Medical Marijuana Awareness Webinar

CANNABIS & MULTIPLE SCLEROSIS

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WELCOME!

Setting Boundaries & Disclaimers

The purpose of this group is to provide a safe, supportive and judgment free zone where we can advocate for and discuss medical cannabis, as well as local and state resources.

It is best to always discuss with your physician before making any medical decisions about your health. The goal of this group is to engage with the community and to help educate Medical Cannabis through discussion.

No matter our background,
we are all coming together as medical cannabis patients,
students, advocates, and researchers.

MULTIPLE SCLEROSIS & MEDICAL MARIJUANA

Multiple sclerosis *(**MS**) is a disease that causes **demyelination** (disruption of the myelin that insulates and protects nerve cells) of **spinal nerve** and brain cells*

- There are four types of MS
  - RRMS: Relapsing-remitting multiple sclerosis,
  - SPMS: Secondary-progressive multiple sclerosis, the most common type
  - SPMS: Primary-progressive multiple sclerosis
  - PRMS: Progressive-relapsing multiple sclerosis

- *There is currently no cure, but treatment may slow its progression*

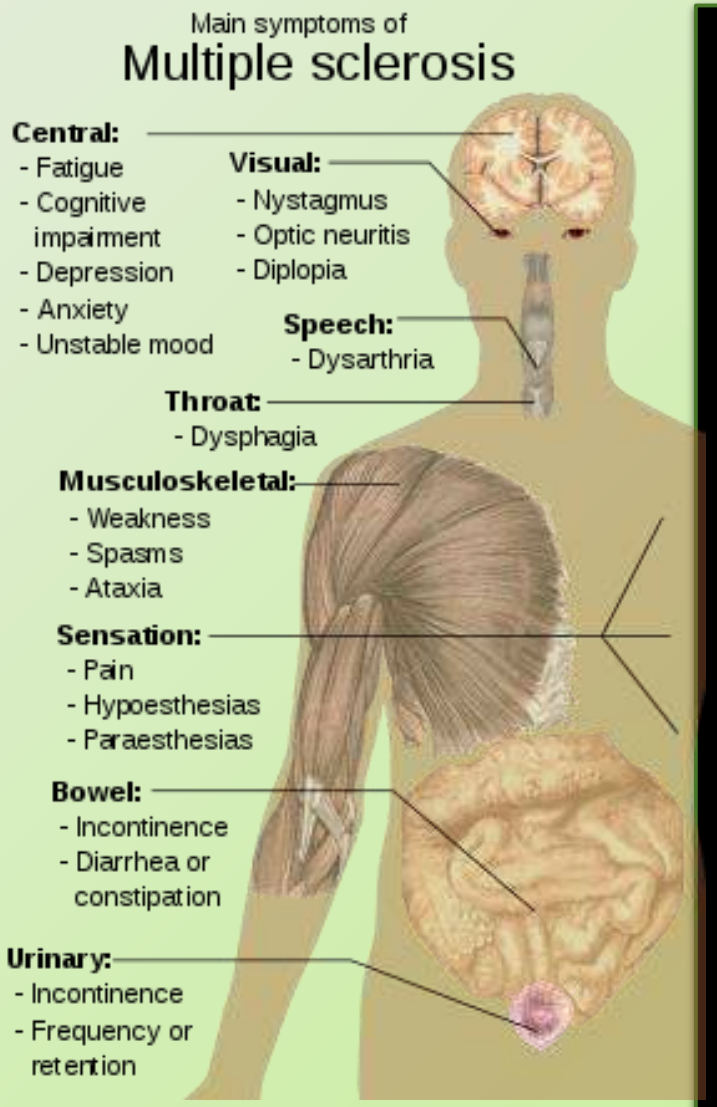
- Marijuana may be useful for treating several symptoms for this condition

MULTIPLE SCLEROSIS BREAKDOWN

It is the breakdown of the thin sheet that offers protection and insulation to the brain and spinal cord, known as myelin sheets.

Symptoms of MS can include:

- Visual changes including double vision or loss of vision
- Numbness
- Tingling or weakness (may range from mild to severe)
- Paralysis
- Vertigo or dizziness
- Erectile dysfunction (ED, impotence)
- Pregnancy problems
- Incontinence (or conversely, urinary retention)
- Muscle spasticity
- Incoordination of muscles
- Tremor
- Painful involuntary muscle contractions
- Slurred speech
- Fatigue

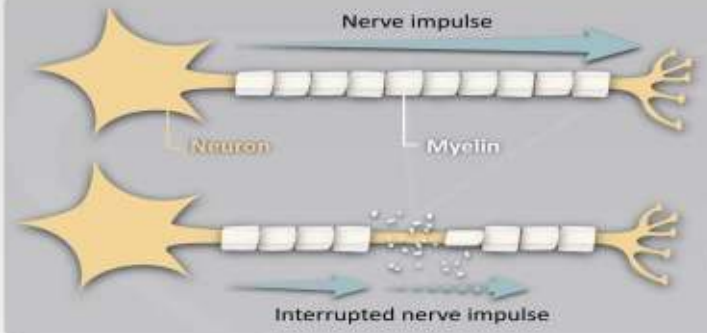


The marijuana plant, or Cannabis Sativa, has dozens of chemical that can affect your mind and body.

CANNABIS & MULTIPLE SCLEROSIS

Fundación CANNA

Multiple Sclerosis (MS) is a degenerative and chronic disease of the central nervous system, with an autoimmune component, that affects the brain and the spinal cord. Is the second cause of disability in young adults after car accidents.



In MS, the immune system attacks the protective sheath (**myelin**) that wraps the axons of the neurons in the brain and spinal cord, causing communication issues between the brain and other parts of the body. With the passing of time, it can cause the **permanent damage of the neurons**, provoking a permanent disability of different parts of the body.

ratio 2:1
women vs **men**

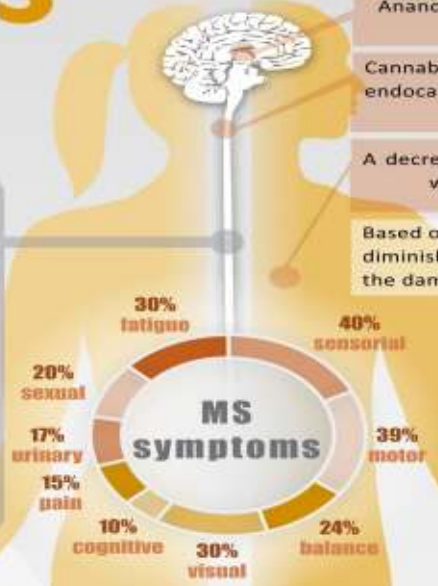
Depending on the localization of the lesions and their magnitude, MS patients can experiment long periods of time without symptoms, or lose their ability to walk. That´s why MS is known as "the disease of a thousand faces"

There are different types of MS depending on the course of the disease: relapsing-remmitting or chronic (primary, secondary).

MULTIPLE SCLEROSIS treatments

MS **does not have a cure**. There are treatments that help to recover from the relapses, to control the symptoms, and to change the evolution of the disease:

- **Treatment for the relapses:**
  Corticoesteroids, Plasma exchange.
- **Treatment to modify the evolution:**
  Beta Interferons, Glatiramer Acetate, Fingolimod, Dimethylfumarate, Ocrelizumab, Natalizumab, Alemtuzumab, Triflunomide, Siponimod, Mitoxantrone.



MEDICINAL CANNABIS IN MULTIPLE SCLEROSIS

Evidence shows alterations in different parts of the endocannabinoid system in MS patients and its animal models:

- Anandamide (AEA) was increased in the cerebrospinal fluid and plasma of MS patients in remission (Di Filippo et al., 2007).
- Cannabinoid CB1R and CB2R receptors and FAAH enzyme of endocannabinoid degradation were augmented in nervous system lesions of MS patients (Benito et al., 2007).
- A decrease in the enzyme FAAH was found in the blood of patients with secondary progressive MS (Jeah-Gilles et al., 2009).

Based on these data, medicinal treatment with *Cannabis* could diminish the neuroinflammation of this desease and, therefore, the damage.

1981 Symptomatology improvement of MS patients consuming recreative *Cannabis* leaded to the first study of *Cannabis* and MS (Petro and Ellenberger, 1981). More studies were performed in the following years.

2002 Several controlled clinical trials were performed, showing a limited evidence of cannabinoids effects (THC + CBD) in one of MS symptoms: spasticity (Zajiceck et al., 2005).

2011 Sativex ® approval, the first cannabis based medicine (THC and CBD in 1:1 ratio) to be commercialized for spasticity treatment in MS.

CANNABINOIDS IN ANIMAL MODELS OF MS

The administration of phytocannabinoids, endocannabinoids and syntetic cannabinoids in animal models of MS improves the motor symptomatology associated with the disease and its development (Chiurchiù et al., 2018).

- **Decrease of neuroinflammation**
  Cannabinoids have a potent anti-inflammatory effect in MS. This effect is mediated by the activation of CB2 receptors in immune and glial cells, and in CB1R/CB2R of the blood brain barrier cells.
- **Increase of endogenous reparative mechanism**
  Cannabinoids promote the regeneration of myelin sheaths in the nerve fibers, and protect from neuronal death. These effects are mediated by the activation of CB1 receptors in oligodendrocytes and neurons.

It is necessary to explore in depth the cannabinoid effects in order to develop therapies for MS patients, and diminish motor and cognitive decline associated to the disease.

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An infographic by Glyph Illustration

EFFICACY

1981	researchers found motivation in anecdotal accounts of MS patients who reported that inhaling cannabis gave relief from spasticity…. Combined with scientific discovery that THC is able to inhibit muscle spasms in animal studies, opened the door to a multitude of scientific inquires
1997	University of Arizona Health Sciences Center in Tucson studied 112 patients with MS by inhaling cannabis and found reduced spasticity, pain, tremors, depression, anxiety, and paresthesia
2003	The Office of Medical Bioethics & University of Calgary studied 420 patients with MS by inhaling cannabis and found a reduction in several symptoms: anxiety, depression, spasticity, and chronic pain.
2006	Hunters Moor Regional Neurological Rehabilitation Centre, UK replicated the study with Sativex, a cannabis synthetic, as an oromuscal spray delivering 2.7 mg THC and 2.5 mg CBD. And found a reduction in spasticity, neuropathic pain, and neuropathic pain of other etiologies. (Barnes, 2006)
2017	**T**he National Multiple Sclerosis Society published a Cannabis Summary regarding using cannabis for the treatment of MS and has stated their key points: • "People with MS experience symptoms that may not be adequately controlled with FDA approved medications. Some people with MS have tried cannabis products to relieve these symptoms. • "Based on existing evidence, cannabis products are probably effective for treating patient reported symptoms of spasticity and pain. Cannabis is probably not effective for MS-related tremor or urinary incontinence." • The potential adverse effects of cannabis products, including new or worsening cognitive symptoms, psychosis, tolerance and dependence, as well as drug to drug interaction.
2019	77 patients diagnosed with MS found alleviation of symptoms by way of cannabis usage "seen most in pain (71%), spasticity (43%), and sleep (42%). In addition, 34% of patients were able to decrease and discontinue other medications including opioids, stimulants, and benzodiazepines

THE EXPERTS SAY

The National MS Society supports the ability of people living with MS to make informed choices about their treatments with their MS health care providers, including the use of medical cannabis

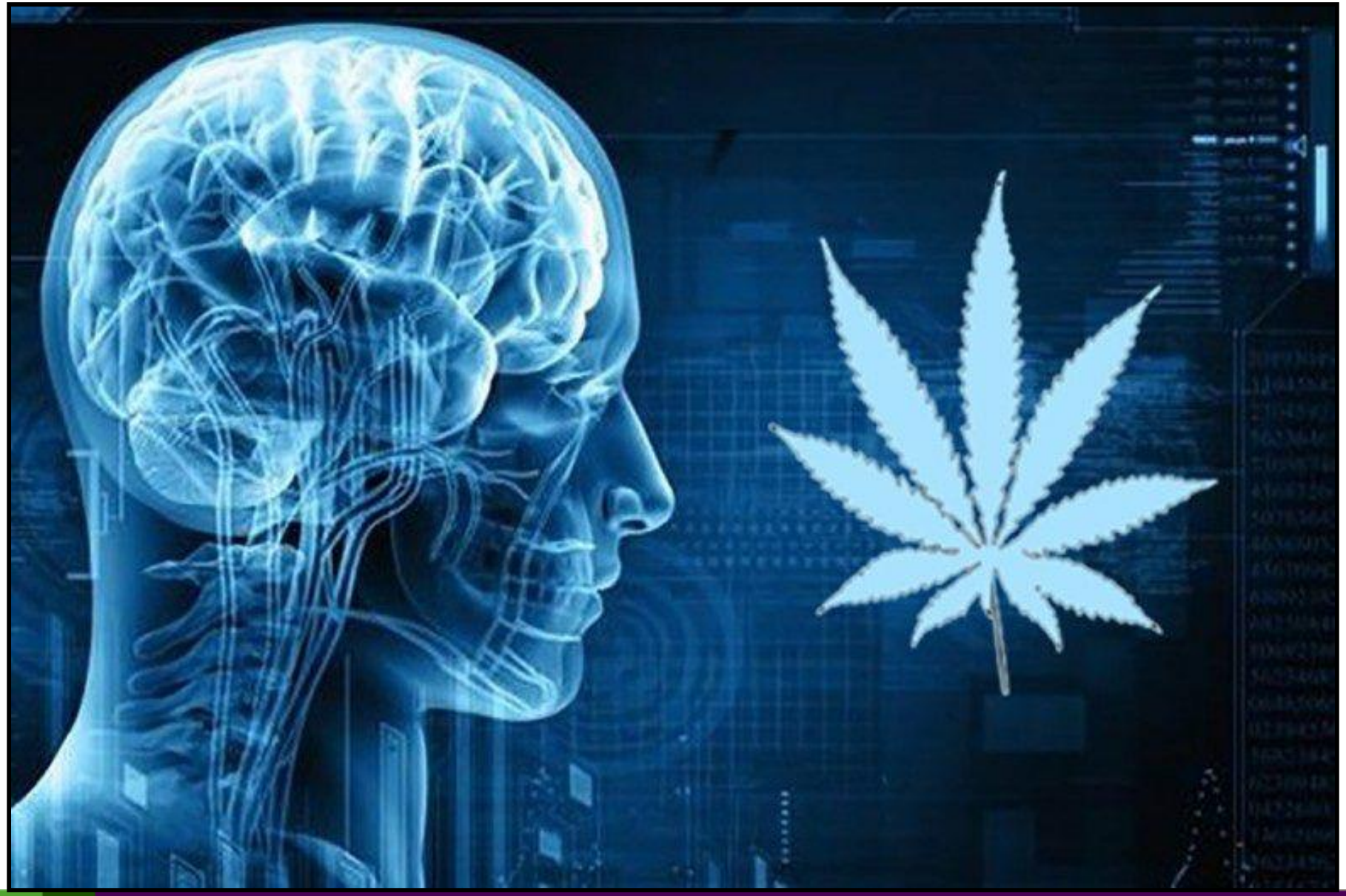
"To date, the major active metabolites [identified] in medical marijuana are Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD), and these have been found to have benefits in individuals with MS, particularly regarding pain and spasticity."

. . . Clyde E. Markowitz, MD, Director of Multiple Sclerosis Center at Penn Medical

"Reports of cannabinoids' ability to reduce MS-related symptoms such as pain, spasticity, depression, fatigue and incontinence are plentiful in scientific literature."

. . . NORML [National Organization for the Reform of Marijuana Laws]

THE ENDOCANNABINOID SYSTEM



THE HUMAN ENDOCANNABINOID SYSTEM
CBD, CBN and THC fit like lock and key into existing human receptors. These receptors are part of the endocannabinoid system which impact physiological process affecting pain modulation, memory and appetite plus anti-inflammatory effects and other imn system compı serve distinct

CB1 receptors are primarily found in the brain and central nervous system, and to a lesser

Receptors are found on cell surfaces

THE HUMAN ENDOCANNABINOID SYSTEM

CBD, CBN and THC fit like lock and key into existing human receptors. These receptors are part of the endocannabinoid system which impact physiological process affecting pain modulation, memory and appetite plus anti-inflammatory effects and other immune system responses. The endocannabinoid system comprises two types of receptors, CB1 and CB2, which serve distinct functions in human health and well-being.

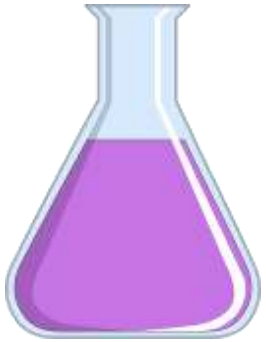
CB2 receptors are mostly in the peripheral organs especially cells associated with the immune system.

source: www.the-human-solution.org

HOW CANNABIS WORKS

Endocannabinoid's
[Brain derived]
Foods: Omega 3S - Omega 6s
Anandamide [AEA]

Phytocannabinoids
[Plant derived]
Buds, Tintures, Extracts
THC, CBD, CBN, etc



Synthetic Cannabinoids
[Pharmaceutical Labs]
Patent Synthesized Compound
THC Only - Marinol

Endocannabinoid
[Brain receptors]
CB1, CB2, etc

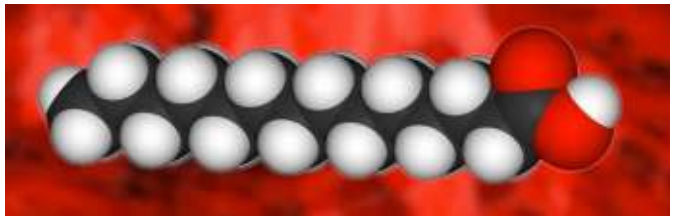
The endocannabinoid system [ECS] regulates a variety of physiological processes including appetite, pain and pleasure sensation, immune system, mood and memory.

CANNABIS HELPS *YOUR* BODY PRODUCE IT'S OWN MEDICINE

Endocannabinoids

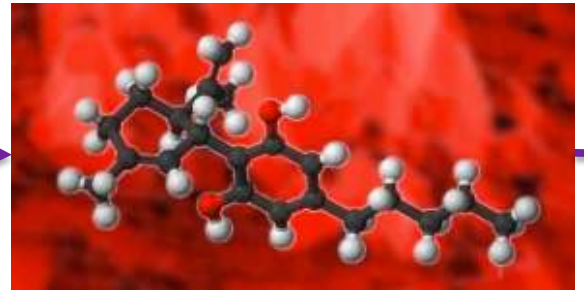
Endocannabinoid's brain derived

Phytocannabinoids plant derived

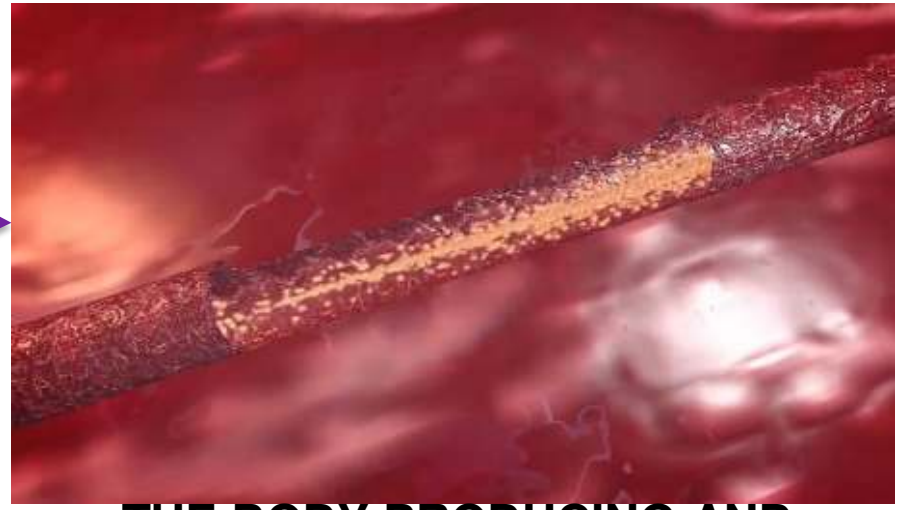


FATTY ACIDS

NEURONS



LONG CHAIN FATTY ACIDS



THE BODY PRODUCING AND DISTRIBUTING ENDOCANNABINOID'S

WHAT IS MEDICAL CANNABIS/MARIJUANA ?

CBD - Cannabidiol

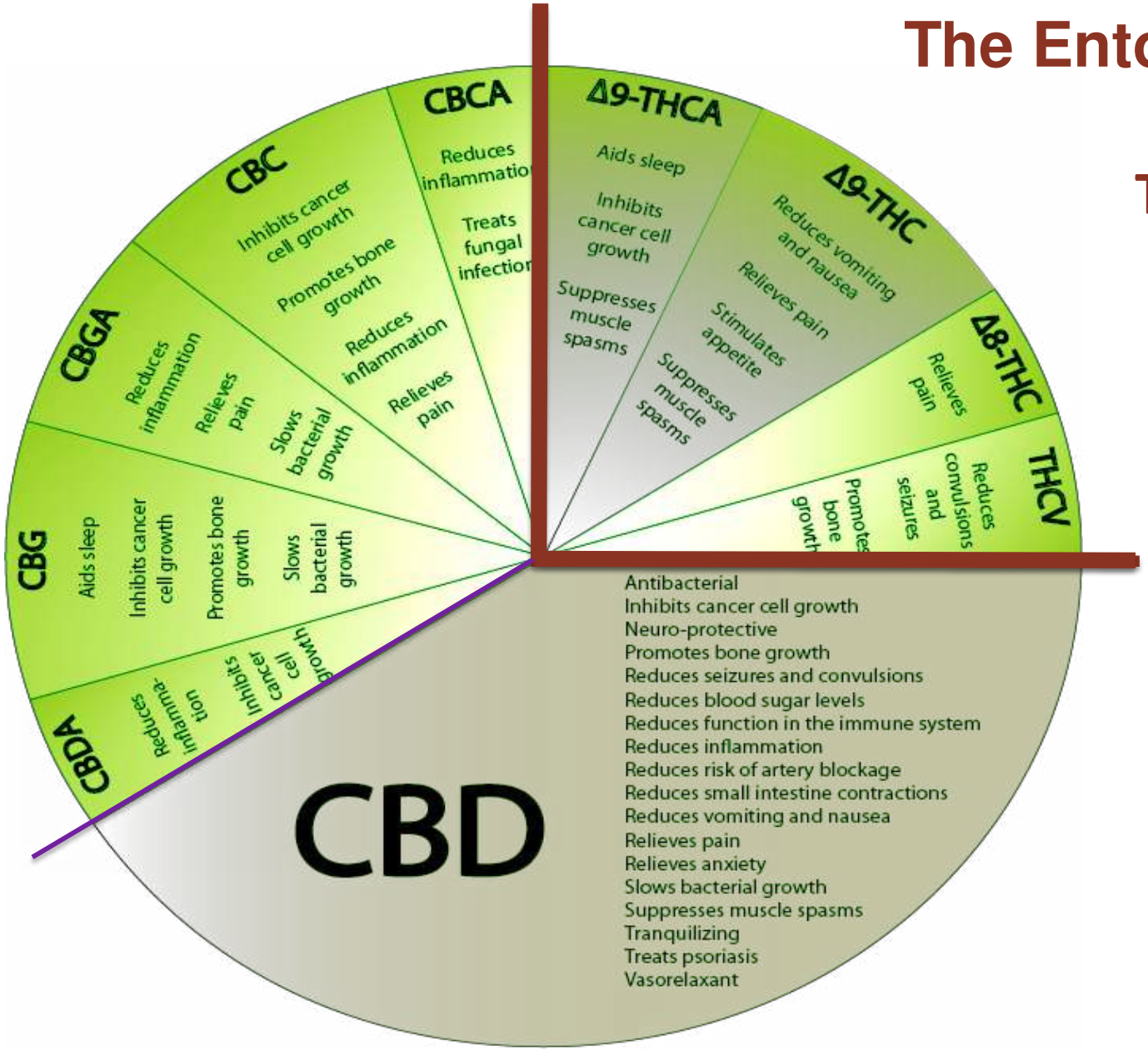
Non-Psychoactive cannabis component – Also found in Hemp

THC - Tetrahydrocannabidiol

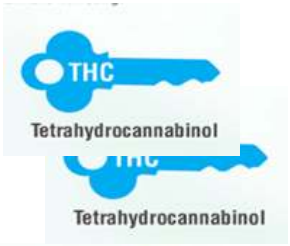
Psychoactive cannabis component

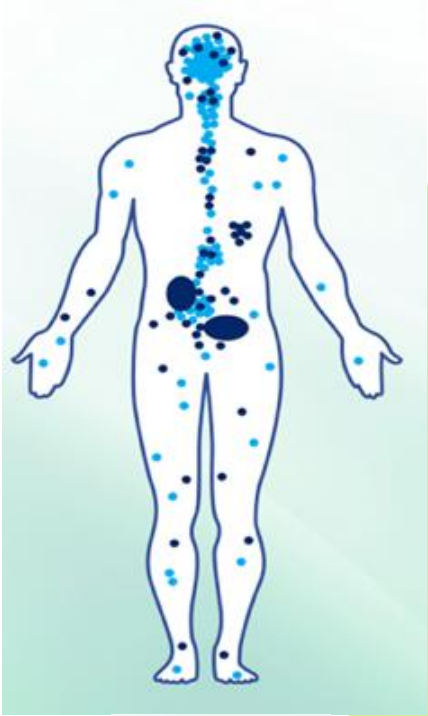
CBD in Hemp & Cannabis

The Entourage Effect



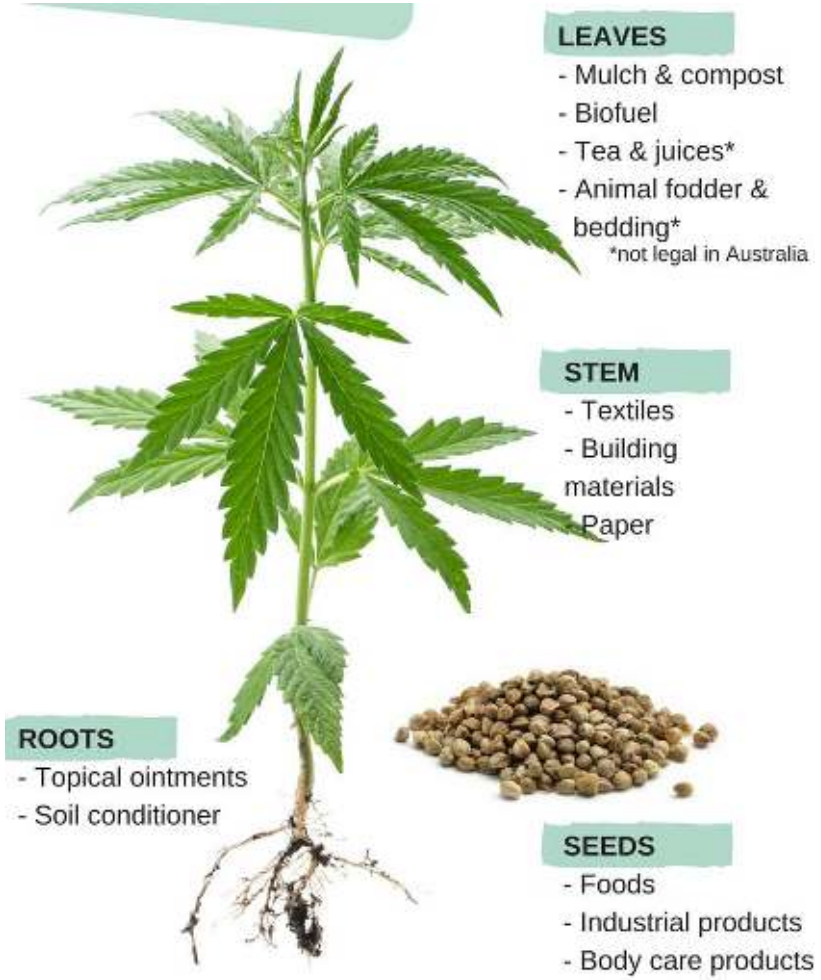
THC





THE PLANT - HEMP vs MARIJUANA

HEMP *CANNABIS SATIVA*



MARIJUANA *CANNABIS INDICA*

Cannabinoids

Terpenes

Your Biology, Dosing, Consumption Method

WHAT ARE TERPENES?

- Terpenes are the most common plant chemicals in nature.
- Found in flowers, spices, fruits, vegetables and essential oils

→ Endocannabinoid System - Highway
→ Anandamide - Driver
→ Cannabinoid - Passenger (CBD/THC)
→ Terpenes navigate/shapes the Cannabinoid journey like a GPS

Please send your questions using the Q&A button at the bottom center of your screen. The speakers will answer after the presentation. The Q&A feature is public. Both panelists and attendees will see your question.

Leafly

α-PINENE

PNE
α-PINENE

AROMA

Pine

VAPORIZES AT

311°F (155°C)

POTENTIAL MEDICAL VALUE

Treatment of:

- Asthma
- Pain
- Ulcers
- Anxiety
- Cancer

POTENTIAL EFFECTS

Alertness

Memory Retention

Counteracts some THC effects

ALSO FOUND IN

Pine Needles

Rosemary

Basil

Parsley

Leafly

CARYOPHYLLENE

CYE
CARYOPHY-
LLENE

AROMA

Pepper
Spicy
Woody
Cloves

VAPORIZES AT

266°F (130°C)

POTENTIAL EFFECTS

Stress Relief

POTENTIAL MEDICAL VALUE

Treatment of:

- Pain
- Anxiety
- Depression
- Ulcers

ALSO FOUND IN

Black Pepper
Cloves
Cinnamon

Leafly

LINALOOL

LNL
LINALOOL

AROMA
Floral

VAPORIZES AT
388°F (198°C)

POTENTIAL MEDICAL VALUE
Treatment of:
- Anxiety
- Depression
- Insomnia
- Pain
- Inflammation
- Neurodegeneration

POTENTIAL EFFECTS
Mood Enhancement
Sedation

ALSO FOUND IN
Lavender

STANDARD DOSING FORMS

- *Sublingual Drops/Tinctures*
- *Inhalation Vape Pens*
- *Capsules*
- *Topical's*
- *Sprays*
- *Flower*
- *Crumble & Shatter*
- *Suppositories*
- *Edibles*

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STANDARD DOSING FORMS

FORM	TIME TO WORK	EFFECTIVENESS	
SUBLINGUAL DROPS/TINCTURE	15-40 Min	4-6 Hours	Taking cannabis in through the mouth under your tongue, absorbs via the digestive system or blood vessels in the mucous membranes in the mouth.
VAPE PEN	Almost Immediately	2-4 Hours	Electronic vaporizing device Inhaling through the lungs
CAPSULES	30 min - 2 hours	5-8 Hours	When taking cannabis in through the mouth, it enters the bloodstream after being digested or broken down in the stomach and absorbed into the digestive system.
EDIBLES	15-40 Min	4-6 Hours	Gummies, brownies,dots, cookies, et al
TOPICALS	Almost immediately	1-2 Hours	A topical medicine is applied to the skin directly 'on top' of the place where it is needed.
TRANSDERMAL PATCH	10 min - 1 Hour	8 - 72 Hours	A topical medicine is applied to the skin directly 'on top' near the neck, inside of legs, top of hands/feet, back of neck
SPRAY	Almost Immediately	2-4 Hours	Absorbs via the digestive system or blood vessels in the mucous membranes in the mouth.
FLOWER	Almost Immediately	1-5 Hours	**REQUIRES A FL STATE FORM** Inhaling through the lungs **3.5oz/35 days: 4oz in possession**
CRUMBLE SHATTER	Almost Immediately	1-6 Hours	Inhaling through the lungs


Trulieve

TruNano Technology

TruNano Ratio Tincture is made with our nano-emulsion technology

Achieved through process of sonification

Quicker onset

The bioavailability of these products are over 90%

Acts like a water-soluble molecule

1:8, 8:1 CBD:THC $55

Trupowder 5mg scoop, 200mg total, $50

TruTincture Drops

- -10mg each
- -10 count
- -$20

Delta 8 Products

- **TruClear:** 1:1 (Delta 8: Delta 9)
- **TruPods:** 1:1:1 (Delta 8: Delta 9: CBD),
  1:1 (CBD: Delta 8),
  1:1 (Delta 8: Delta 9)
- More expansion in this line

BALANCED LIVING A SENSE OF RESTORATION & CONTROL

Maintaining Emotional Wellbeing

- Talk, Animal, Music, or Art Therapies

Proper Diet, Exercise & Healthy Habits

Balancing Spiritual Wellbeing

Cognitive Health: Meditation or Tai Chi

GROUP DISCUSSION

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