seems to be the case with phytocannabinoids. We have seen the dose response curve for CBD isolate vs full spectrum oils and we know the latter provides for better optimal dosing and outcomes. So, let big pharma do what it does best and let this industry continue on the right path of supporting hemp and its natural class of phytocannabinoids rather than single magic bullets.

ATHM: Are pharmaceutical and medical executives increasingly interested in CBD and cannabis?

Mr. Germano: Undoubtedly. Again, once you understand the role of the ECS in controlling or influencing every physiological process in the body, it is hard to imagine that there would not be intense interest in hemp and marijuana. Transdermal delivery is said to provide benefits that include slow and long-lasting release relief as well as easy dosing

control. Is this a good way to treat pain without side effects? While transdermal delivery is an efficacious way to deliver phytocannabinoids that have bioavailability issues. Orally, I rely on recommending many of the tried and true methods to enhance lipid delivery (phytocannabinoids are lipids) through use of phospholipids, liposomes, emulsions, micronization, etc., similar techniques we see used for other nutrients such as curcumin and CoQ₁₀. Topically, the cosmetic world has decades of experience delivering lipids into the skin via the use of natural ingredients such as alcohols, MSM, and magnesium sulfate. It is amusing to see companies that do not employ drivers of lipids into the skin and just have oil in a bottle or container. Without the drivers, much if not all of the phytocannabinoids will rest on the surface and never get to their receptors to elicit their effects. On that note, again we cannot rely on CBD alone especially since it does not attach to the cannabinoid receptors. I usually recommend the addition of the phytocannabinoid that is able to attach to the CB₂ receptors that control inflammation and pain such as beta caryophyllene. Once again, CBD is not the answer alone, orally or topically.

ATHM: What role is CBD playing in neurological health?

Mr. Germano: While GW Pharmaceuticals led the way in this category with its CBD based drug to treat epilepsy, even the US government recognized the importance by being granted a patent on the neuroprotective effects of phytocannabinoids! The role of phytocannabinoids and the ECS in maintaining neurological health is significant. New investigations into the ECS in our brain and its relationship in numerous neurological diseases is leading us down a different perspective in that the key to a healthy brain is reliant on a healthy functioning ECS. The ECS is one of the most extensive signaling systems in our brain and assists in the regulation of many neurological effects such as making brain cells more adaptive to environmental changes, disease, and injury; protecting the brain from excitatory expression by glutamate that can lead to neuronal death; protecting the brain from inflammation, a hallmark of most neurological diseases; and modulating neurotransmitter release, reduces oxidative stress, and is involved in pain signaling. These are just a few important aspects to consider but maintaining brain balance (homeostasis) is paramount to the health of the nervous system and addressing the disturbances commonly seen in neurodegenerative diseases.

Sheldon Baker is CEO of the Baker Dillon Group LLC and has created numerous highly visible nutraceutical brand marketing communications campaigns for well-known supplement and food industry companies. He is also the producer of The 420 Area Code, a radio and television talk show focusing on CBD, hemp and cannabis. For more information contact him at Contact@The420AreaCode.com.