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Opportunities and Challenges Using Hemp-CBD in Practice

Presented by:

Karen Wright, MS, CNS, CDN

Hosted by:

Susan Allen-Evenson, RDN, CCN, FMN



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Karen Wright, CDN, CNS - Biography



Karen started her career as a research analyst at ABC News. Her passion to help others started after the September 11th attacks on the World Trade Center.

Currently, Karen practices as a New York state licensed nutritionist (CDN) and Certified Nutrition Specialist (CNS).

Karen uses hemp CBD in her functional nutrition practice. After becoming concerned about the quality of products on the market, she used her journalistic skills to do extensive research on the quality of CBD products. Karen advises people daily about CBD and the other alternative options to address their concerns.

Karen is a public speaker and the author of the book *“Is It Mold? A Holistic Approach to Managing a Commonly Overlooked Condition”*. She continues her professional studies with current training as a Master Herbalist and is also completing Next Level Functional Nutrition’s comprehensive IFMNT Certificate of Training program.



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Disclosure

NO CONFLICT OF INTEREST



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- Market Growth
- What is CBD?
- About The Plant
- Making Hemp Product
- Safe Use of Hemp Products
- Administration
- Legality

Brief Outline

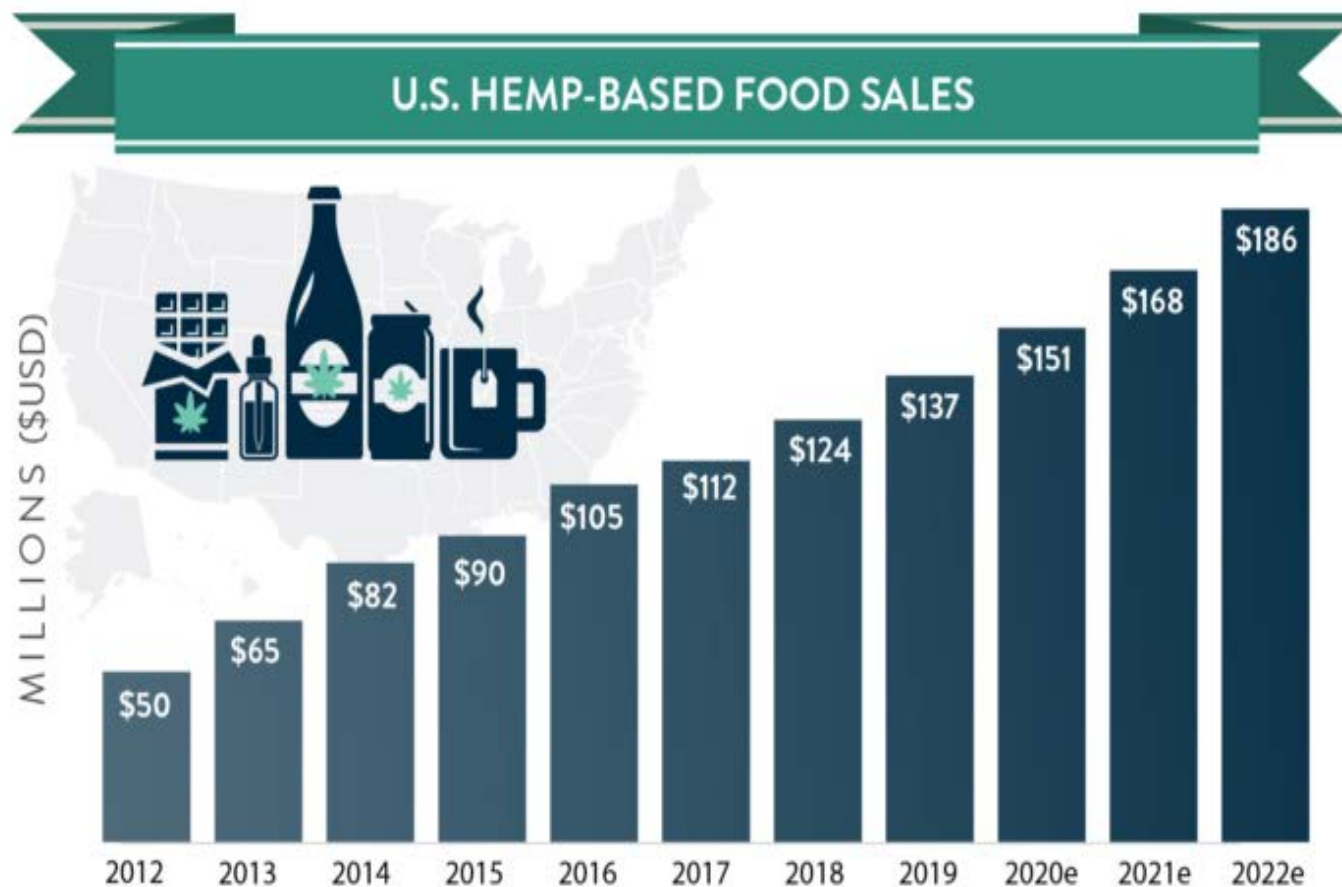


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CBD Market Growth



© 2019 New Frontier Data | Source: Hemp Business Journal





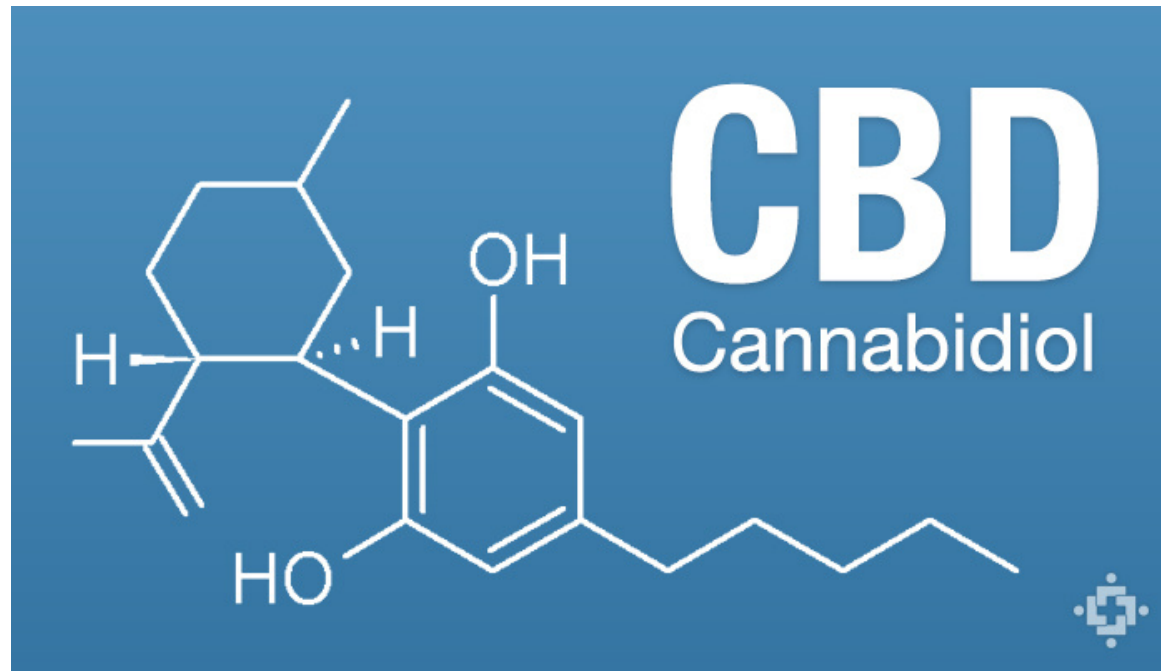
CBD Market Growth

- 2 billion by 2020
- Brightfield Group – hemp-CBD market alone \$22 billion by 2022
- March 21, 2019 – CVS announced it will be selling CBD
- Public companies:
 - Wildflower Brands, Inc. (OTCQB: WLDFB) (CSE:SUN) 300 percent growth in 9 months
 - CuraLeaf – Revenue rose \$32 million from \$6.3 million



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CBD



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What is CBD?

- Abbreviation for cannabidiol
- One of the over 100 phytocannabinoids in the cannabis plant
- Psychoactive only in influencing neurotransmitters
- Won't cause “high”, intoxication effect like THC
- Compound extracted from cannabis plant



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Health Benefits

- Improve mood
- Reduce anxiety
- Injuries
- Heart health
- Bone structure
- Insomnia
- Inflammation
- Nausea and vomiting
- Epilepsy and seizure
- Substance Abuse
- Pain
- Source fatty acids
- Immune support



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About The Plant



Source: Wikipedia



Cannabaceae Family

- Cannabis
 - Cannabis sativa L ssp. sativa
 - Industrial hemp
 - Cannabis indica L ssp. indica
 - Marijuana
 - Cannabis sativa L ssp. Ruderalis
 - Low amounts of THC
 - Self flowering
- Humulus lupulus – Hops





Marijuana vs. Industrial Hemp

- *Marijuana*
 - The Controlled Substances Act (CSA) defines marijuana as “all parts of the plant *Cannabis sativa* L., whether growing or not; the seeds thereof; the resin extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture, or preparation of such plant, its seeds or resin.”
 - CSA *excludes* mature stalks of the plant, seed oil and unviable seeds - only trace amounts of cannabinoids
 - Associated with Recreational Use
 - Flowers and leaves used for medicinal, recreational and spiritual purposes
 - Grows 5 feet spreading low to ground
 - 10-15% THC or more
 - Psychoactive
 - Schedule 1 drug
 - Growth legal in some states



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Marijuana vs. Industrial Hemp (cont'd)

- *Industrial Hemp*

- Cannabis sativa L. containing 0.3% or less THC
- Grows in 15-20 foot stalks
- Used for building, clothing, rope, paper, textiles, food, fuel and medicine





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Growing Hemp

- Requires little fertilizer
- Can grow almost every where
- Pest resistance
- Deep roots
- Leaves will return mineral and nitrogen to soil
- No need to rotate the crop
- Resists UV-B light



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Is Cannabis Plant An Adaptogen?

Definition:

- Non-toxic
- Creates a state of non specific resistance
- Help re-regulate the HPA Axis

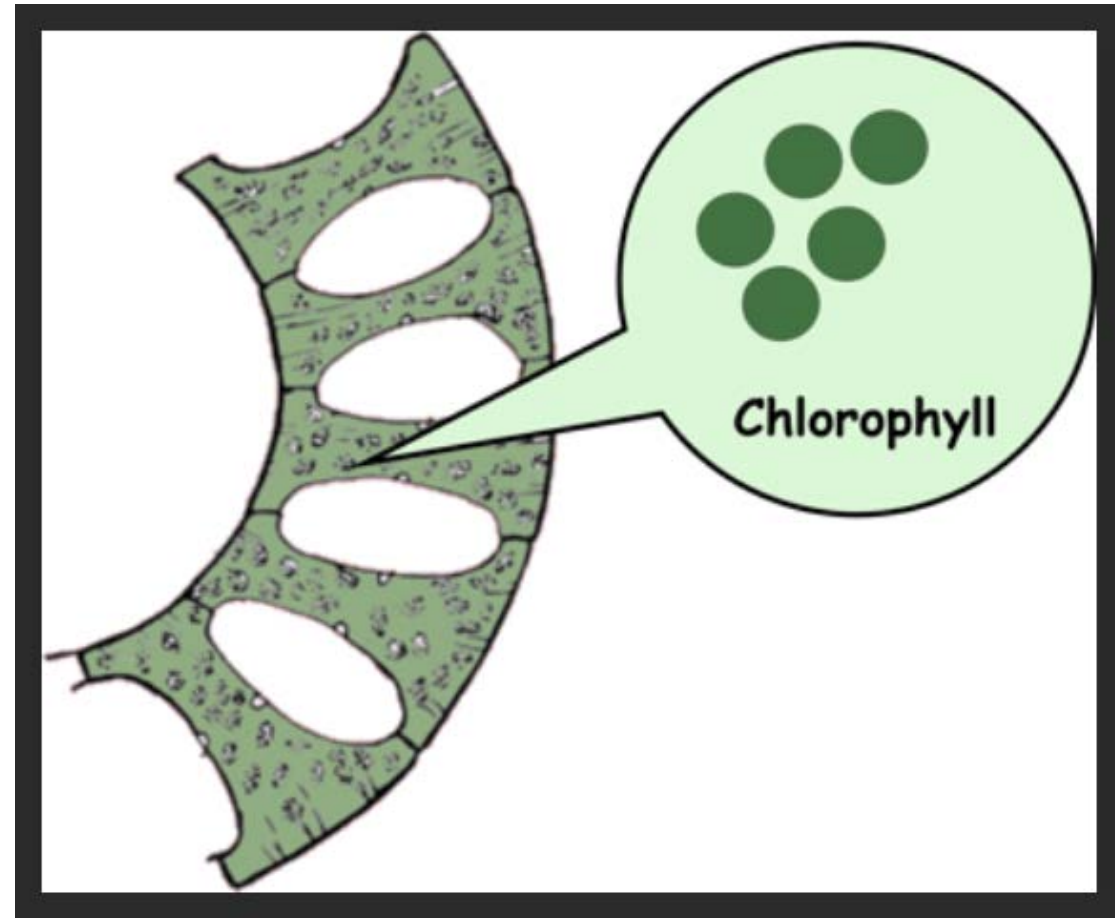
NO!!!

Source : David Winston, RH



Plant Composition

- Cannabinoids
- Terpenoids
- Glycoproteins
- Alkaloids
- Chlorophyll
- Fatty Acids
- Flavonoids





Phytocannabinoids

- Cannabinoids produced by plants
- Hemp
 - *Tetrahydrocannabinol – THC*
 - *Cannabidiol – CBD*
 - Digestive
 - Calming, sedative, stress
 - Anti-spasmodic
 - THC and CBD work together “entourage effect”
 - THC-A and CBD-A non decarboxylated forms



Phytocannabinoids (cont'd)

- Lessor known

- *Cannabichromene - CBC*

- Doesn't bind to CB1 receptor
- Pain perception, anxiety
- Keeps Anadamide in bloodstream longer

- *Cannabidivarin – CBDV*

- Anticonvulsant in vivo

- *Cannabigerol acid - CBGa*

- *Cannabigerol – CBG*

- Starting point for THC, CBD and CBC
- Not psychoactive even though creates THC
- Pain, stimulates appetite, anti-inflammatory, antibacterial

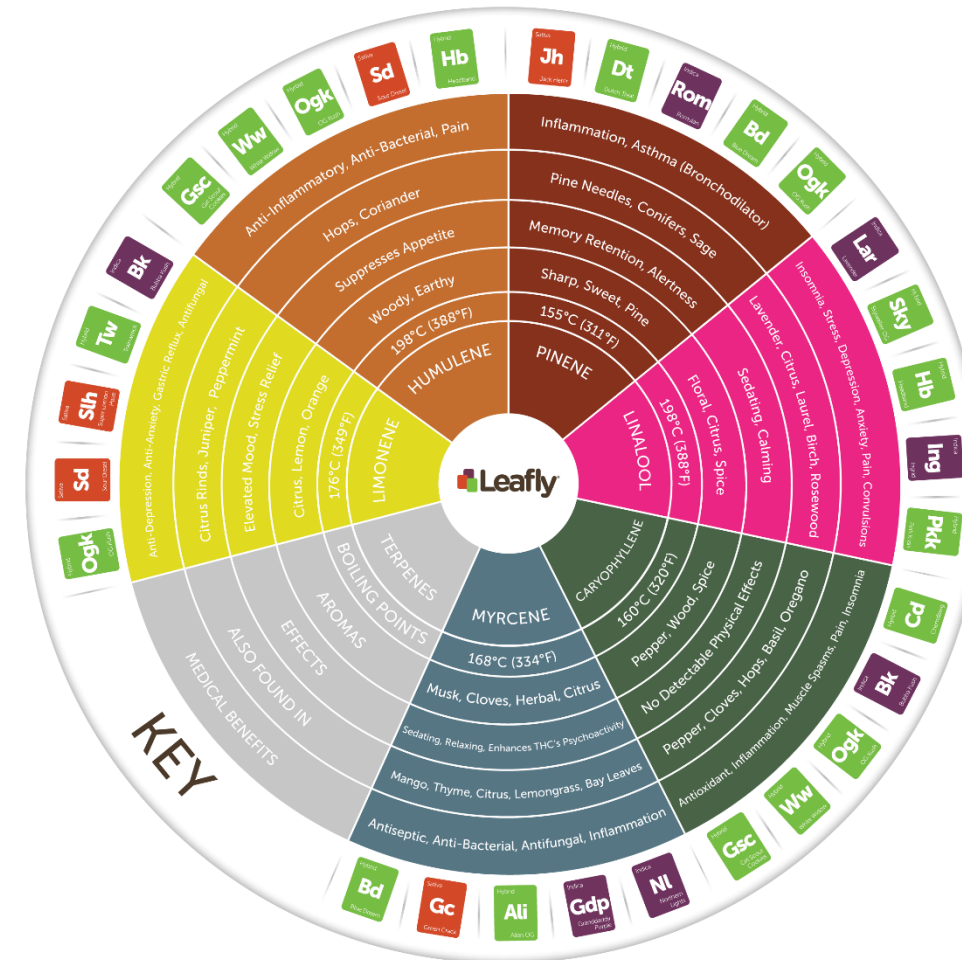
- *Cannabinol – CBN*

- Oxidized version of THC
- Sleep, sedative



Terpenes

- Immune system of plant
- Scent or flavor
- Changes from plant
- Varies by farm



References
<http://steephill.com/resources/cannabinoid-and-terpenoid-reference-guide/>
<http://sclabs.com/learn/terpenes.html>

Source: Leafly.com



Most Common Terpenes

Terpene	Purpose	Plants
Caryophyllene	Reacts with cannabinoid receptor, anti-bacterial and anti-inflammatory	Black pepper, rosemary, oregano
Humulene	Appetite suppressant, anti-inflammatory	Hops, black cherry, ginseng, sage, clove, basil
Limonene	Gastric reflux and heartburn, elevate mood and reduce stress	Lemons, limes, oranges



Most Common Terpenes (cont'd)

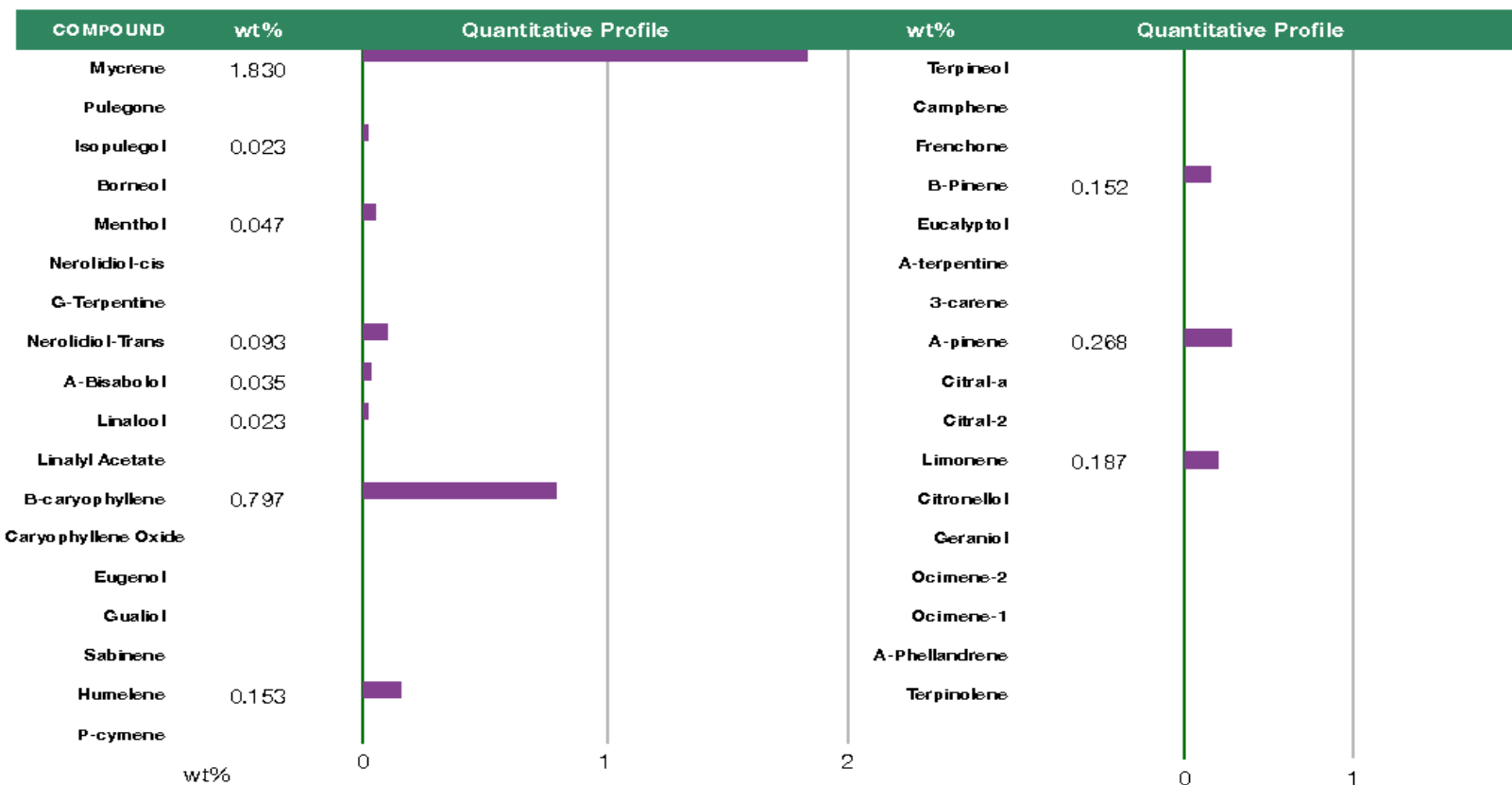
Terpene	Purpose	Plants
Linalool	Reduce lung inflammation, sleep disorders, depression and anxiety	Cinnamon, lavender, coriander
Myrcene	Insomnia, pain, muscle spasms	Lemongrass, thyme, hops
Pinene	Anti-inflammatory, respiratory conditions	Pine needles, rosemary, basil, sage



Terpenes (cont'd)

TP: Terpinines Profiles [W1-10-08] Analyst: CJH Test Date: 06/28/2018

The client sample was analyzed by Head-Space Gas Chromatography (HS-GC). The collected data was compared to data collected for certified reference standards at known concentrations.



Total Terpene: 3.6 wt%

* Indicates qualitative calculation based on recorded peak areas

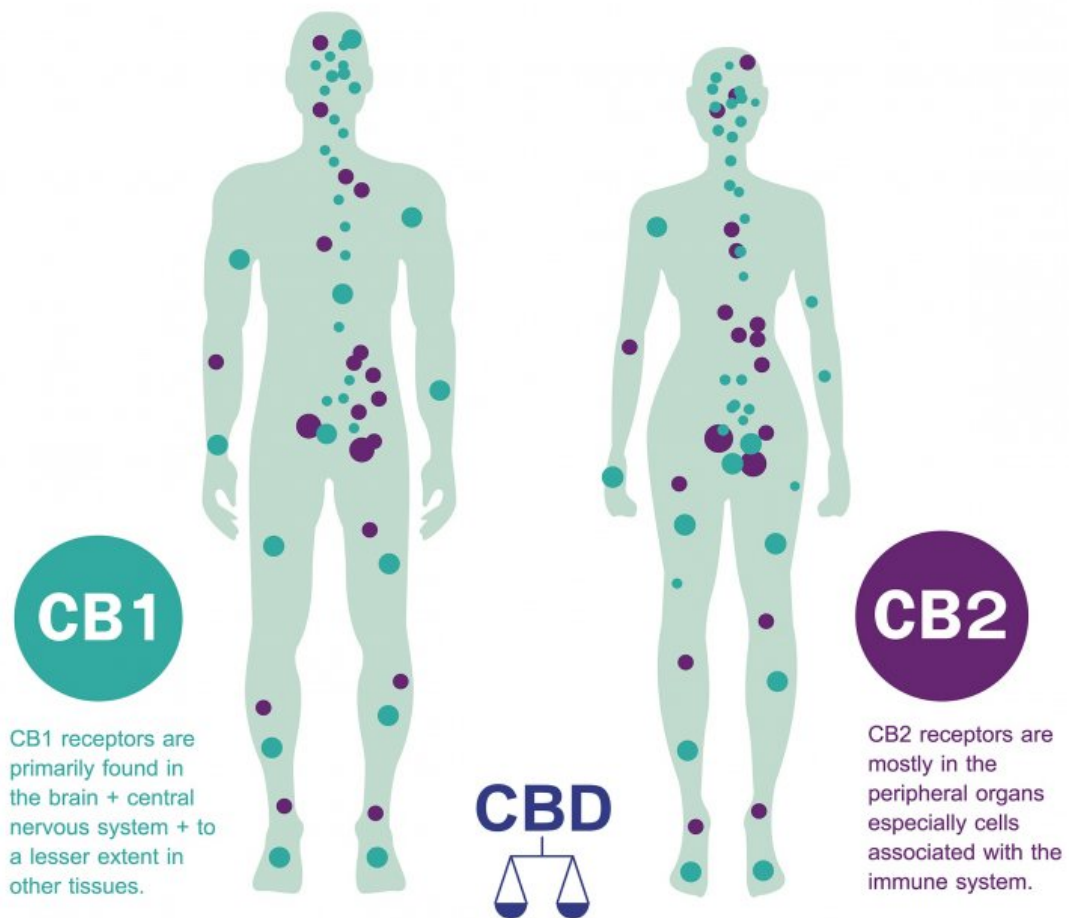


Endocannabinoids

- Endocannabinoids are produced naturally in the body
- Endogenous
 - Brain
 - Anandamide
 - 2-Arachidonylglycerol (2AG)
- Found in breast milk
- Help with imbalances – inflammation, nerve dysfunction, unhealthy cell growth



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THE Endocannabinoid system

Resource: <https://www.projectcbd.org/cbd-101/what-is-cbd>



Endocannabinoid system (ECS)

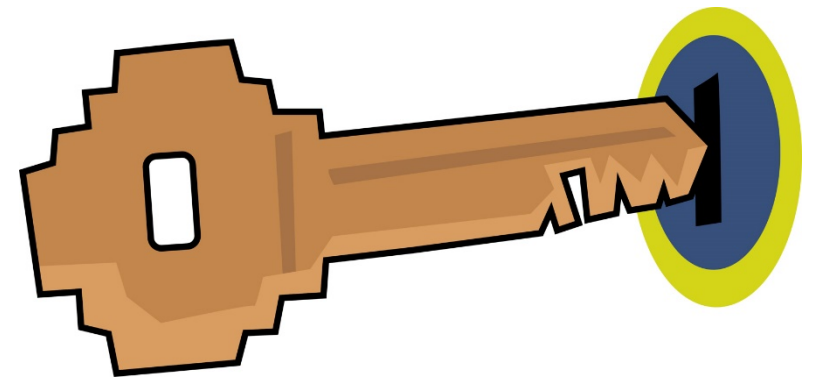
- Ancient internal signaling system evolving more than 500 million years ago
- Endocannabinoids and receptor found all animals except insects
- **Maintains homeostasis**
- Found throughout the entire body
- Must abundant neuro-modulatory receptors
- Lock and key system
- **Clinical Endocannabinoid System (ECS) Deficiency Syndrome may be a root cause of some diseases**
- Can boost with diet, exercise and singing



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Endocannabinoid system (ECS)

- Lock and key system
- **Clinical Endocannabinoid System (ECS) Deficiency Syndrome may be a root cause of some diseases**
- Can boost with diet, exercise and singing



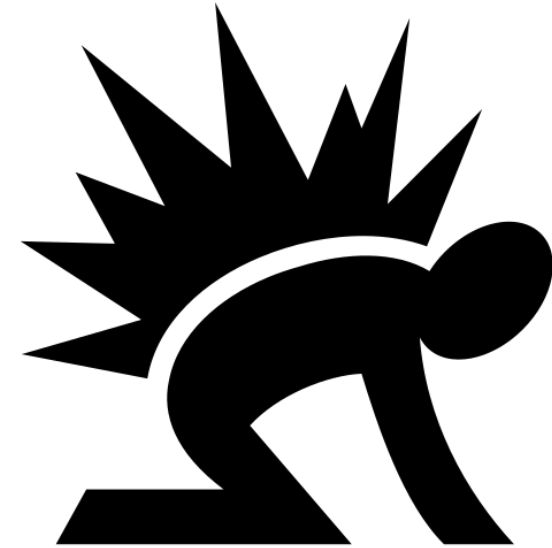
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- *CB receptors*
 - Pain
 - Inflammation
 - Appetite
 - Gastrointestinal motility
 - Neuro- protection and degeneration
 - Immune cells
 - Hormones and neurotransmitters such as dopamine, serotonin and glutamate
- *G-protein coupled*

ECS Receptors

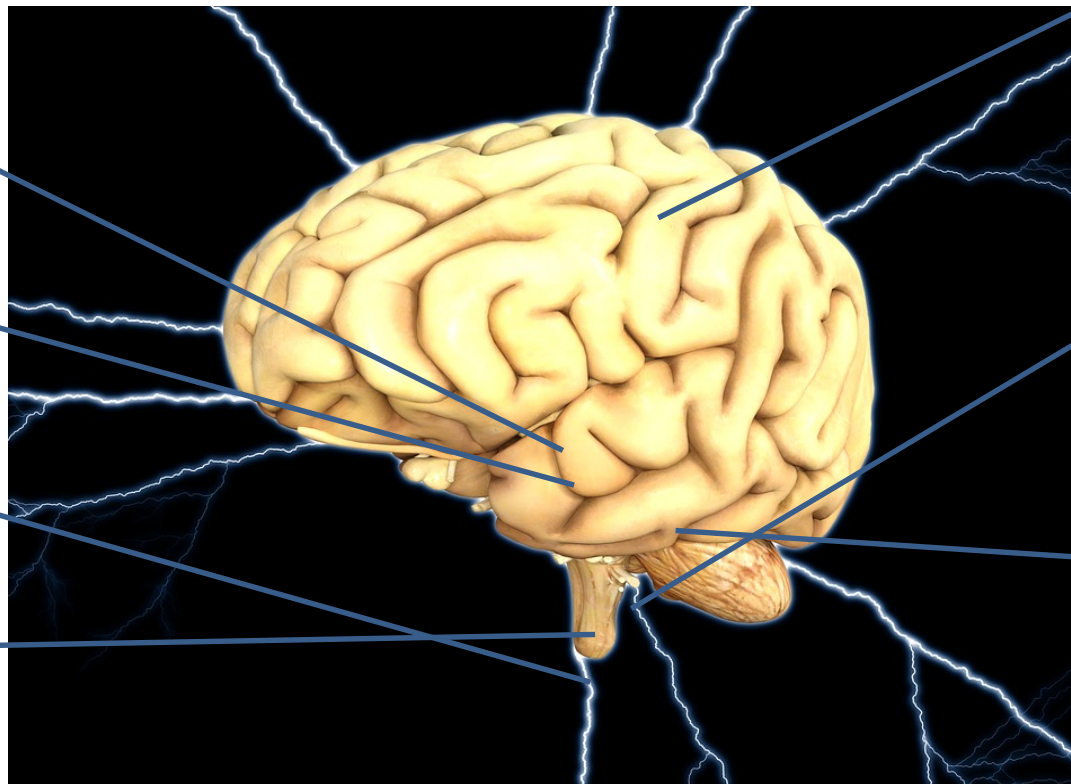


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- *CB1 receptor*
 - Mainly brain and nervous system
 - Peripheral organs and tissues
 - Activated by Anandamide &/or THC
 - 2-AG main binding molecule

ECS Receptors



Basal Ganglia
Movement

Cerebellum
Movement

Spinal Cord
Pain

Medulla
Nausea

Cerebral Cortex
Cognitive function

Hippocampus
Learning, memory, stress
THC not CBD

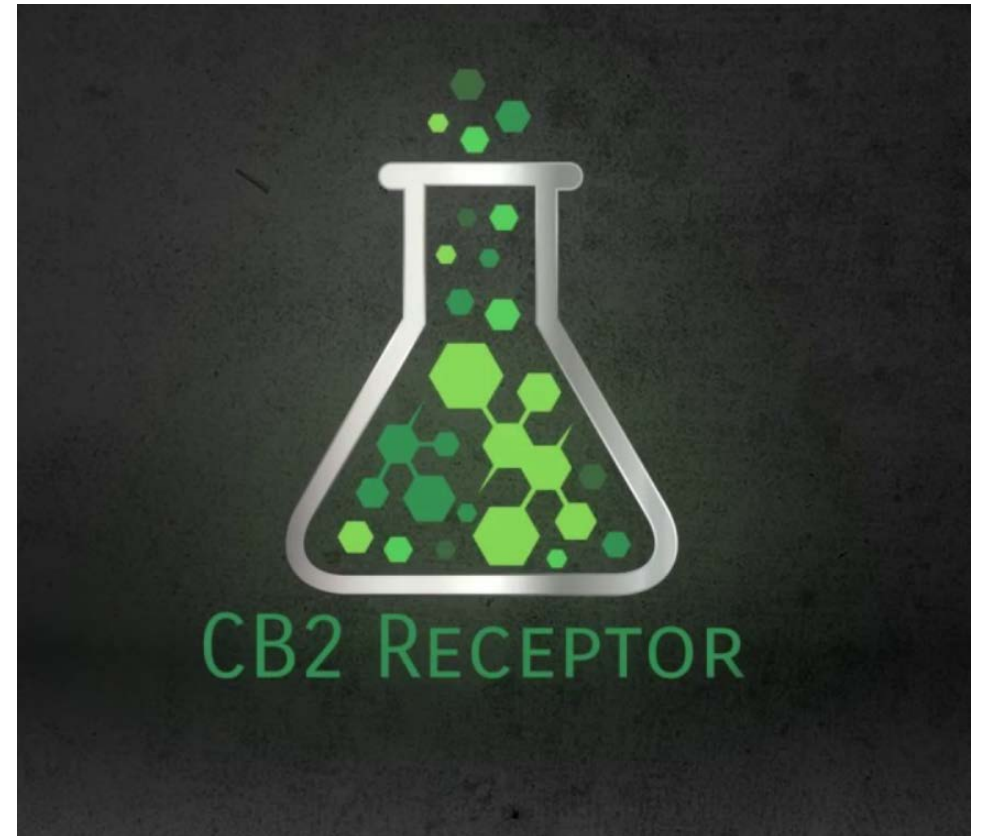
Hypothalamus
Appetite



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ECS Receptors (cont'd)

- *CB2 receptor*
 - Concentrated immune system
 - Peripheral cells
 - Spleen
 - Bones
 - Skin
 - GI
 - Activated by Anandamide &/or THC
 - CBD stimulates





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Making Hemp Product



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Oil Extraction Methods

- *Supercritical Extraction (CO₂)*
 - Cleanest and safest
 - Expensive
- *Solvent*
 - Ethanol, butane and low-grade alcohol
 - Material heated
- *Olive Oil*
 - Decarboxylated plant added to oil
 - Short shelf life
- *Nano*
 - Not enough research





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Full Spectrum CBD

- Contains all the cannabinoids present in hemp plant
 - THCV, delta9-THC, CBDV, CBG, CBN, CBC, THCA, CBDA, CBGA
- Contain small amounts of THC 0.3% or less
- Could fail drug test
- Entourage effect
- Terpenes, flavonoids and fatty acids

ID	Weight %	Conc.
Δ 9-THC	0.17 wt %	1.29 mg/capsule
THCV	-	-
CBD	4.53 wt %	34.77 mg/capsule
CBDV	0.04 wt %	0.33 mg/capsule
CBG	0.06 wt %	0.49 mg/capsule
CBC	0.21 wt %	1.60 mg/capsule
CBN	-	-
THCA	-	-
CBDA	0.03 wt %	0.23 mg/capsule
CBGA	0.00 wt %	0.01 mg/capsule
Total	5.05 wt%	38.72 mg/capsule
Max THC	0.17 wt%	1.29 mg/capsule
Max CBD	4.56 wt%	34.97 mg/capsule

Ratio of Total CBD to THC 26.8:1



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Isolate CBD

- Only CBD compound
- Doesn't contain other cannabinoids
- Will not contain THC
- Use if concerned about passing drug test

CANNABINOID LEVELS

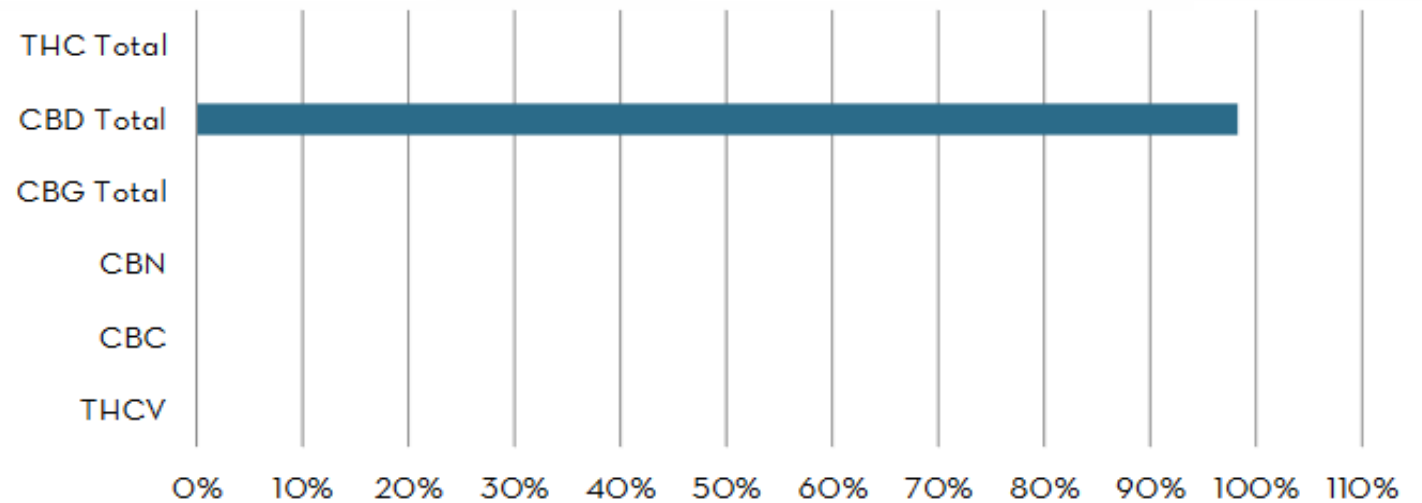
	%	mg/gram
THC	N/D	N/D
THC-A	N/D	N/D
CBD	98.32%	983.16
CBD-A	N/D	N/D
CBN	N/D	N/D
CBG	N/D	N/D
CBG-A	N/D	N/D
CBC	N/D	N/D
THCV	N/D	N/D
Total	98.32%	983.16

TOTAL THC*: N/D

THC + THC-A*, % by weight

TOTAL CBD*: 98.32%

CBD + CBD-A*, % by weight





Broad Spectrum CBD

- Full spectrum of cannabinoids without THC
- Use if concerned about passing drug test

Findings	δ 8 THC	δ 9 THC	THCV	THCA	CBD	CBDA	CBC	CBCA	CBDV	CBG	CBGA	CBN
(%)	ND	ND	ND	ND	91.55	ND	ND	ND	1.26	ND	ND	ND



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Color

- Both the hemp and marijuana plants are green
- The more processed the product the lighter color
- White colored CBD highly possessed
- The farther away from natural green the fewer active chemicals.
 - Check Certificate of Analysis





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Drug Testing

- THC stored in fat tissue and accumulates in the body
- It is possible for THC from CBD products to be detected in the urine





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Safe Use of Hemp Products





- Inhibitor CYP450 enzymes
 - CYP3A4, CYP3A5, CYP2D6, CYP2B6, CYP2C9, CYP2C19
- Binds in gut and liver
- Do not combine with any drug that has grapefruit warning

Resource: Iffland, K., & Grotenhermen, F. (2017). An Update on Safety and Side Effects of Cannabidiol: A Review of Clinical Data and Relevant Animal Studies. *Cannabis and cannabinoid research*, 2(1), 139-154. doi:10.1089/can.2016.0034a

Drug Interactions

Table 1.

Inhibition of Human Metabolic Enzymes by Exogenous Cannabinoids *In Vitro* and the Extrapolated Levels of Oral Daily CBD Administration in Humans Needed to Reach These *In Vitro* Concentrations (Adapted)^{6,8}

CYP-450 isoform	1A1	1A2	1B1	2A6	2B6	2C9	2D6	3A4	3A5	3A7
CBD (in μM)	0.2	2.7	3.6	55.0	0.7	0.9–9.9	1.2–2.7	1.0	0.2	12.3
^a Extrapolated oral daily CBD doses to reach the levels above (in mg)	4900	63,000	84,000	1.28 Mio.	Ca. 16,000	21,000–231,000	28,000–63,000	Ca. 23,000	4900	0.29 Mio.

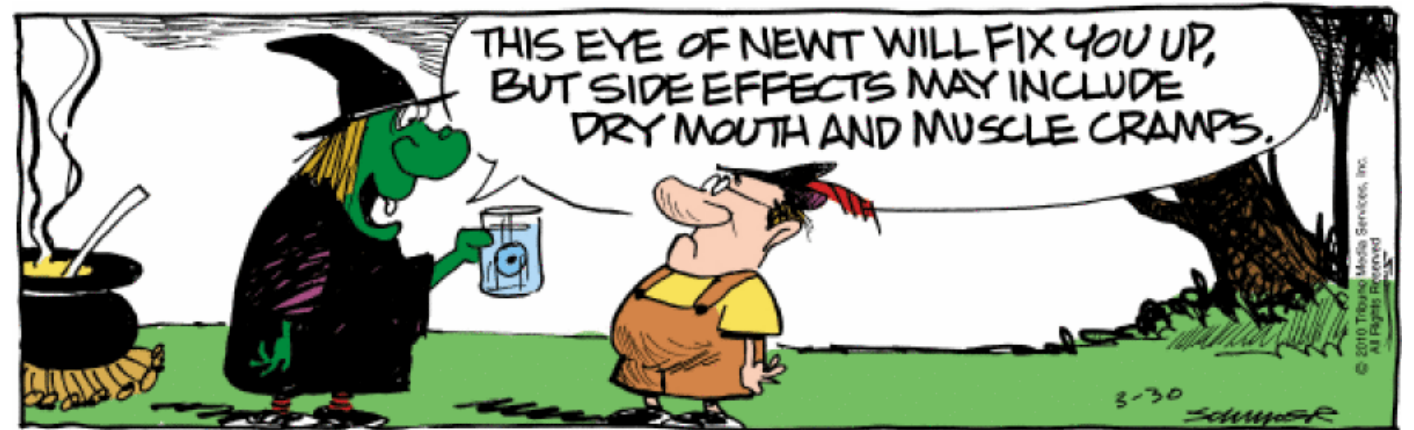
^aThe calculations made here are based on the assumption that the CBD distribution in the blood follows the pharmacokinetics of a hydrophilic substance such as alcohol. The reality is more complex, because CBD is lipophilic and, for example, will consequently accumulate in fat tissue. These calculations were made with the intention to give the reader an impression and an approximation of the supraphysiological levels used in *in vitro* studies.



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Safety & Side effects

- No one has died from overdose
- Allergies
- Mild stomach attach
- Drowsiness
- Dry mouth
- Fatigue
- Lightheadedness



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Hemp Administration





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- Vaping
- Tincture
- Oils
- Pills – Soft gels, capsules
- Sprays
- Suppositories
- Topical

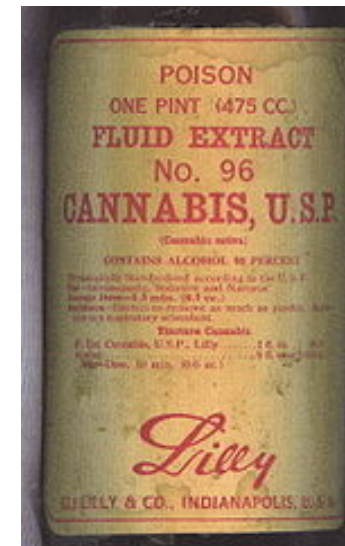


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Types of Product



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Dosing

- Low dose better
- Each person unique
- With CBD you start low and **Titrate up. 1 week at low dose then increase slowly. max, is 40 mg. higher can cause issues to the eyes.**

- Depression - 25 mg day
- Anxiety - 10 mg day
- Nausea - 5 mg day
- Insomnia - 20 mg day





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Dosing (cont'd)

Front Product

1 oz / 30 mL
1314 mg† Cannabinoids

Front Product



Back Box

Supplement Facts	
Serving Size: .5 mL	
Serving Per Container: 60 approx.	
Cannabinoid Complex:	21.90 mg† **
CBD	16.67 mg† **
CBDa	3.60 mg† **
CBDV	0.11 mg† **
CBN	0.04 mg† **
CBG	0.34 mg† **
CBC	1.05 mg† **
CBGa	0.09 mg† **
**Daily Value Not Established	
Ingredients: Coconut MCT Oil, Unfiltered Industrial Full Spectrum Hemp Oil, and Vitamin E.	

Back Box

Supplement Facts		
30 servings per container		
Serving size 6 sprays (0.9g)		
	Amount Per Serv.	% DV
Hemp Derived Cannabidiol (CBD)	50mg	†
† Daily Values not established.		

Other Ingredients: Organic Hemp Seed Oil,
Natural Peppermint Flavor, Stevia Leaf Extract.



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FDA Approved Drug - Epidiolex

- Derived from CBD
- Epilepsy
 - Dravet syndrome
 - Lennox Gestaut syndrome
- **Annual Cost \$32,500**
- Side effects
 - Elevated Liver Enzymes
 - Drowsiness
 - Decreased Appetite
 - Rash
 - Insomnia
 - Infections
- Dosage 50 mg per kg of body weight





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Certificate of Analysis





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Cleaning the Earth

HOME > POLITICS > POLITICS FEATURES

JUNE 11, 2018 3:54PM ET

Can Hemp Clean Up the Earth?

Scientists are looking at how hemp could clean contaminated soil – further proving it to be a miracle plant

How Hemp Can Clean Up Radiation From Fukushima Nuclear Disaster

Hemp plants were shown to be effective in cleaning the soil around the site of Russia's Chernobyl nuclear disaster and were even considered for use near Fukushima.

by *MintPress News Desk*

Farmers in Italy fight soil contamination with cannabis

From Growing Tobacco to Growing Hemp

Jane Harrod, a farmer in Kentucky, talks about transitioning to a different crop after the U.S. soured on cigarettes.



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Certificate of Analysis

- Reputable companies should be able to provide
- Test for chemicals, heavy metals, pesticides
- Show breakdown of terpenes and cannabinoids
- Conducted by a third party



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Sample Certificate

Sample ID: G9B0266-02

Results at a Glance

Total CBD : 87.64 %

Pesticides : PASS

Residual Solvent Analysis : PASS

Cannabinoids (% weight)

Decarboxylated* %

Total THC $((\text{THCA} \times 0.877) + \Delta_9)$

< LOQ

Total CBD $((\text{CBDA} \times 0.877) + \text{CBD})$

87.64

THCA

< LOQ

delta 9-THC

< LOQ

delta 8-THC

< LOQ

THCV

< LOQ

CBD

87.64

CBDA

< LOQ

CBDV

< LOQ

CBDVA

< LOQ

CBN

1.426

CBG

1.215

CBGA

< LOQ

CBC

2.979

CBCA

< LOQ

CBLA

< LOQ

Total Cannabinoids

93.26



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Pesticide Analysis in PPM

Date/Time Extracted: 02/20/19 10:15

Date/Time GC Analyzed: 02/21/19 03:11

Analysis Method/SOP: 202

Date/Time LC Analyzed: 02/21/19 13:56

Batch Identification: 1908032

Analyte	Result	Action Level	LOQ	Type
Abamectin	< LOQ	0.5	0.08	Insecticide and anthelmintic
Acephate	< LOQ	0.4	0.01	Organophosphate insecticide
Acequinocyl	< LOQ	2	0.08	Acaricide
Acetamiprid	< LOQ	0.2	0.01	Neonicotinoid insecticide
Aldicarb	< LOQ	0.4	0.01	Carbamate insecticide
Azoxystrobin	< LOQ	0.2	0.01	Qol fungicide
Bifenazate	< LOQ	0.2	0.01	Insecticide and miticide
Bifenthrin	< LOQ	0.2	0.02	Pyrethroid insecticide and acaricide
Boscalid	< LOQ	0.4	0.01	Carboxamide fungicide
Carbaryl	< LOQ	0.2	0.01	Carbamate insecticide
Carbofuran	< LOQ	0.2	0.01	Carbamate insecticide
Chlorantraniliprole	< LOQ	0.2	0.01	Anthranilic diamide insecticide
Chlorfenapyr	< LOQ	1	0.2	Pyrazole insecticide, acaricide and miticide
Chlorpyrifos	< LOQ	0.2	0.01	Organophosphate insecticide
Clofentezine	< LOQ	0.2	0.01	Ovicidal tetrazine acaricide
Cyfluthrin	< LOQ	1	0.08	Pyrethroid insecticide
Cypermethrin	< LOQ	1	0.2	Pyrethroid insecticide
Daminozide	< LOQ	1	0.03	Plant growth regulator
DDVP (Dichlorvos)	< LOQ	1	0.01	Organophosphate insecticide
Diazinon	< LOQ	0.2	0.01	Organophosphate insecticide
Dimethoate	< LOQ	0.2	0.01	Organophosphate insecticide



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Sample ID: G9B0266-02

Matrix: Extracts and Concentrates

M #: 1005599

Residual Solvents

Solvent	Results in ppm	LOQ	Action Level
Acetone	< LOQ	1000	5000
Acetonitrile	< LOQ	50.00	410
Benzene	< LOQ	0.5000	2
Butanes	< LOQ	1000	5000 ³
2-Butanol	< LOQ	1000	5000
Cumene	< LOQ	50.00	70
Cyclohexane	< LOQ	50.00	3880
Dichloromethane	< LOQ	50.00	600
1,4-Dioxane	< LOQ	50.00	380
2-Ethoxyethanol	< LOQ	50.00	160
Ethyl acetate	< LOQ	1000	5000
Ethyl benzene	< LOQ	50.00	2170
Ethylene glycol	< LOQ	50.00	620
Ethylene oxide	< LOQ	50.00	50
Ethyl ether	< LOQ	1000	5000
Heptane	< LOQ	1000	5000
Hexanes	< LOQ	50.00	290 ⁴
Isopropyl acetate	< LOQ	1000	5000
Methanol	< LOQ	100.0	3000

Date/Time Extracted: 02/21/19 13:22

Date/Time Analyzed: 02/22/19 03:28

Analysis Method/SOP: 205

Batch Identification: 1908051

3 - Total butanes should be calculated as sum of n-butanes (CAS# 106-97-8) and iso-butane (CAS# 75-28-5)

4 - Total hexanes should be calculated as sum of n-hexane (CAS# 110-54-3), 2-methylpentane (CAS# 107-83-5), 3-methylpentane (CAS# 96-14-0), 2,2-dimethylbutane (CAS# 75-83-2), 2,3-dimethylbutane (CAS# 79-29-8)

5 - Total pentanes should be calculated as sum of n-pentane (CAS# 109-66-0), iso-pentane (CAS# 78-78-4), and neo-pentane (CAS# 463-82-1)

6 - Total xylenes are 1,2-dimethylbenzene (CAS# 95-47-6), 1,3-dimethylbenzene (CAS# 106-42-3),



Potency

Batch: 1908034 - 215-Concentrates

Blank(1908034-BLK1)						
Analyte	Result	LOQ	Units	% Recovery Limits	Extracted	Analyzed
THCA	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
delta 9-THC	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
delta 8-THC	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
THCV	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBD	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBDA	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBDV	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBDVA	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBN	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBG	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBGA	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBC	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBCA	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29
CBLA	< LOQ	0.4100	%		02/20/19 10:19	02/20/19 18:29

Reference(1908034-SRM1)						
Analyte	% Recovery	LOQ	Units	% Recovery Limits	Extracted	Analyzed
THCA	98.9	0.2388	%	80-120	02/20/19 10:19	02/20/19 18:51
delta 9-THC	96.6	0.2388	%	80-120	02/20/19 10:19	02/20/19 18:51
CBD	97.4	0.2388	%	80-120	02/20/19 10:19	02/20/19 18:51
CBDA	98.7	0.2388	%	80-120	02/20/19 10:19	02/20/19 18:51



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Quality Control Pesticide Analysis

Batch: 1908032 - 202

Blank(1908032-BLK1)						
Analyte	Result	LOQ	Units	% Recovery Limits	Extracted	Analyzed
Abamectin	< LOQ	0.08	ppm		02/20/19 10:15	02/21/19 06:59
DDVP (Dichlorvos)	< LOQ	0.01	ppm		02/20/19 10:15	02/20/19 20:34
Acephate	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Acequinocyl	< LOQ	0.08	ppm		02/20/19 10:15	02/21/19 06:59
Acetamiprid	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Aldicarb	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Azoxystrobin	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Bifenazate	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Bifenthrin	< LOQ	0.02	ppm		02/20/19 10:15	02/20/19 20:34
Boscalid	< LOQ	0.01	ppm		02/20/19 10:15	02/20/19 20:34
Carbaryl	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Carbofuran	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Chlorantraniliprole	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Chlorfenapyr	< LOQ	0.2	ppm		02/20/19 10:15	02/20/19 20:34
Chlorpyrifos	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Clofentezine	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Cyfluthrin	< LOQ	0.08	ppm		02/20/19 10:15	02/21/19 06:59
Cypermethrin	< LOQ	0.2	ppm		02/20/19 10:15	02/20/19 20:34
Daminozide	< LOQ	0.03	ppm		02/20/19 10:15	02/21/19 06:59
Diazinon	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Dimethoate	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Ethoprophos	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Etofenprox	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Etoxazole	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Fenoxycarb	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Fenpyroximate	< LOQ	0.01	ppm		02/20/19 10:15	02/21/19 06:59
Fipronil	< LOQ	0.02	ppm		02/20/19 10:15	02/20/19 20:34



Quality Control Solvent Analysis

Batch: 1908051 - 205

Blank(1908051-BLK1)						
Analyte	Result	LOQ	Units	% Recovery Limits	Extracted	Analyzed
Acetone	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
Acetonitrile	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Benzene	< LOQ	0.5000	ppm		02/21/19 13:22	02/22/19 17:02
Butanes	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
2-Butanol	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
Cumene	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Cyclohexane	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Dichloromethane	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
1,4-Dioxane	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
2-Ethoxyethanol	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Ethyl acetate	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
Ethyl benzene	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Ethylene glycol	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Ethylene oxide	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Ethyl ether	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
Heptane	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
Hexanes	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Isopropyl acetate	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
Methanol	< LOQ	100.0	ppm		02/21/19 13:22	02/22/19 17:02
Pentanes	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
Propane	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
2-Propanol (IPA)	< LOQ	1000	ppm		02/21/19 13:22	02/22/19 17:02
Tetrahydrofuran	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Toluene	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02
Xylenes	< LOQ	50.00	ppm		02/21/19 13:22	02/22/19 17:02



Microbiological			
Item	Specification	Result	Test Method
Total Aerobic Plate Count	<10,000 cfu/g	<10 cfu/g	Internal
Total Yeast and Mold	<1000 cfu/g	<10 cfu/g	Internal
Total Coliforms	<100 cfu/g	<10 dfu/g	Internal
E. Coli	Negative or ND* or absent	Absent	Internal
Salmonella	Negative or ND* or absent	Absent	Internal

*ND=none detected

Heavy Metals			
Item	Specification (ppm)	Result (ppm)	Test Method
Arsenic	≤ 1.0	0.035 ppm	Internal
Cadmium	≤ 1.0	0.005 ppm	Internal
Lead	≤ 3.0	0.027 ppm	Internal
Mercury	≤ 0.1	0.020 ppm	Internal
Total Heavy Metals	≤ 10	0.087 ppm	Internal



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Symbol	Metal	Conc. ¹	MDL	Limits ²	Status
Al	Aluminum	601 ug/kg	5 ug/kg	-	
As	Arsenic	20 ug/kg	4 ug/kg	150 ug/kg	PASS
Cd	Cadmium	ND	1 ug/kg	2500 ug/kg	PASS
Ca	Calcium	1,490 ug/kg	500 ug/kg	-	
Cr	Chromium	16 ug/kg	5 ug/kg	-	
Co	Cobalt	35 ug/kg	10 ug/kg	-	
Cu	Copper	ND	500 ug/kg	100000 ug/kg	PASS
Fe	Iron	434 ug/kg	5 ug/kg	-	
Pb	Lead	1,178 ug/kg	2 ug/kg	500 ug/kg	FAIL
Mg	Magnesium	12,059 ug/kg	500 ug/kg	-	
Mn	Manganese	929 ug/kg	500 ug/kg	-	
Hg	Mercury	ND	2 ug/kg	1500 ug/kg	PASS
Mo	Molybdenum	ND	5000 ug/kg	10000 ug/kg	PASS
Ni	Nickel	ND	500 ug/kg	50000 ug/kg	PASS
P	Phosphorus	64,626 ug/kg	500 ug/kg	-	
K	Potassium	6,952 ug/kg	5 ug/kg	-	
Se	Selenium	ND	10 ug/kg	-	
Ag	Silver	ND	10 ug/kg	-	
S	Sulfur	4,973 ug/kg	5 ug/kg	-	
Sn	Tin	ND	5000 ug/kg	-	
Zn	Zinc	17,307 ug/kg	5 ug/kg	-	

1) ND = None detected to the Method Detection Limit (MDL)

2) USP recommended maximum daily limits for oral drug product.



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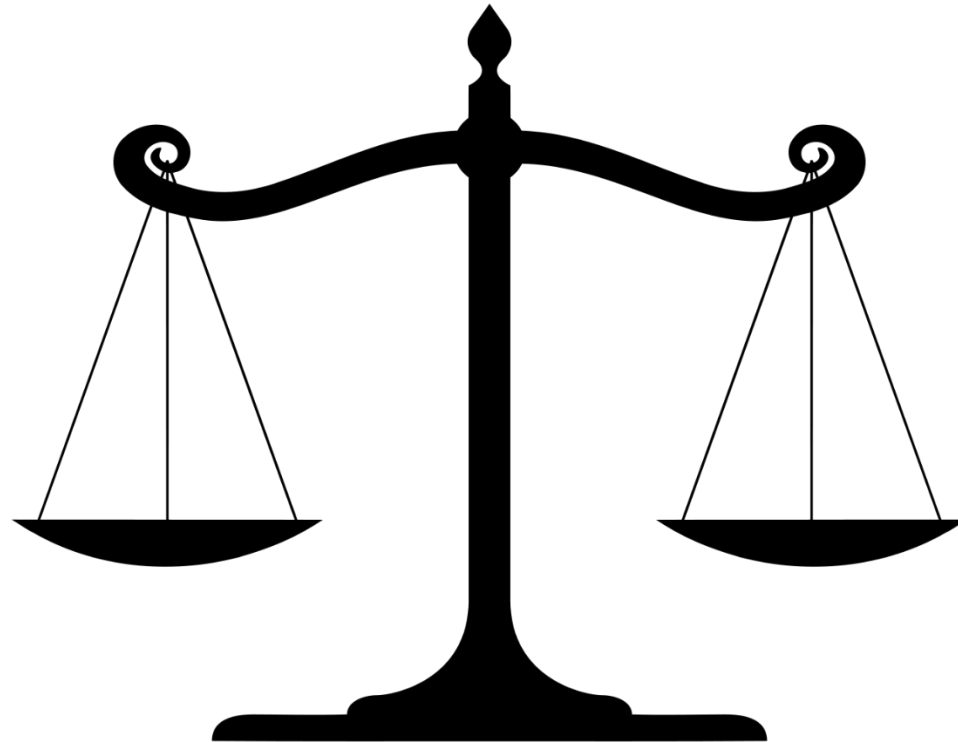
Symbol	Metal	Conc.	Units	MDL	All	Ingestion	Units	Results
As	Arsenic	ND	µg/kg	4	200	1500	µg/kg	PASS
Cd	Cadmium	3	µg/kg	1	200	500	µg/kg	PASS
Hg	Mercury	3	µg/kg	2	100	1500	µg/kg	PASS
Pb	Lead	24	µg/kg	2	500	1000	µg/kg	PASS

1) ND = None Detected to Lowest Limits of Detection (LLD) 2) MA Dept of Public Health: Protocol for MMJ and MIPS, Exhibit 4(a) for all products. 3) USP Exposure Limits based on daily oral dosing of 1g of concentrate for a 110lb person.



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Legality





Federal

- *Drug Enforcement Administration (DEA)*
 - Schedule I – Cannabis, Marijuana
 - Schedule V - A drug product in finished dosage formulation that 1308.15(f) has been approved by the U.S. Food and Drug Administration that contains Cannabidiol derived from cannabis and no more than 0.1 % (w/w) residual tetrahydrocannabinols.
 - (GRAS) notices related to hulled hemp seeds, hemp seed protein and hemp seed oil and that the agency had no questions regarding the company's conclusion that the use of such products as described in the notices is safe.
- *Food and Drug Administration (FDA)*
 - Currently other parts of plant considered non-GRAS – public hearing scheduled
April 1.



Legality (cont'd)

Farm Bill 2018

- Industrial hemp as any part of the plant *Cannabis Sativa* L. possessing no more than 0.3% THC by weight
- Hemp products for human consumption or topical use remain subject to jurisdiction of Food and Drug Administration and Federal Trade Commission
- Shipped into or out of the United States remain subject to Customs and Border Patrol jurisdiction.
- States can decide the legality within the state
- States can't interfere with the transport of products through the state
- 7 State illegal
- Hemp farmers could get insurance



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- GRAS

- Hemp Seeds
- Hemp Seed Oil
 - 3:1 ratio Omega 6 to Omega 3
 - Gamma-linolenic acid (GLA)
 - Alpha-linolenic acid



Hemp in food products

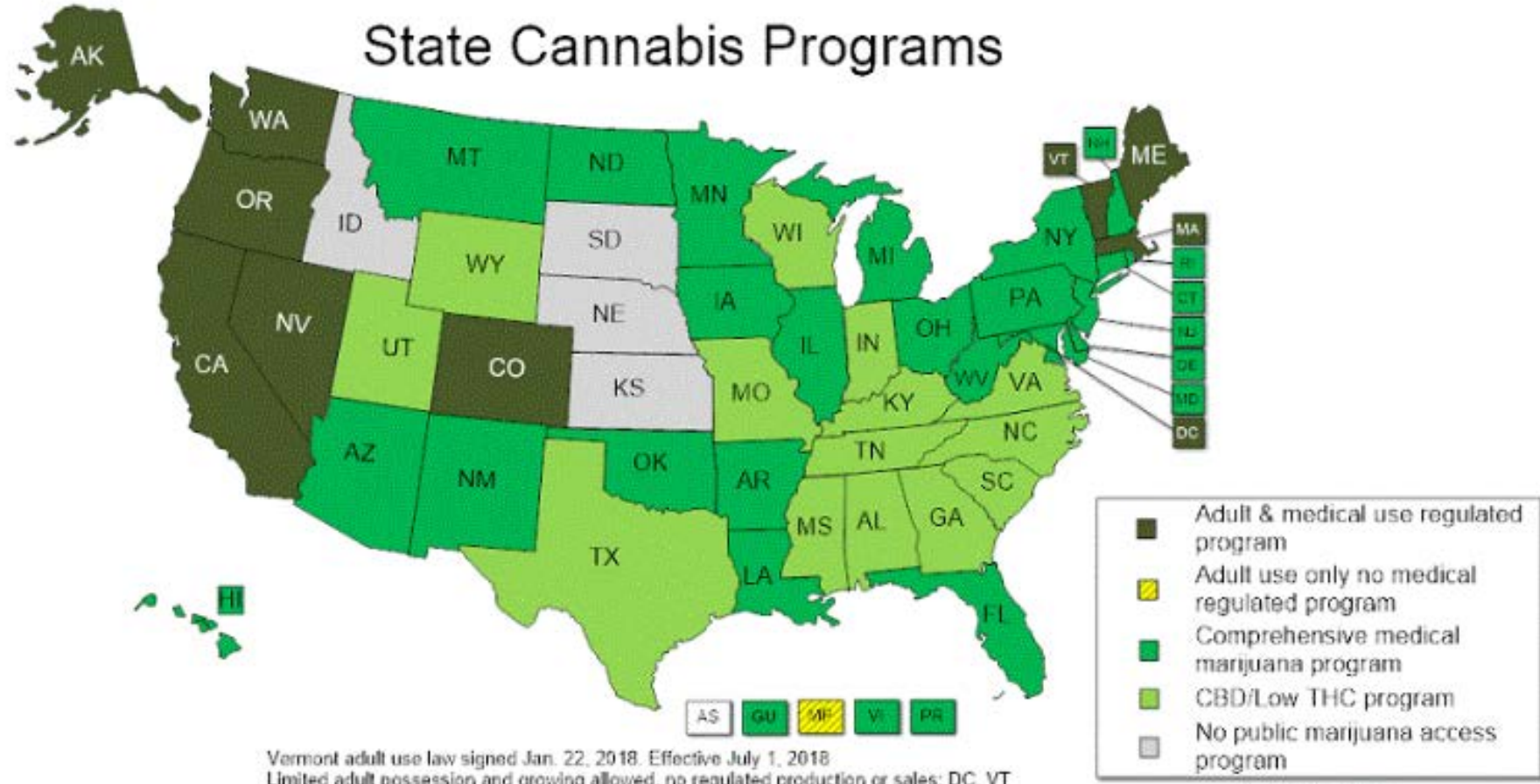
- Non GRAS

- CBD products
- Gummies
- Candy
- Drinks
- Coffee
- Edibles





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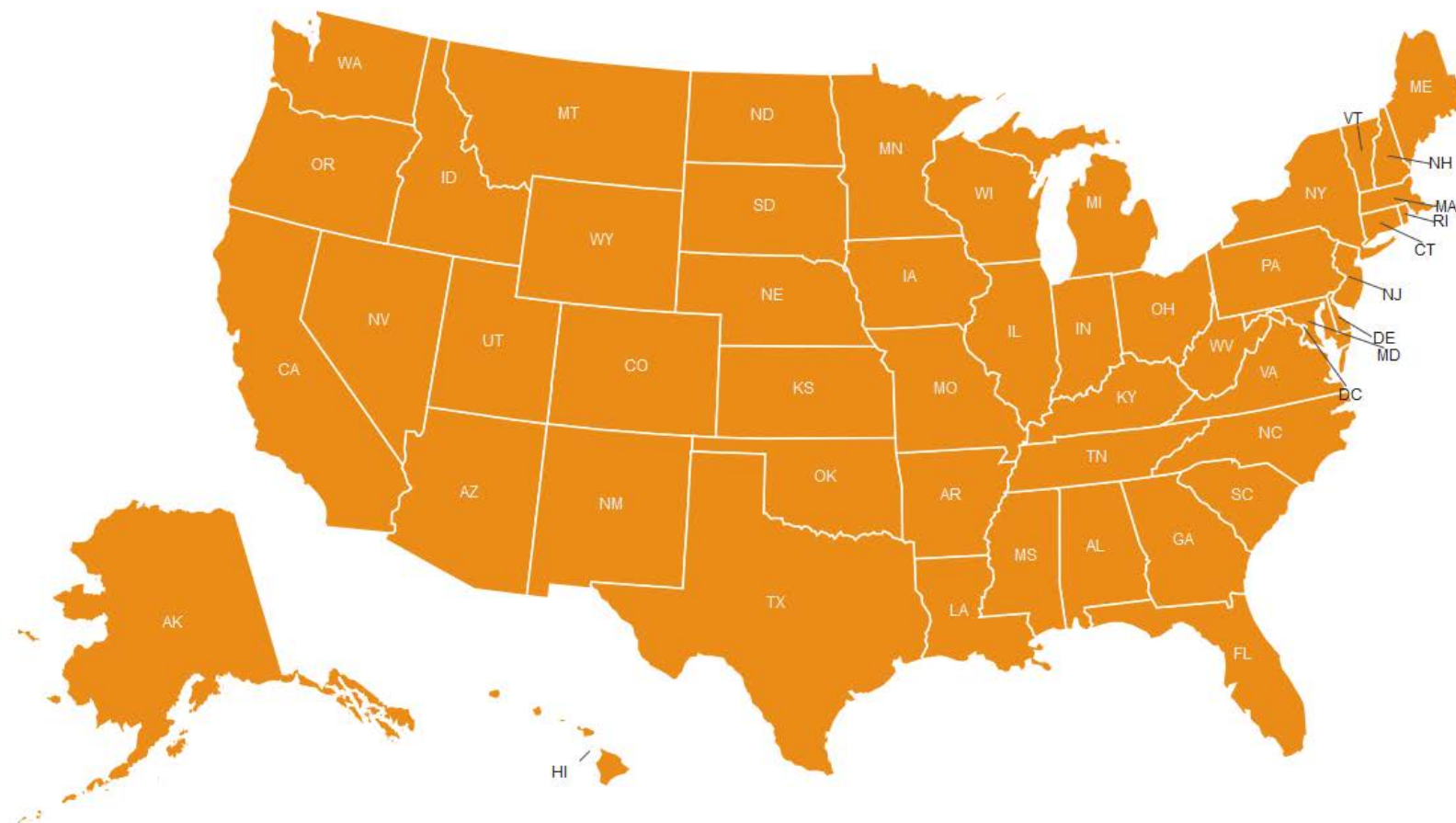
As of March 2019

Resource: <http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>



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CLICK ON A STATE TO TAKE ACTION:

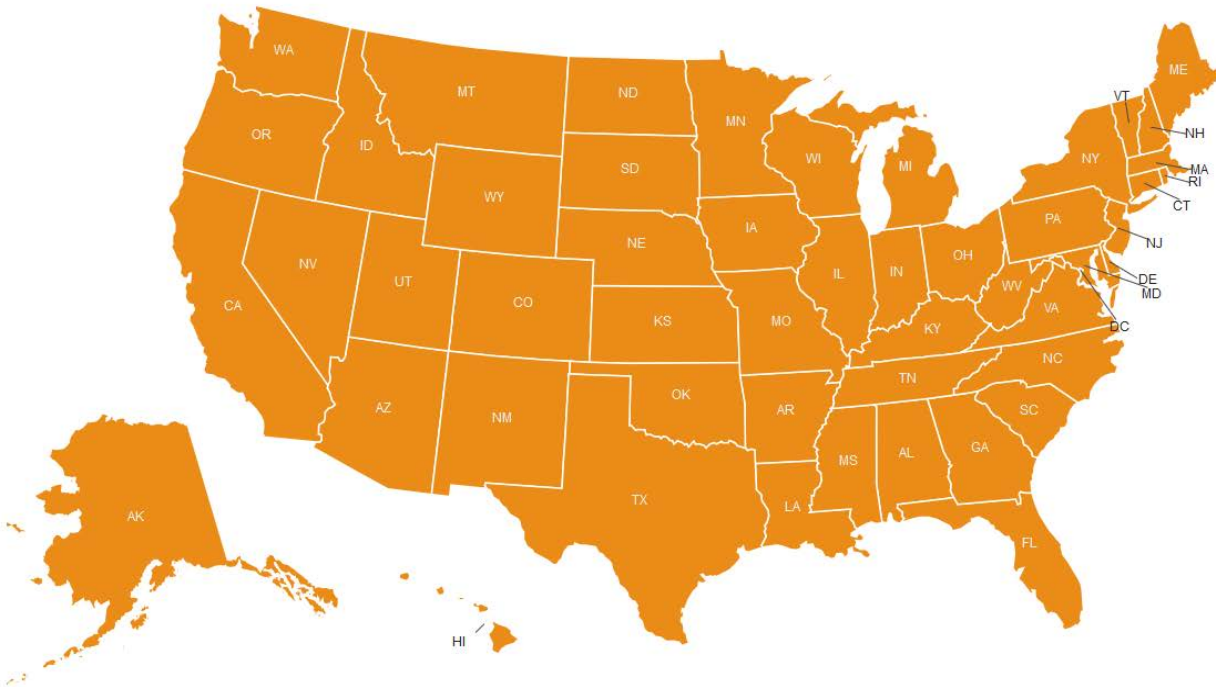


Resource: <https://hempsupporter.com/stateactioncenter/>



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CLICK ON A STATE TO TAKE ACTION:



On December 3, 2018, New York introduced new rules prohibiting the manufacture and sale of hemp-derived CBD products for vaping or inhalation. The rules also generally prohibit the sale of CBD products that are not produced under the FDA's dietary supplement standards and good manufacturing practices.

New York City's Department of Health followed suit in February 2019 and embargoed \$1,000 of CBD pastries. The Department will start issuing fines ranging from \$200 to \$650 in July, 2019. We ask for your help in redressing these actions which have cast a chill on legal commerce in popular products that promote health and wellness among New Yorkers.

Resource: <https://hempsupporter.com/stateactioncenter/>



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Selling Hemp

States Comfortable Selling

Alabama, Alaska, Arkansas, Colorado, Connecticut, Delaware, Florida, Hawaii, Indiana, Kentucky, Maine, Maryland, Michigan, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Vermont, Washington, Wisconsin

States THC Free Only

Kansas, Mississippi, Oklahoma

States Avoid selling

Arizona, California, Idaho, Illinois, Iowa, Louisiana, Missouri, Nebraska, North Carolina, Ohio, South Dakota, Virginia, Wyoming



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Karen Wright MS, CDN, CNS



??an? ?o?!

Questions?

karen@healthwright.info

Book a consultation today!



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Ask Yourself...

- **Want to expand your knowledge and skillset and make a difference like never before?**
- **Are you ready for a career transformation?**
- **Tired of others taking your clients?**
- **Need a competitive edge to set yourself apart?**

Now is a great time to consider going forward to the *next level*. Learning and applying Integrative and Functional Medical Nutrition Therapy (IFMNT) is changing careers in a drastic way!



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Susan Allen-Evenson

Online Training in Integrative and Functional Medical Nutrition Therapy (IFMNT)

- Primarily live/Interactive webinars, also recorded for flexibility of on-demand learning
- Content is continually expanded and updated!
- Primary presenter, Susan Allen-Evenson, with over 25yrs IFMNT experience provides continuity of training. Guest instructors round-out the learning process
- Not just book-learning, you'll receive my "stories from the trenches" and real case scenarios that ensure your learning is instantly more practical.
- Unlike most other programs, we only allow qualified healthcare practitioners and dietetic Interns to enroll.
- This training is deep, but very manageable for even those with a full-time career and family commitments



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- The deeper IFMNT assessment
- All about dietary supplements/protocols
- Blood chemistry and specialty functional lab interpretation
- Endocrine topics (thyroid, adrenal, hormones)
- CardioMetabolic topics (obesity, cardio, and DM)
- Gastrointestinal (SIBO/dysbiosis, microbiome, digestive issues)
- Toxicity and Detoxification
- 6 core centers of health and biochemical balance
- Therapeutic diets and adjunctive alternative therapies
- IFMNT business set up and practice tips
- Cancer, ADHD/Spectrum disorders, Biotoxin Illness
- Neurotransmitter imbalances, eating and mood disorders
- Genomics/Nutrigenomics
- Specialty IFMNT Culinary



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- Increase your confidence
- **Have a bigger impact on even your most challenging cases!**
- Meet the growing demand for those clients specifically seeking out IFMNT-trained practitioners!
- **Increase your referral and employment opportunities!**
- Set yourself apart as an authority - practice expansion assured!
- **Watch your earning potential skyrocket!**



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Next IFMNT Foundations series starts May 8th! Registration Open Next Week!



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Next *Hot-Topic* Webinar:



“Itching” for Answers: The Histamine Epidemic and What to do About it.

Susan Allen-Evenson RDN, CCN, FMN

- **April 23rd, 2019**
- **8-10 PM ET (5-7 PT)**
- **Be sure you’re on our mailing list to get registration information**
- **2 CPEs pre-approved for RDNs (others should consult their professional boards)**



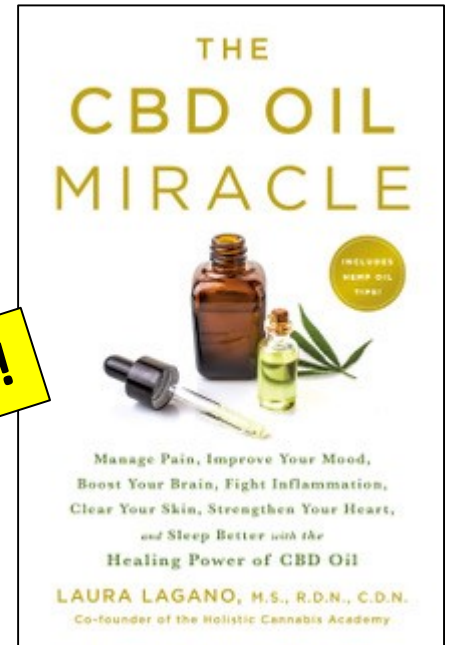
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To Learn Even More about CBD and Medical Cannabis...



Laura Lagano MS, RDN, CDN
Integrative & Functional
Dietitian/Nutrition Education director and
co-founder of Holistic Cannabis Academy.

New Book Release!



- Webinar participants can order directly from Laura and get free shipping in the month of March. Just email her at laura@lauralagano.com and mention this webinar!
- A free book comes with registration for the Holistic Cannabis Academy signature program. For more info, visit: <http://bit.ly/HCAnextlevel>
 - **Spring Special:** For a limited time, 35% OFF HCA training!



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Thank
you



Susan Allen-Evenson, RDN, CCN, FMN

- Educational webinars and online training in Integrative and Functional Medical Nutrition Therapy (IFMNT)
- Certificate of Training in IFMNT; Earn a Functional Medicine Nutritionist credential (FMN)
- Inquiries: IFMNTRD@gmail.com

<https://www.nextlevelfunctionalnutrition.com/>