

A Raw Look at the Nutritional Properties of Hemp

By: *Doc Rob*

Dr. Rob "Doc Rob" Streisfeld



BIO: Dr Rob Streisfeld is a passionate consumer advocate and educator with nearly 20 years of Natural Health & Natural Products Industry experience. A Doctor of Naturopathic Medicine (SCNM - '02) and Certified Natural Food Chef, "Doc Rob" as widely known, provides an informed and innovative perspective for both consumers and health professionals.

Over the past decade, Doc Rob has helped to identify and expand key health categories such as probiotics, enzymes, whey protein, fermented foods, whole food supplements, and more. His recent passion is rooted in cannabis, cannabinoids, and the benefits they offer.

Additionally, Doc Rob hosts a podcast, "Concierge for Better Living" on CannabisRadio.com, and launched the book series, "The Cannabis Conundrum" (www.TheCannabisConundrum.com)



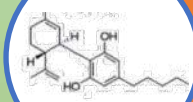
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CANNABIS & THE ENDOCANNABINOID SYSTEM



The Key to Homeostasis?



EndoCannabinoids vs PhytoCannabinoids



Synergy or the “Entourage” effect with Cannabis Derived Phytonutrients

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EVERYONE HAS AN ENDOCANNABINOID SYSTEM (ECS)



In fact, the **ECS** evolved long before humans; it is over 600 million years old.

It regulates variety of biological processes, like pain, sleep, mood, and appetite.

However, experts believe that the overall function of the **ECS** is the regulation of **homeostasis**.

Balance within the ECS is critical to homeostasis and to prevent disease.





The Endocannabinoid System: Mechanisms Behind Metabolic Homeostasis and Imbalance

Stephen C. Woods, PhD

ABSTRACT

Scientific interest in the endocannabinoid (EC) system developed as a result of the known effects of tetrahydrocannabinol, including an increased desire to consume food. Further investigation has led to the belief that the EC system plays a role in accumulation of intra-abdominal fat and worsening of cardiovascular disease (CVD) risk factors. The EC system has been identified as a neuromodulatory system that is normally inactive but can be overstimulated to cause and exacerbate numerous metabolic pathologies. EC agonists and receptors have been identified in the brain, liver, and peripheral adipose tissue, and the EC system is known to affect metabolism in these areas and others through neuromodulatory signals. Meal size, body weight, and numerous metabolic factors such as triglyceride and cholesterol levels, insulin resistance, and glucose intolerance can be affected via the EC system. Further research into the EC system is warranted to elucidate its role in metabolic homeostasis. © 2007 Elsevier Inc. All rights reserved.

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3 "Types" of Cannabinoids to Consider



CANNABINOIDS:

ENDO

PHYTO

DIETARY

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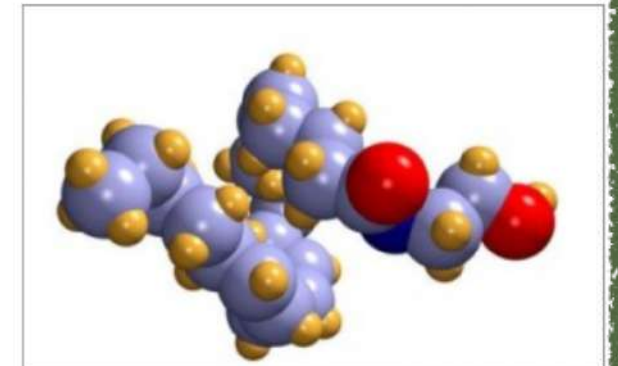
Anandamide (AEA) (bliss) 2-Arachidonoylglycerol (2-AG)

1992 - Scientists Discover First Endocannabinoid

"Twenty-eight years after discovering THC, in 1992, Dr. Mechoulam, along with Dr. William Devane and Dr. Lumir Hanus, identified the brain's first endogenous cannabinoid (or endocannabinoid) - the brain's natural version of THC -which they called 'anandamide,' from the Sanskrit word 'ananda,' which means 'eternal bliss' or 'supreme joy.'

Vigorous exercise stimulates the release of anandamide, and the sense of euphoric well-being that comes with a healthy workout - what jogging enthusiasts refer to as a 'runner's high' - is due to elevated levels of endocannabinoids. The endocannabinoid system in the brain is also believed to help mediate emotions, consolidate memory, and coordinate movement."

David J. Brown, MS ★ "The New Science of Cannabinoid-Based Medicine: An Interview with Dr. Raphael Mechoulam," *Mavericks of Medicine*, 2006



Anandamide neurotransmitter molecule. The atoms are color-coded as carbon (light blue), hydrogen (yellow), nitrogen (dark blue) and oxygen (red).

Source: SciencePhoto.com (accessed Dec. 15, 2011)

CANNABINOIDS:

ENDO

“Many randomized controlled trials identified in this systematic review have been conducted on lifestyle modifications (e.g., exercise, maintenance of ideal body weight) and CAM interventions (e.g., dietary supplements, stress modification, acupuncture, massage and manipulation). **In our opinion these are sensible methods of enhancing the eCB system.** Preclinical studies identified useful prescription drugs, such as SSRIs, anxiolytics, antipsychotics, and anticonvulsants. However, these drugs are generally administered in a chronic fashion, and this comes with a caveat: generating chronic elevations in AEA and 2-AG may be counterproductive. **Faced with constant activation by agonists, CB1 and CB2 desensitize and downregulate.”**

Citation: McPartland JM, Guy GW, Di Marzo V (2014) Care and Feeding of the Endocannabinoid System: A Systematic Review of Potential Clinical Interventions that Upregulate the Endocannabinoid System. PLoS ONE 9(3): e89566. doi:10.1371/journal.pone.0089566

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Phytocannabinoid = plant derived fatty acid capable of attaching as a ligand to the CB receptors.

CANNABINOIDS:

PHYTO

Over 100 Have been identified

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Dietary Cannabinoids = common food sources of ligands capable of binding to the CB receptors.

β -caryophyllene, a sesquiterpene found in the essential oil of **black pepper, oregano**, and other edible herbs, as well as in various cannabis strains and in many green, leafy vegetables.

CANNABINOIDS:

DIETARY

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CBD & MORE!



1. Where it all begins.... THE ACIDS
2. The Headliners.... THC & Cannabidiol (CBD)
3. Key Supporting Cast.... THCV, CBN, ?

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THE ACIDS



Cannabigerolic Acid (CBGA) -> Cannabigerol (CBG) *The "Mother" Cannabinoid*
Cannabidiolic Acid (CBDa) is one of the four possible outcomes of Cannabigerolic acid (CBGa) being processed:

- 1) Cannabigerol (CBG),
- 2) Cannabichromic acid (CBCa),
- 3) Tetrahydrocannabibolic acid (THCa),
- 4) and CBDa.

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THE HEADLINERS



THC: (Δ 9-Tetrahydrocannabinol, Δ 9-THC, D9-THC, d9-THC). D8, D11...

- strongly **psychoactive****
- THC enabled scientists to discover the existence of the Endocannabinoid system in vertebrate animals (including humans) (1992)
- effective treatment for a variety of ailments and disorders including pain, tumors, nausea and ADHD

CBD: Cannabidiol "non-psychoactive" (in that it does not produce the euphoria, time dilation, or anxiety normally produced by THC)

- extremely valuable in the treatment of seizure disorders such as MS and Epilepsy
- lack of psychoactivity makes it ideal in treating children, the elderly and patients that prefer to remain clear headed and focused
- CBD is often as effective as THC in the management of pain and tumors. CBD may lower blood sugar, and may be used in the treatment of Diabetes.
- CBD has a calming effect, and is useful in the treatment of stress related disorders and sleep loss

Research Articles: Behavioral/Cognitive

Cannabidiol Counteracts the Psychotropic Side-Effects of Δ -9-Tetrahydrocannabinol in the Ventral Hippocampus Through Bi-Directional Control of ERK1-2 Phosphorylation

<https://doi.org/10.1523/JNEUROSCI.0708-19.2019>

Cite as: J. Neurosci 2019; 10.1523/JNEUROSCI.0708-19.2019

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THE SUPPORTING CAST



CBN Cannabinol

- Cannabinol is an oxidation product of THC. It normally forms when THC is exposed to oxygen and heat. A high level of CBN often reflects cannabis that is old or has been exposed to significant heat.
- CBN is known to be very slightly psychoactive and more strongly sedative than other known Cannabinoids
- samples with significant CBN (approaching 1% by weight) can be useful to treat insomnia
- CBN is also somewhat effective as an anti-emetic and anticonvulsant

CBG Cannabigerol

- non psychoactive
- stimulate the growth of new brain cells, including in the elderly
- stimulates bone growth
- is antibacterial and anti-tumor, and combats insomnia



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THE SUPPORTING CAST (continued)



CBC Cannabichromene

- non psychoactive
- about ten times more effective than CBD in treating anxiety and stress
- displays efficiency in treating inflammation, pain relief and is both anti-viral and anti-tumor
- CBC has been shown to stimulate the growth of bone tissue

THCV - Tetrahydrocannabivarin

- The “Sports Car” of Cannabinoids
- Psychoactive: More intense, shorter duration than THC
- Better at reducing Anxiety than CBD.. especially THC induced palpitations
- More research needed but potential for use in Parkinson, Diabetes, PTSD...
- Being touted as the “weight loss” cannabinoid

THCV comes from THCVA which is the result of breaking CBGVA down with heat or UV light

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TERPENOIDS/TERPENES



Terpenoids are lipophilic (are attracted to lipids), have an affinity for biomembranes which function to prevent leakage of cellular contents into extracellular space, but also control the influx of material into the cell. Terpenoids can increase cell membrane permeability, helping to destroy any pathogenic organism in the human body. Ex: essential oils show such strong antimicrobial and cytotoxic activities. Terpenoids can modulate the activity of ion channels in the human body. Cannabis essential oils are also anti-spasmodic, especially affecting the motility of smooth muscle cells in the intestines.

Michael Wink, Modes of Action of Herbal Medicines and Plant Secondary Metabolites, Medicines 2015, 2, p. 251-286

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TERPENOIDS/TERPENES



1. alpha-Pinene (CBD/THC) : Anti-inflammatory, Bronchodialator, Memory Aid
2. beta Myrcene (CBD/THC/CBG) : Anti-inflammatory, Analgesic, Anti-Cancer
Myrcene is also found in hops, basil, bay leaves, and thyme, as well as in cannabis.
3. beta Caryophyllene (CBD/THC) : Anti-inflammatory, Gastric Protective, ...
4. Limonene (CBD/CBG/THC) : Anti-anxiety, Anti-depressant*, Immunostimulant*, anti-acne, anti-cancer, treatment for GERD (reflux)
5. Linalool (CBD/THCV/CBDV/THC) : Anti-anxiety, sedative, analgesic, anti-convulsant
6. Nerolidol (THC/CBN) : Sedative, Skin Penetrant, Anti-Malarial

* Via Inhalation

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POLYPHENOLS/PHENOLICS



**FLAVONOIDS,
STILBENOIDS,
LIGNANS... Oh MY!**

The look and freshness, flavor, and nutritional value of fresh and processed foods often depend on the various phenolic compounds found. Often containing high anti-oxidant capacity, polyphenols have been shown to have anti-carcinogenic and anti-mutagenic properties.

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FLAVONOIDS



- Currently 26 flavonoids have been identified in Cannabis
- When flavonoids enter the human body they are conjugated in the liver by glucuronidation, sulfation, or methylation or metabolized to smaller phenolic compounds.
- Most significant flavonoids found in Cannabis are the CanniFlavones (CannFlavin A, B, and C) and Canniprene which has significant anti-inflammatory properties

CANNABIS FLAVONOIDS IN PHARMACEUTICAL DEVELOPMENT



Therapeutic agents containing cannabis flavonoid derivatives targeting kinases, sirtuins and oncogenic agents for the treatment of cancers

Abstract

An embodiment of the invention provides a cannabis-based flavonoid pharmaceutical composition including any one or more selected, from among the group of Apigenin, Cannflavin. A. Cannflavin B, Cannflavin C, Chrysoeriol, Cosmoiin, Flavocannabiside, Kaempferol, Luteolin, Myricetin, Orientin, Isoorientin (Homoorientin), Quercetin (+)-Taxifolin, Vitexin, and Isovitexin, or their synthases, for the prevention and treatment of certain cancers that can be treated by therapeutically targeting oncogenic factors including kinases, sirtuins, bromodomains, matrix metalloproteinases and BCL-2. Some of the cancers that can be treated by use of cannabis flavonoids based on the inhibition of these therapeutic targets include brain, breast, colon, renal, liver, lung, pancreatic, prostate, leukemia, melanoma as well as any other cancers that overexpress the oncogenic factors inhibited by the cannabis flavonoids identified herein.

US20180098961A1

United States



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Similar

Inventor: Henry Lowe, Ngeh J. Toyang

Current Assignee : Flavocure Biotech LLC

Worldwide applications

2015 - [US](#) [US](#) 2017 - [US](#)

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STILBENOIDS



DENBINOBIN - A member of the Anthroquinone family, the compound has been isolated from Cannabis exhibiting strong anti-viral properties and preliminary studies suggest possible use in treatment of HIV.

Also isolated from the traditional Chinese herb, Ephemerantha lonchophylla, some research suggests Denbinobin has anti-cancer properties as well.

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LIGNANS



Cannabisins (A-F) are a group of lignans found in Cannabis seeds and roots. They have free radical scavenging anti-oxidative and anti-cancer activity.

Cannabisin B - Purified from the hempseed hull, shown to have potential anti-cancer properties.

It has been suggested that Cannabisin F has cytotoxic properties, and may inhibit cell growth against some cancers. (Chen et al., 2006 and Li et al., 2012)



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HEMP: A SUPERFOOD



COMPLETE PROTEIN

Edestin protein, which is only found in hemp seeds, has a makeup similar to blood plasma and has been shown to promote a healthy immune system as well as eliminate stress. Its counterpart, **Albumin** protein, assists in maintaining the strength of tissues that hold the body together.

Hemp protein contains all of the 20 known amino acids – including 9 essential amino acids (EAAs)

ESSENTIAL FATTY ACIDS

Perfect 3:1 Ratio

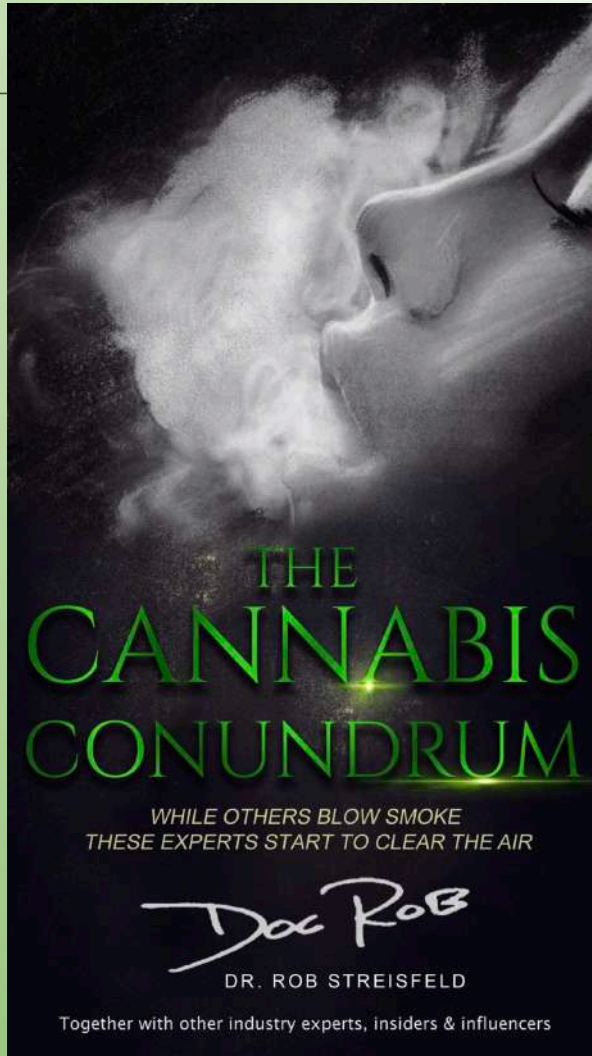
PHYTO & DIETARY CANNABINOIDS, TERPENOIDS, BIOFLAVINOIDS, and More

VEGAN, Non-GMO, SUSTAINABLE



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THANK YOU!



WISHING YOU ALL THE BEST
IN HEALTH & HAPPINESS!

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