

History of Cannabis Sativa

And The Integration Into Current Brands

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History of Cannabis

- **28 Million Years Old:** Studies on ancient pollen suggest that Cannabis (Cannabaceae family, including Hops) evolved some three kilometres above sea level on a Tibetan Plateau. This plant and specifically cannabinoids has evolved alongside humans since the great-ape period.
- **8,000+ BCE:** Cannabis has been used as hemp cord and smoked as part of ritual and/ or religious activities in western China.
- **1619:** Early Jamestown ordered all farmers to grow hemp, and as more colonies arose, hemp cultivation laws became mandatory. Cannabis Sativa/ Hemp quickly became legal tender in most of the early settler days of 1631 into the early 1800s.
- **1850:** Cannabis is added to The U.S. Pharmacopoeia.
- **1936:** The American propaganda film Reefer Madness was anti Mexican/ Anti African American and made to scare American youth and woman away from using Cannabis. In 1937, the U.S. Congress passed the Marijuana Tax Act which criminalized the plant.
- **1976:** U.S. FDA continues to list marijuana as Schedule I Drug that has: "A high potential for abuse with no accepted medical value."
- **1998:** US Government files a patent on cannabinoids, listing them as a neuro-protectants & cardio-protectants!
- **1997/ Today:** Social Media begins to change our lives - today, cell phones become a communication and information game changer. We are again, a government of the people, by the people, and for the people - let's take back our rightful use of this amazing plant.

大麻

"Great Hemp"

"Hemp is of first necessity to the wealth & protection of the country." - Thomas Jefferson

History of Cannabis

28 Million Years Ago



The Qinghai-Tibet Plateau is thought to be the birthplace of Cannabis.

©Getty Images

2,800 Years Ago



Wooden braziers were used to burn cannabis at funerals in ancient China.

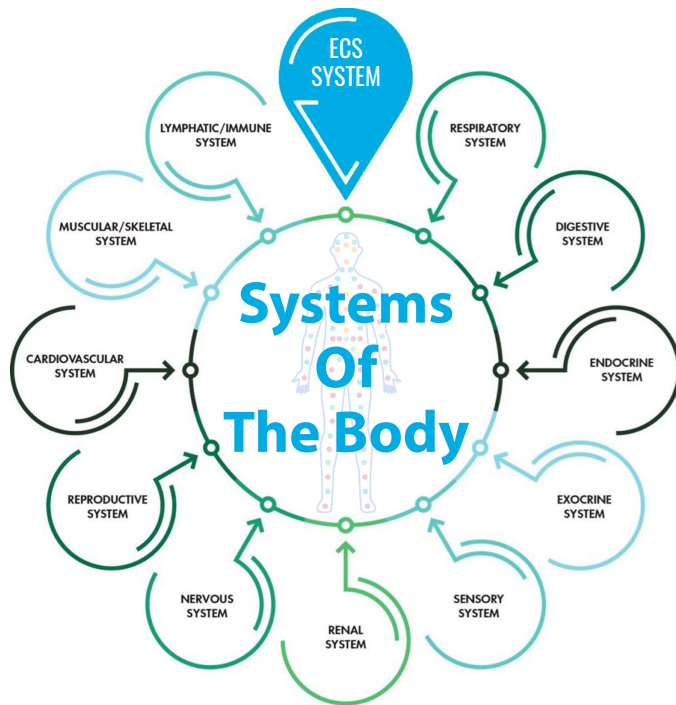
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The 10,000-Year History of Cannabis: <https://isum.com/cannabis-history/>

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What is the ECS System?

Human Biological Systems



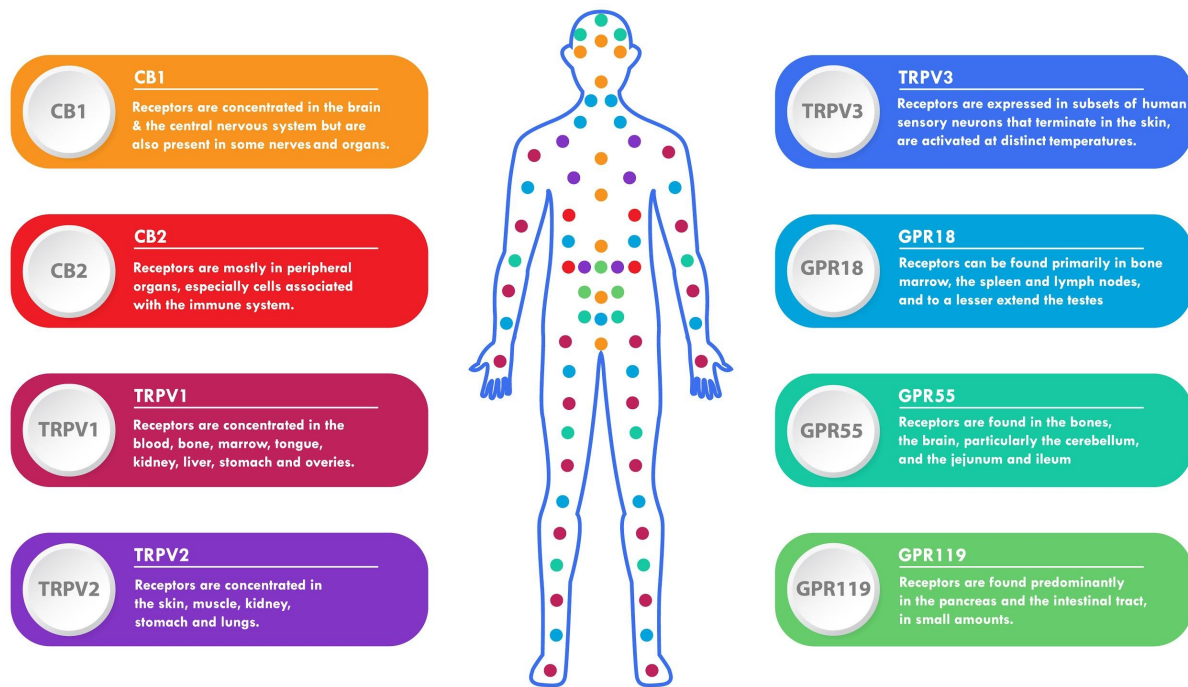
ECS Defined

Endocannabinoid System

- The endocannabinoid system (ECS) is a complex biological system that was discovered in the 1990's - it is composed of **Endocannabinoids**, which are endogenous lipid-based neurotransmitters that bind to various **Receptors** (CB1, CB2, GPR55, GPR119, TRPV1, etc.) that are expressed throughout the central nervous system (including the brain) and peripheral nervous system. **Enzymes** also play an important role in breaking down cannabinoids.
- CB1 receptors, are mostly found in the central nervous system (hormonal and neurotransmitter release, reducing anxiety, lowering inflammation,) and CB2 receptors, are mostly found in your peripheral nervous system, activating immune cells and modulating pain.
- The endocannabinoid system is involved in almost every biological function in the body, including sleep, mood, immunity, fertility, appetite, pain, memory and much more.
- The ECS system aids in the regulation of overall physiological homeostasis, or WELLNESS by modulating ALL other systems. This should be KEY to your innovation focus.

Cannabinoid Receptors

Human Cannabinoid Receptors



Cannabinoids



Endocannabinoids

The endocannabinoid system (ECS) is a biological system composed of endocannabinoids, which are endogenous lipid-based retrograde neurotransmitters that bind to cannabinoid receptors, and cannabinoid receptor proteins that are expressed throughout the vertebrate central nervous system (including the brain) and peripheral nervous system. The endocannabinoid system remains under preliminary research, but may be involved in regulating physiological and cognitive processes, including fertility, pregnancy, during pre- and postnatal development, appetite, pain-sensation, mood, and memory, and in mediating the pharmacological effects of cannabis.

Two primary endocannabinoid receptors have been identified CB1 and CB2, CB1 receptors are found predominantly in the brain and nervous system, as well as in peripheral organs and tissues, and are the main molecular target of the endocannabinoid ligand (binding molecule), anandamide, as well as its mimetic phytocannabinoid, THC. One other main endocannabinoid is 2-arachidonoylglycerol (2-AG) which is active at both cannabinoid receptors, along with its own mimetic phytocannabinoid, CBD. 2-AG and CBD are involved in the regulation of appetite, immune system functions and pain management.



Anandamide



2-Arachidonoylglycerol

Phytocannabinoids



The cannabis plant and other plants produce cannabinoids, which interact with our body's receptors. These plant cannabinoids are known as phyto-cannabinoids. Phyto is a prefix that means "pertaining to derived from plants". They are categorized as any plant-derived natural product with the capability to directly interact with the body's cannabinoid receptors or share chemical similarity with cannabinoids.

Furthermore, phytocannabinoids from cannabis have significantly influenced research on the endocannabinoid system. So far, they have become widely known for their medicinal properties in recent years. In particular, the cannabis plant contains over 400 chemical entities, and more than 60 of them are cannabinoid compounds, which have varying effects.



Cannabidiol



Cannabidivarin



Cannabigerol



tetrahydrocannabinol



Tetrahydrocannabivarin



Cannabidiolic acid



Cannabichromene



Cannabinol



Tetrahydrocannabinolic acid



Delta-9 tetrahydrocannabinol

Additional Endocannabinoids Being Researched:

Docosatetraenoyl ethanolamide (DEA) | 2-AGE, Noladin ether | Homo-gamma-linolenoyl ethanolamide (HGLE)

Receptor Agonists

Plant-Based Cannabinoids & Receptor Agonists w Cannabimimetic Effects



Cacao



Saffron



Nutmeg



**Japanese
Liverwort**



**Echinacea
Purpurea**



**Long Pepper
(Guineesine)**



Black Truffle



White Peony



Magnolia



Ginger Root



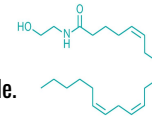
Electric Daisy



Red Ginseng

Interesting Note:

Anandamide (the “Bliss” molecule) is an Endocannabinoid (fatty acid neurotransmitter) that is only found in two foods - Cacao and Black Truffle.



Terpenes

Theory of Terpenes

















- Terpenes are a widely diverse class of organic compounds, produced by a variety of plants - we believe that terpenes began for adaptive purposes, they often have a strong odor used to repel predators and lure pollinators.
- Cannabis terpenes are synthesized in secretory cells inside glandular trichomes, and production is increased with light exposure. Terpenes are mostly found in high concentrations in female cannabis/ hemp flowers.
- Terpene profiles are thought to play a key role not only in the scent or “flavor” of a strain, but also in that strain’s ability to effect a need-state outcome (sleep, energy, libido, anxiety, relaxed, etc.). There is much more research needed regarding the actual role of terpenes.



Terpenes

Common Terpenes

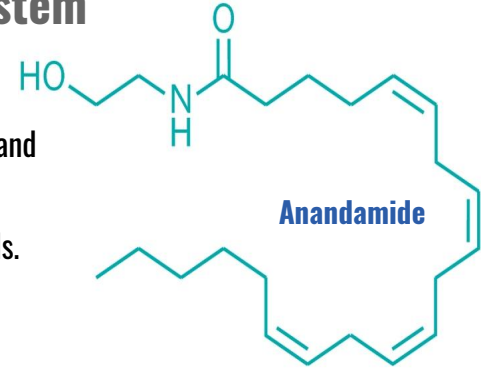
~140 Different Terpenes Have Been Identified in the Cannabis/ Hemp Plant.

 <p>Bisabolol floral</p> <p>Properties anti-inflammatory anti-irritant anti-microbial</p> <p>Common Uses cancer, skin lesion</p>	 <p>Borneol mint</p> <p>Properties anti-bacterial anti-inflammatory antispasmodic</p> <p>Common Uses eyesight, pain relief</p>	 <p>Camphene fir needles, musky earth</p> <p>Properties anti-oxidant skin lesion</p> <p>Common Uses cardiovascular diseases</p>	 <p>Caryophyllene spicy</p> <p>Properties anti-bacterial anti-inflammatory anti-fungal</p> <p>Common Uses insomnia, muscle spasms pain relief</p>	 <p>Delta 3 Carene pine, rosemary</p> <p>Properties anti-inflammatory bone stimulant</p> <p>Common Uses memory</p>	 <p>Eucalyptol mint</p> <p>Properties anti-bacterial anti-fungal</p> <p>Common Uses alzheimer's pain Relief</p>	 <p>Geraniol peach, rose grass</p> <p>Properties anti-cancer anti-oxidant neuroprotectant</p> <p>Common Uses cancer, pain relief</p>	 <p>Humulene earthy</p> <p>Properties anti-bacterial anti-inflammatory anti-tumor effects</p> <p>Common Uses cancer, infections appetite suppression</p>
 <p>Limonene bitter citrus</p> <p>Properties anti-anxiety anti-cancer digestion, gallstones</p> <p>Common Uses liver detoxification weight loss, sleep aid</p>	 <p>Linalool floral</p> <p>Properties anti-anxiety anti-epileptic anti-psychotic pain killing</p> <p>Common Uses depression, convulsions insomnia, pain relief</p>	 <p>Myrcene citrus, cloves</p> <p>Properties relaxing sedating</p> <p>Common Uses inflammation, insomnia spasms, pain</p>	 <p>Pinene pine</p> <p>Properties anti-depressant anti-inflammatory anti-microbial</p> <p>Common Uses asthma, bronchitis cancer, depression memory, mental alertness</p>	 <p>Phytol balsamic, floral</p> <p>Properties anti-insomnia immunosuppressant</p> <p>Common Uses reduce itching sleep aid wound healing</p>	 <p>Terpinolene smoky, woody</p> <p>Properties anti-bacterial anti-fungal anti-insomnia antiseptic</p> <p>Common Uses cancer heart disease sleep aid</p>	 <p>Trans-nerolidol citrus, rose</p> <p>Properties anti-cancer anti-microbial anti-oxidant anti-parasitic</p> <p>Common Uses relaxing skin lesion</p>	 <p>Valencene sweet citrus</p> <p>Properties anti-inflammatory anti-melanogenesis antiallergic</p> <p>Common Uses memory skin lesion</p>

Fatty Acids

Fatty Acid Modulation of the Endocannabinoid System

- Essential fatty acids were discovered in 1929 by Burr & Burr.
- Key fatty acids that are known to be essential for humans: alpha-linolenic acid (an omega-3 fatty acid) and linoleic acid (an omega-6 fatty acid).
- The consumption of omega-3 fatty acids can shift the balance towards higher levels of endocannabinoids.
- Plant-based oils that are high in Omega-3 | Omega-6 fatty acids:
 - Safflower
 - Grapeseed
 - Prickly Pear
 - Algal
- Endocannabinoids (Anandamide (AEA) and 2-arachidonoyl glycerol (2-AG)) are endogenously synthesized from omega-6 and omega-3 polyunsaturated fatty acids (PUFAs).



Hemp Extracts

Extraction Methods

- **Whole Plant** - fats, waxes, chlorophyll, cannabinoids, terpenes, etc.
- **Ethanol** - solvent-based extraction
- **CO2** - supercritical fluid extraction
- **Winterized** - ethanol freezing
- **Distilled** - post processing refinement
- **Full vs Broad Spectrum & Isolate**



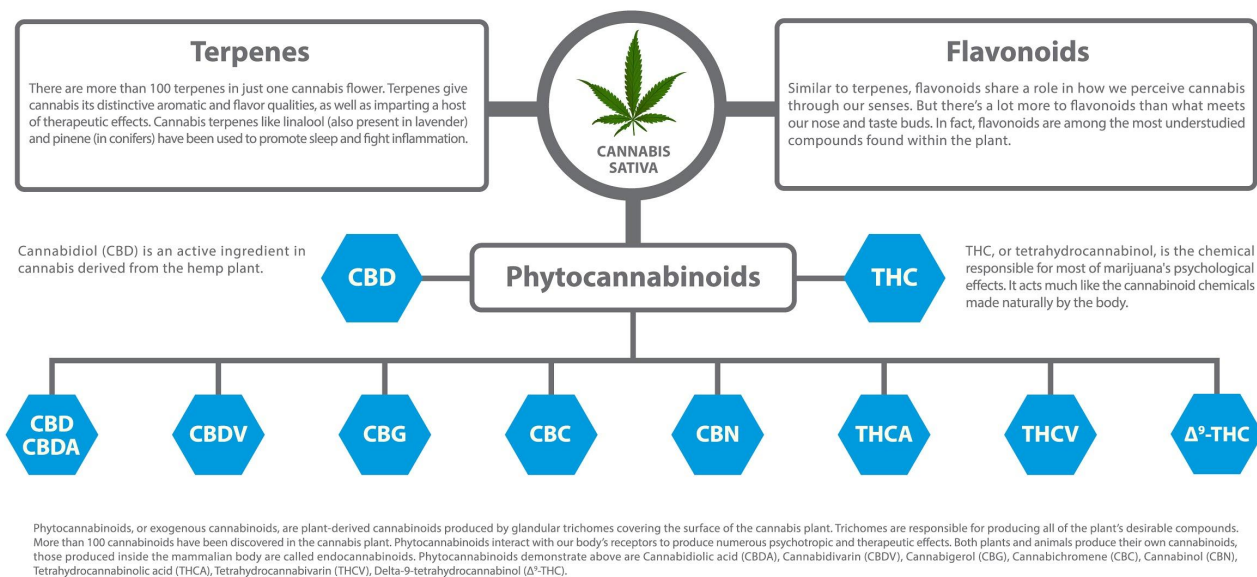
Blissful Plant Extraction Methods:

CO2 Supercritical Fluid Extraction | Whole Plant | Patented Cold Processed

The “Entourage” Effect

The Benefits Of Whole Plant

THE ENTOURAGE EFFECT IS A PROPOSED MECHANISM BY WHICH CANNABIS COMPOUNDS ACT SYNERGISTICALLY TO MODULATE THE OVERALL PSYCHOACTIVE EFFECTS OF THE PLANT, PRIMARILY BY THE ACTION OF CBD AND THC.



Aristotle's Book of Metaphysics:

The “plurality of parts are not merely a complete aggregate but instead, some kind of a whole BEYOND its parts”.

Processing Advantages

Current Trends

Nano Sized Particles

- Particles that are less than 100 nanometers. Nanoemulsions (nano-cannabinoids) can provide high bioavailability and therapeutic effect, and are absorbed by the body, either orally or through the skin, more rapidly.

Liposomes

- A spherical-shaped vesicle that is composed of one or more phospholipid bilayer. Liposomes can improve absorption of cannabinoids into the body by transporting it through the intestinal membrane, safely into targeted tissues.

Water Soluble

- Products that will homogenize with water or a water based product (ie:vegetable glycerin. Benefits: Bioavailability, speed-to-action, easy integration into RTD beverages.

Patented Processes

- Virun Esolv[®] Emulsification Technology, Lexaria Hemp DeHydraTECH[®], etc.

Yeast

- Turning sugar into cannabinoids via enzymatically processing yeast.

Flavoring Concepts

Directional Flavoring™

- Use extracts and oils to “Flavor” products.
- We believe botanical extracts should drive core flavor profiles - stay TRUE to the plant.
- These oils also have enormous medicinal value.
- We use a lightly processed crude Hemp Extract that has all of the flavors of the whole-Plant.

Masking Concepts & Problems

- Keys to flavor “masking” - DON'T Cover.
- Flavor leaching over time - this happens with masking.
- Thoughtful botanical & flavor blending can achieve a longevity of balanced flavor and functionality.



Hemp Chocolate Bar



Blissful Plant
Oil Blend

Structure Function Claims?



Know The Rules & Be SMART!

FDA Structure Function Claims Link:

<https://www.fda.gov/food/food-labeling-nutrition/structurefunction-claims>

Clinical Benefits of CBD List (Pub-Med/ National Library of Medicine, etc.):

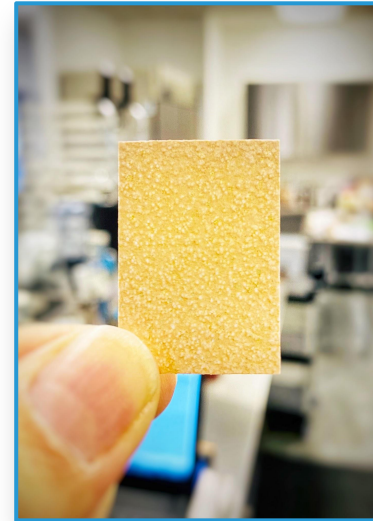
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Be An Innovator

Disrupt The Damn System

- Micro Dosing
- Oil Tinctures
- Cold Processes
- Functional-Foods
- RTD Beverages
- Chocolate Bars
- Snack & Protein Bars
- Dissolvable Strips
- Fatty Acid Blends
- Entourage Effects
- Topicals & Beauty
- Nano Powders
- Cannabimimetics



Know Your Farmers



Farm Grow Partners
FSOil | Combined Hemp - Oregon

Know Your Manufacturing

cGMP Extraction & Manufacturing Plants





Manufacturing 101

Brand & Product Standards

- cGMP Certification
- FDA Compliance
- Organic | Kosher | US Hemp Authority | Etc.
- Quality System - HACCP | Process Documents | SOPs | Recall Plan | Training
- Cross Contamination & Spore-Forming Probiotic Protocols
- Air Flow | Temperature | Humidity Control Systems
- Inbound & Outbound Testing - Quarantine As Needed
- Historical Records | Retention Records & Samples
- Business References For All Manufacturing Partners
- Execute Our Own Audits
- 3rd Party Testing - Heavy Metals | Cannabinoids
Yeast & Mold | Micros | Residual Solvents

Know Your Compliance!

6.5. Batch Production Records (Batch Production and Control Records)

Information				Comment
	Y	N	N/A	
Batch production records should be prepared for each intermediate and JOYFUL HEMP finished product and should include complete information relating to the production and control of each batch. The batch production record should be checked before issuance to assure that it is the correct version and a legible accurate reproduction of the appropriate master production instruction. If the batch production record is produced from a separate part of the master document, that document should include a reference to the current master production instruction being used. Is this in compliance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
These records should be numbered with a unique batch or identification number, dated and signed when issued. In continuous production, the product code together with the date and time can serve as the unique identifier until the final number is allocated. Is this in compliance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- Every Brand (And Your Wellness), Will Depend on a Successful Manufacturing, Legal, Testing, & Compliance Relationship.
- A Successful Manufacturing Relationship Depends on Rules, Transparency, & Documentation.



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www.BlissfulPlant.com