

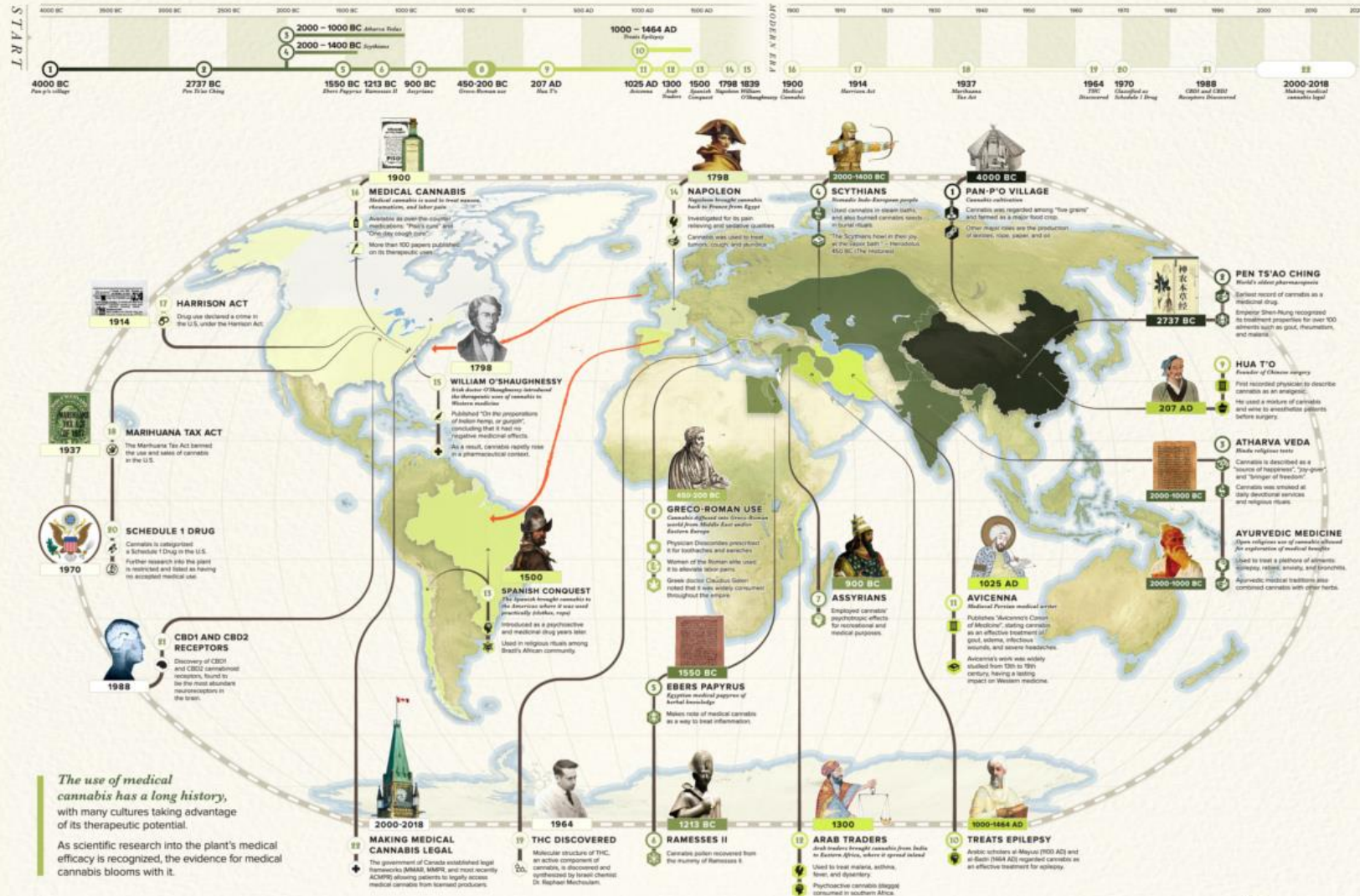
The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic visual effect.

Medical Cannabis: Basics, Access, Applications in the Cancer Patient

a 6,000 YEAR HISTORY of CANNABIS

THE CANNABIS SPACE IS HIGHLY POLARIZED TODAY.

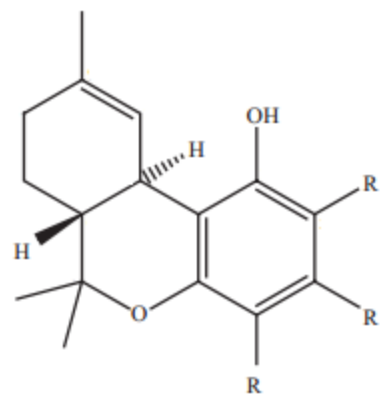
However, it's less known that the plant has over 6,000 years of documented history – and its therapeutic applications appear to have been realized by most cultures. With medical cannabis making a comeback around the world, it's worth tracing the plant's humble beginnings and how it played a vital role throughout the centuries.



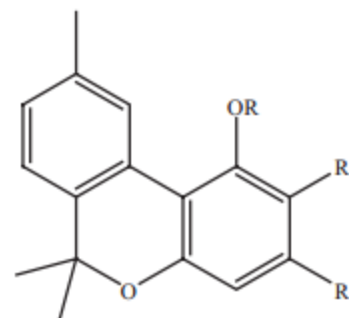
The use of medical cannabis has a long history, with many cultures taking advantage of its therapeutic potential.

As scientific research into the plant's medical efficacy is recognized, the evidence for medical cannabis blooms with it.

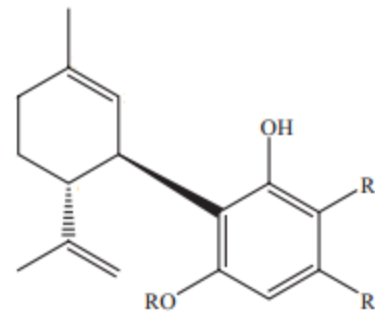




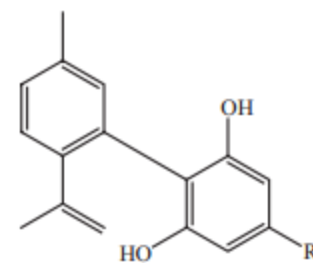
Tetrahydrocannabinol (THC)



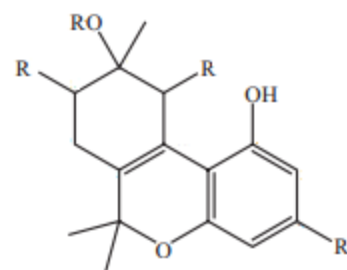
Cannabinol (CBN)



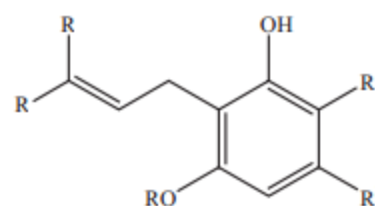
Cannabidiol (CBD)



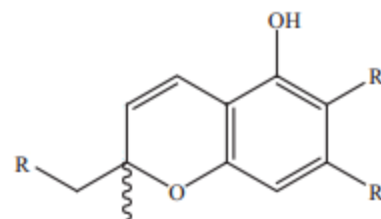
Cannabicyclol (CBL)



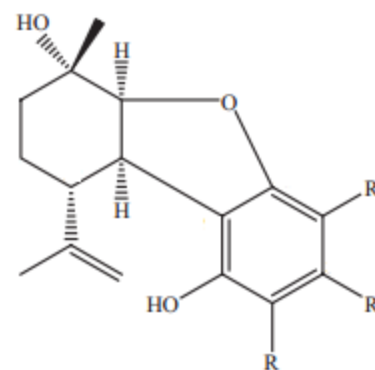
Cannabitriol (CBT)



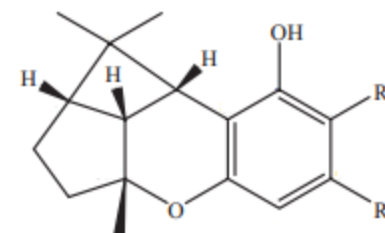
Cannabigerol (CBG)



Cannabichromene (CBC)



Cannabielsoin (CBE)



Cannabinodiol (CBND)

THE MOST COMMON T E R P E N E S FOUND IN CANNABIS

Myrcene



Aroma: Earthy, cloves, herbal
Effects: Sedating, relaxing,
Medical value: anti-inflammation, anticarcinogenic
Also found in mango, lemongrass, hops and thyme

Linalool



Aroma: Floral, citrus, candy
Effects: Sedation, anxiety relief
Medical value: anti-depressant
Also found in lavender

Limonene



Aroma: Citrus
Effects: Stress relief, elevated mood
Medical value: anti-cancer, anti-inflammatory, antiseptic
Also found in lemons, oranges and juniper

α - Pinene β - Pinene



Aroma: Pine
Effects: Alertness, increased energy
Medical value: anti-inflammatory, antiseptic
Also found in pine trees, rosemary, sage

Trans-Caryophyllene



Aroma: Pepper, woody, spicy
Effects: pain reliever
Medical value: anti-inflammatory, anti-cancer, antiseptic
Also found in cotton, black pepper and cloves

THE ENDOCANNABINOID SYSTEM

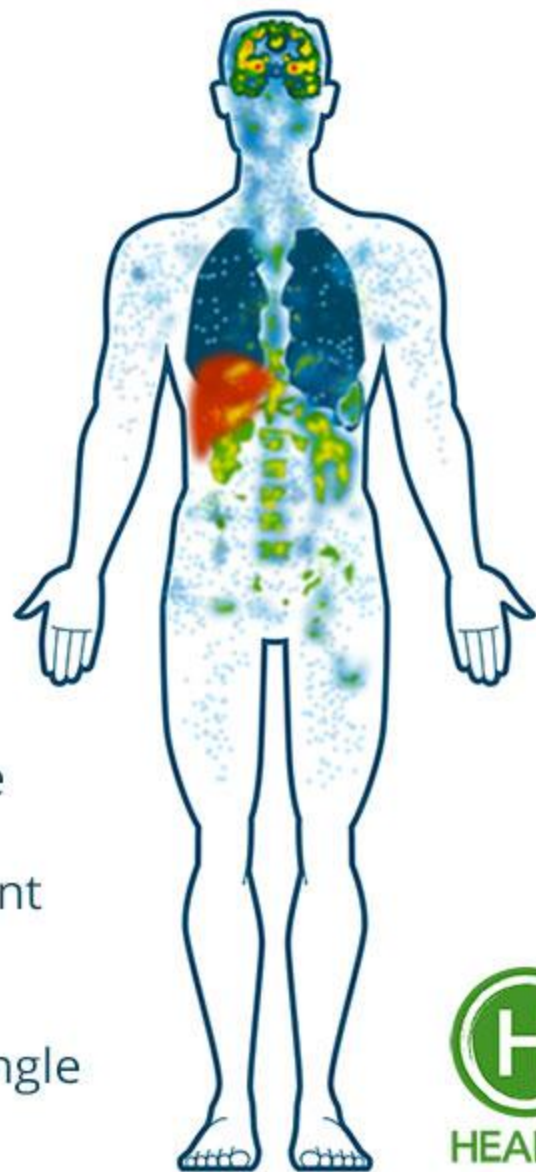
Endocannabinoids and their receptors are found throughout the body: in the **brain**, **organs**, **connective tissues**, **glands**, and **immune cells**.

In each tissue, the **cannabinoid system** performs different tasks, but the goal is always the same: **homeostasis**, the maintenance of a stable internal environment despite fluctuations in the external environment.

Endocannabinoids are found at the intersection of the body's various systems, allowing communication and coordination between different cell types.

At the site of an injury, **cannabinoids** can be found decreasing the release of activators and sensitizers from the injured tissue, stabilizing the nerve cell to prevent excessive firing, and calming nearby immune cells to prevent release of pro-inflammatory substances.

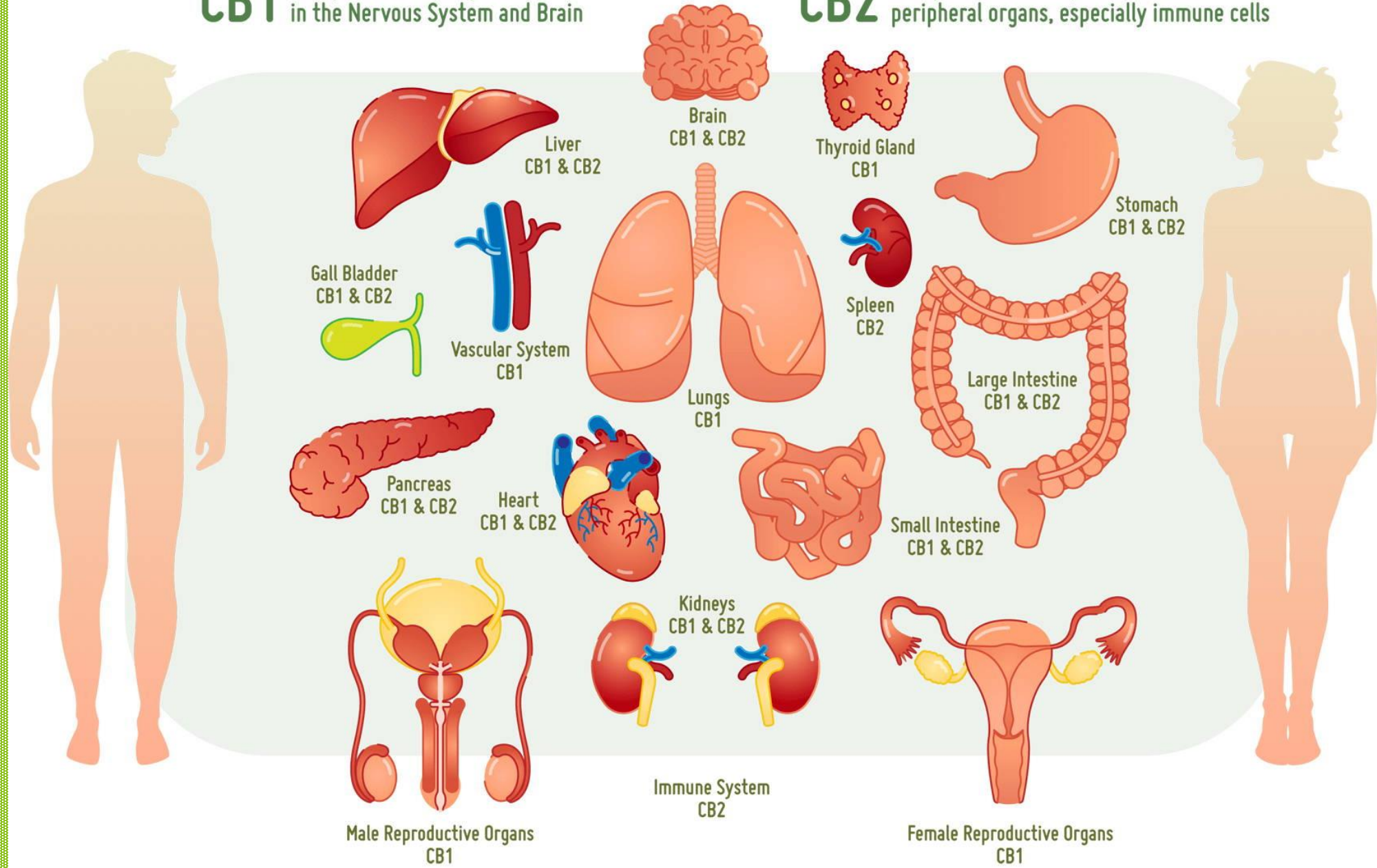
Three different mechanisms of action on three different cell types for a single purpose: **minimize the pain and damage caused by the injury**.



The Human Endocannabinoid System

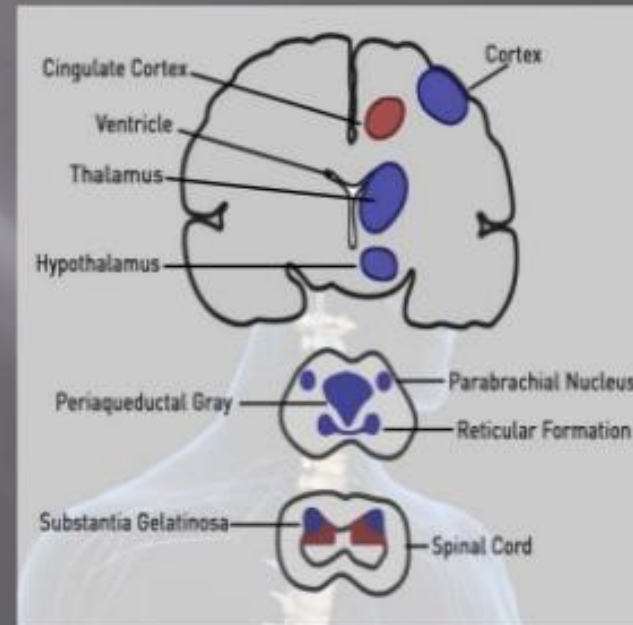
CB1 Receptors are mostly found in the Nervous System and Brain

CB2 Receptors are mostly found in the peripheral organs, especially immune cells



Location of Opioid Receptors

1. **Brainstem:** mediating respiration, cough, nausea & vomiting, maintenance of BP, pupillary diameter and control of GI secretion.
2. **Medial thalamus:** mediating poorly localized deep pain
3. **Spinal cord:** receptors located in the substantia gelatinosa are involved in the receipt & integration on sensory input leading to the attenuation of painful afferent stimuli



ANNUAL DEATHS

Tobacco	435,000
Poor Diet/Exercise	365,000
Alcohol	85,000
Prescription Drugs	32,000
Motor Vehicle Crashes	26,347
Homicide	20,308
Aspirin	7,600
Peanuts	100
Marijuana	0

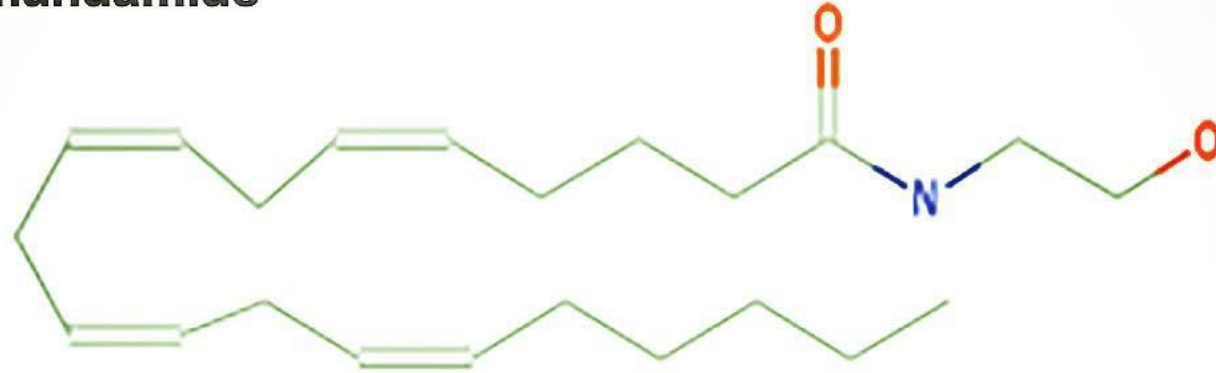


MARIJUANA: Safer Than Peanuts!

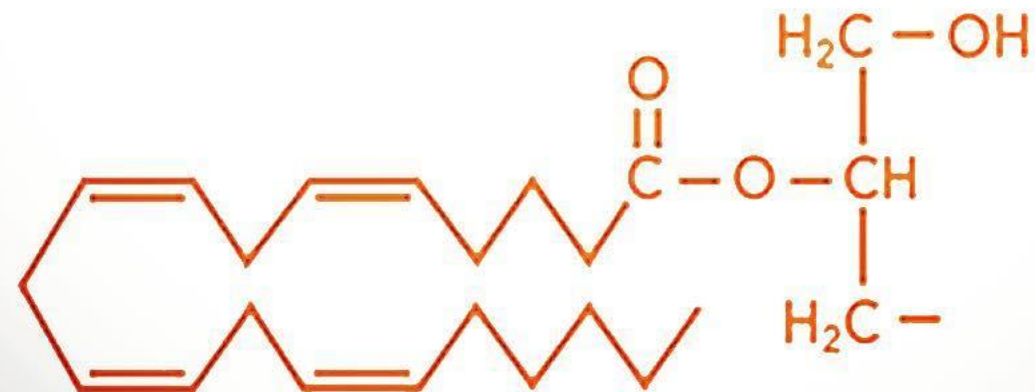
ENDOCANNABINOIDS

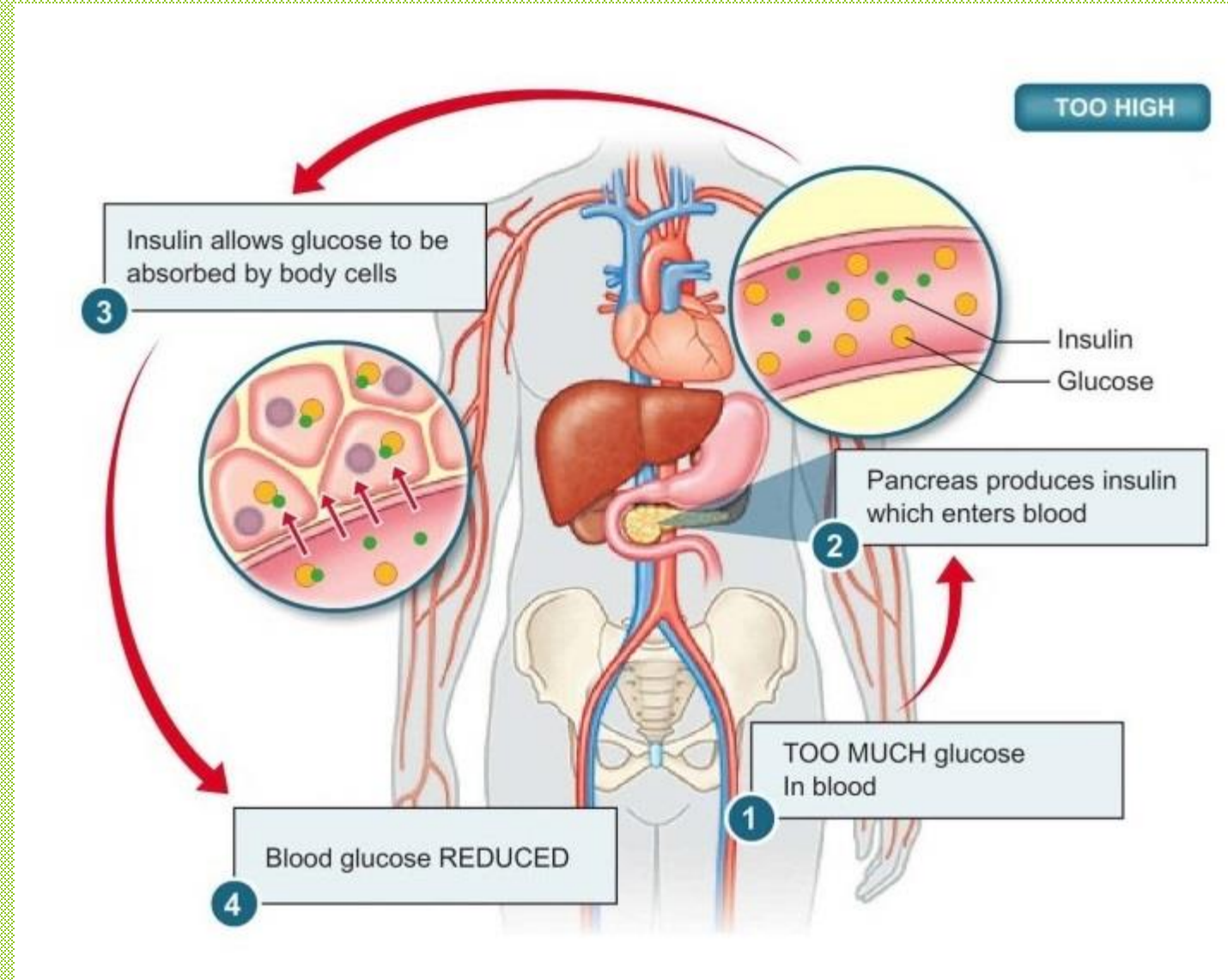
cannabis-like cannabinoids manufactured internally by the body

Anandamide



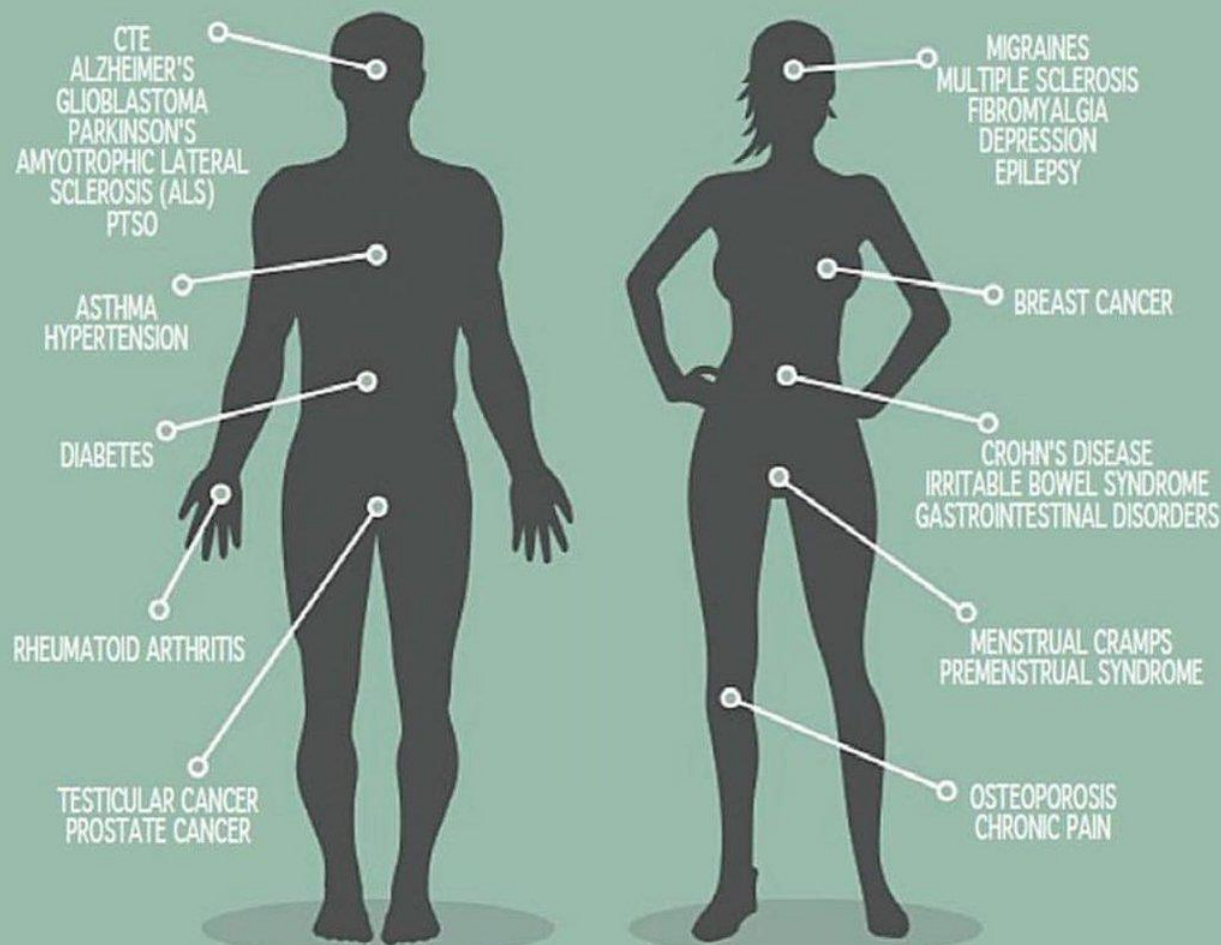
2-Arachidonoylglycerol (2-AG)





ENDOCANNABINOID SYSTEM

The human endocannabinoid system (ECS) is a network of receptors spread throughout our entire body that control some of our most vital life functions, including our immune system, memory, appetite, sleep pattern, mood and pain sensation.



The background features abstract, overlapping green geometric shapes in various shades of green, creating a modern and dynamic look. The shapes are primarily located on the right side of the slide, with some extending towards the left.

COMPARISON OF THE MOST COMMON DELIVERY METHODS

INHALATION

- Onset within minutes
- Peak effect in 30 minutes
- Lasts 1-4 hours
- Vaporization healthier than smoking
- Easier to dose since effects felt immediately

ORAL INGESTION

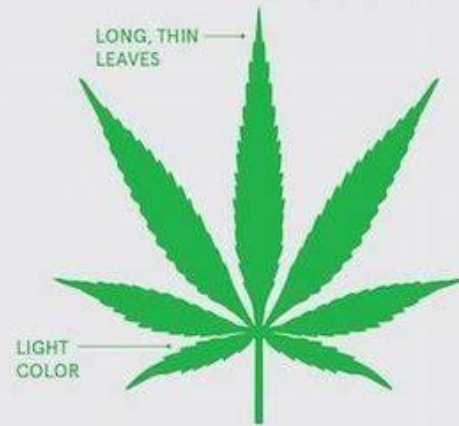
- Onset 30-90 minutes
- Peak effect in 2-3 hours
- Lasts 6-8 hours
- Difficult to dose, start with small amount, re-dose if no effect after 90 minutes
- THC is changed to a stronger compound when eaten; be aware that a small amount can be very potent
- No equipment needed, no odor, discreet way to medicate

SUBLINGUAL

- Onset 15-60 minutes
- Peak effect in 1-2 hours
- Lasts 1-6 hours
- Available as tinctures, extracts, and dissolvable strips
- No equipment needed, no odor, discreet way to medicate

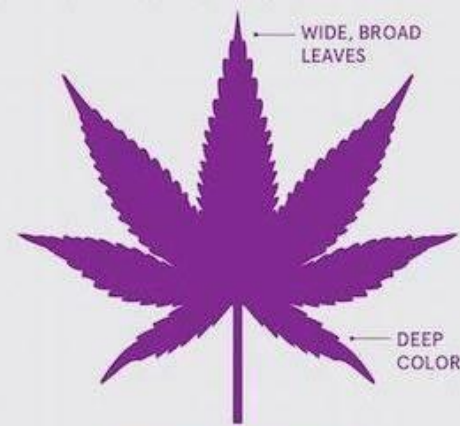
TOPICAL

- For external skin use
- Apply as needed to areas of pain or rash
- CBD absorbs better than THC
- repeat dose as necessary
- Apply a small amount to non-affected area to test for possible allergic response (not common)



SATIVA

VS.

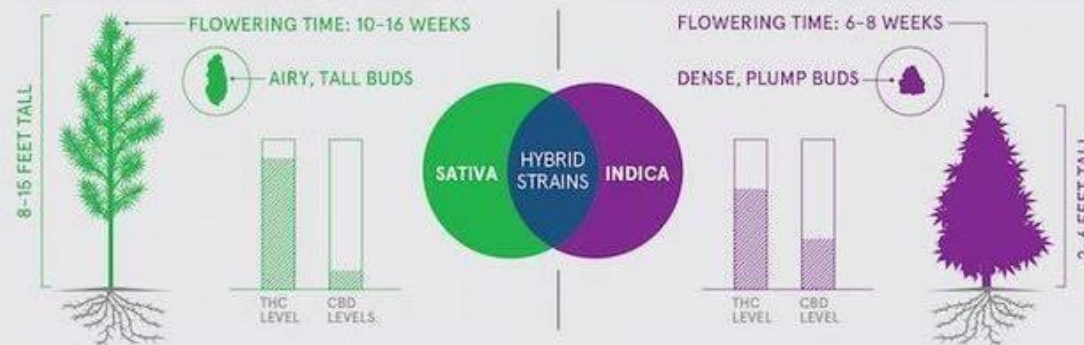


INDICA



RUDERALIS is a short, hearty, wild strain with fewer leaves and low THC content. It is not used for consuming but is sometimes crossbred with indicas or sativas to produce an "autoflowering" hybrid—meaning it will produce flowers (buds) based on age rather than light cycles like sativas or indicas.

GROWING



EFFECTS



DAYTIME:
MIND/HIGH



NIGHTTIME:
BODY/STONED

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Likely Effects of Cannabis Products

THC-RICH PRODUCTS

- mostly THC with virtually no CBD
- THC dominant effects
- Psychoactive for most (makes you “high”)
- Effective for pain relief, helps with sleep, lessens nausea and vomiting, stimulates appetite, muscle relaxer, anti-anxiety and mood enhancer

HIGH RATIO CBD:THC PRODUCTS

- mostly CBD with small amounts of THC
- CBD:THC of 25:1, 18:1, 15:1, 12:1, 10:1
- CBD dominant effects
- Not psychoactive for most but can be with larger doses

- Effective for pain relief, usually nonsedating, anti-inflammatory, anticonvulsant, anti-anxiety, mood stabilizer, can help with brain or spinal cord injury (neuroprotection)

LOW RATIO CBD:THC PRODUCTS

- Combination of CBD plus THC in lower ratios
- CBD;THC 8:1, 4:1, 2:1, 1:1
- Can be psychoactive depending on dosing or tolerance to THC
- Effective for pain relief (especially nerve pain), anti-inflammatory, muscle relaxer, anti-depressant, anti-anxiety, relieves nausea

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A Sample Cannabis Recommendation

Cannabis Recommendation

Name: Tel:

DB: Email:

Plan:

The following plan was printed and provided to the patient.

The risks, benefits, dosage and delivery systems of medical cannabis have been discussed. Informed consent obtained. I recommend this patient use the lowest effective dosage of cannabis to treat the identified health concerns:

Medical cannabis certification provided for 12 months.
Estimated duration of treatment at least 12 months or indefinite.

Extract to be taken two or three times daily by mouth. Hold in mouth for 1-2 minutes before swallowing for better absorption. Start protocol on a Friday afternoon.

Whole plant extract in approximate ratio of 12:1 CBD:THC

Make sure to get 1 ml syringes for accurate dosing

Starting dose: 0.25 ml each dose

Every 7 days, increase by 30-50%. For example:

Day 8: .35 ml each dose

Day 15: 0.5 ml each dose

Day 22: 0.75 ml each dose

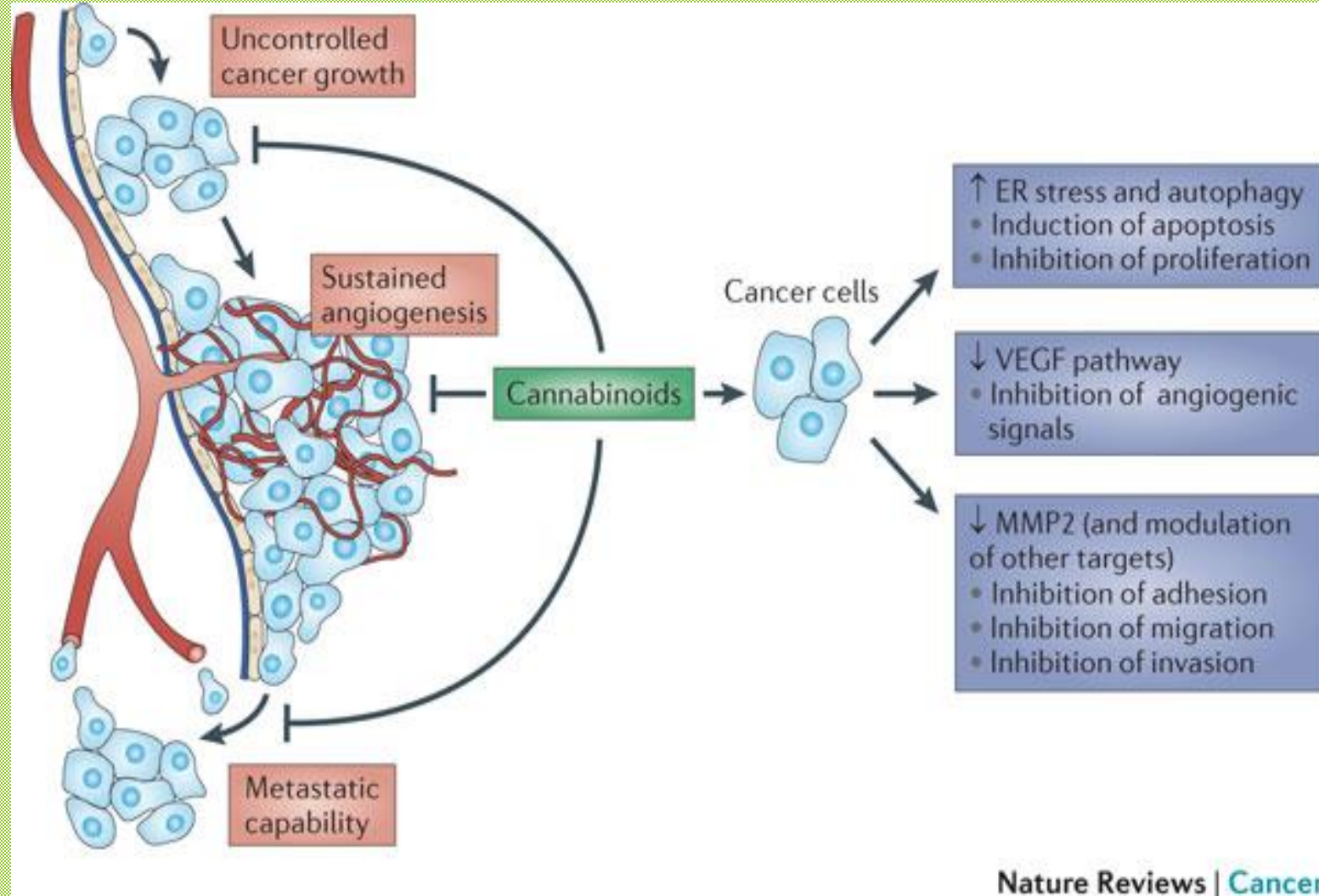
Stop increasing the dose when you have improved symptoms. If an increase in your dose results in decreased benefits, return to the previous dose.

Consider vape pen as a more immediate release formulation for spikes of symptoms in the approximate ratio of CBD:THC

Follow up with Dr. Meshulam by phone or email in one month; Return for follow up appointment in 3 months.

A FEW USES FOR MEDICAL CANNABIS

1. PAIN RELIEF
2. PTSD
3. NAUSEA AND VOMITING
4. APPETITE STIMULANT
5. SLEEP AID
6. SEIZURE MANAGEMENT
7. CANCER
8. “OTHER”



MEDICAL MARIJUANA

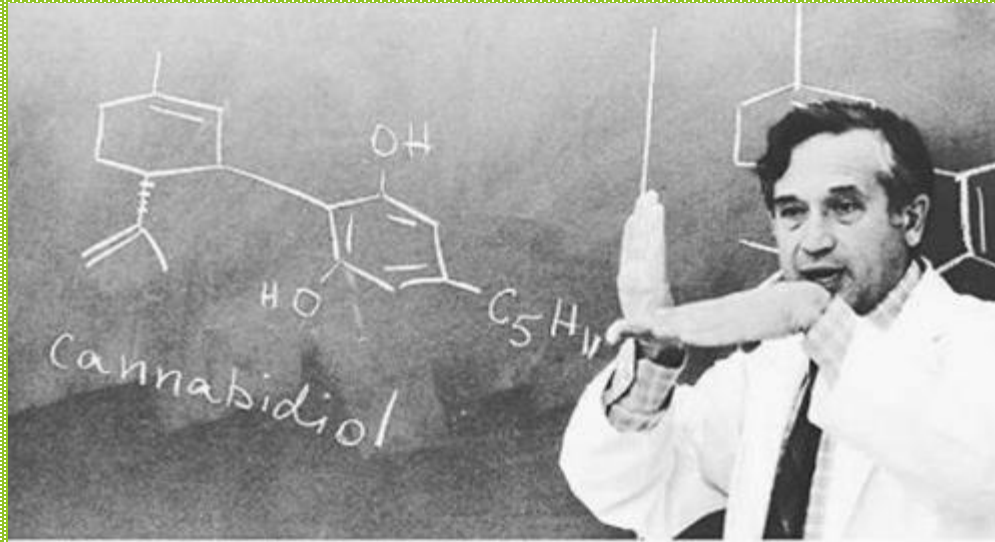
THIS SIMPLE DRIED
HERB IS ILLEGAL



HOWEVER, IF A MULTINATIONAL
DRUG COMPANY GRINDS UP THAT
HERB, EXTRACTS THE CANNABIS
SATIVA AND CREATES SYNTHETIC
DELTA-9-TETRAHYDROCANNABI-
NOL, COMBINES IT WITH
GELATIN, GLYCERIN, IRON OXIDE
RED, IRON OXIDE YELLOW, TITA-
NIUM DIOXIDE, MARKETS IT TO
DOCTORS AND HOSPITALS UN-
DER THE NAME MARINOL AND IN
THE PROCESS MAKES A BUNCH
OF WEALTHY WALL STREET IN-
VESTORS EVEN RICHER, THEN
IT'S LEGAL.



Thomson
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"The endocannabinoid system is very important. Almost all illnesses we have are linked to it in some way or another. And that is very strange."

- Raphael Mechoulam

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