Welcome!

Medical Cannabis Applications

Mastering the delivery systems, dosages and medical applications for cannabinoid medicine

CANNABINOIDS

presented by

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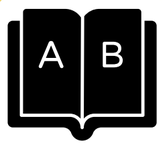
A chemical molecule, produced in the mammalian brain and the cannabis plant, that interacts with the endocannabinoid receptor system to exert an effect

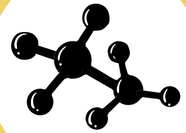
DEFINITION OF A CANNABINOID

(Depends on who you ask)



Definition of cannabinoid using **Dictionary app**:
Any of the chemical compounds that are the active principles of marijuana

National Cancer Institute defines cannabinoid:
A type of chemical in marijuana that causes drug-like effects all through the body, including the central nervous system



Oxford definition:
any of a group of closely related compounds which include cannabinol and the active constituents of cannabis

Plant vs Human Cannabinoids

ENDOGENOUS CANNABINOIDS (ENDOCANNABINOIDS):

1. **Anandamide** (arachidonoyl ethanolamide)
   Sanskirt for bliss

2. 2-arachidonoyl glycerol (**2-AG**)

Made on demand
Rapidly broken down by enzymatic reaction

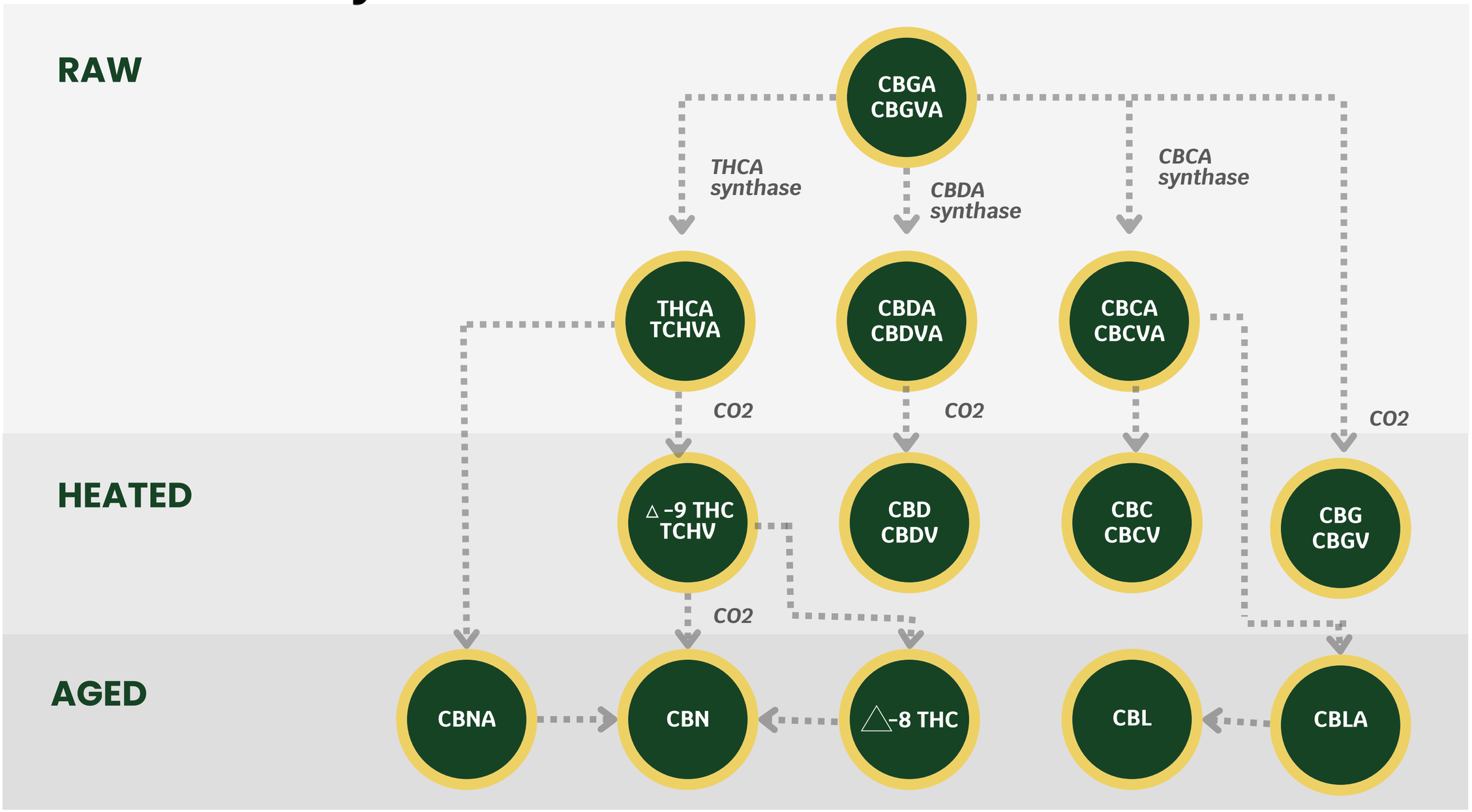
Lack of cannabinoids: fibromyalgia, seizures

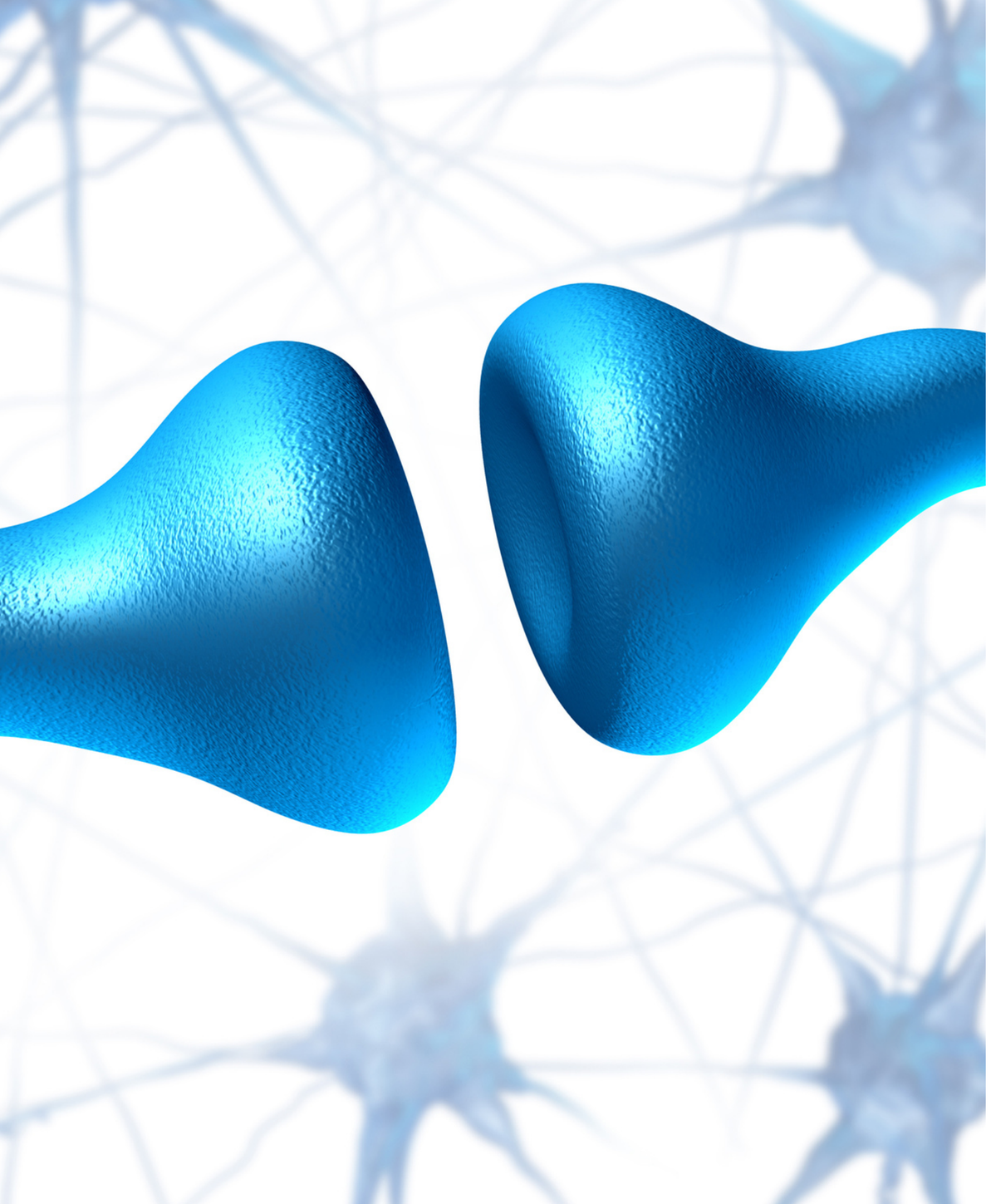
PHYTOCANNABINOIDS (PLANT CANNABINOIDS):

Δ-9-THC
CBD
CBG
CBN
THCV
CBV
CBDV
CBE
CBL

Cannabinoid Synthesis

www.alchimiweb.com





CB1 & CB2 Receptors

CB1 receptors found mostly in central and peripheral nerve centers (*basal ganglia, cortes, hippocampus, cerebellum*)

CB2 receptors occur mainly on immune and vascular cells (peripheral receptors), but have been detected in lower amounts in the CNS (microglial cells). Responsible for modulation of cytokine release and of immune cell migration.

ENDOCANNABINOID SYSTEM: RESPONSES IN THE BODY

Emotions
(acute and long-term depression)

Memory

Fear and Stress responses

Effects reproductive function

Appetite

Gastrointestinal activity

Osmotic pressure within the eye

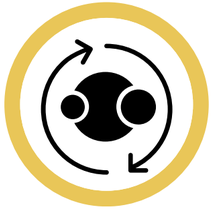
Fat breakdown and synthesis

Central nervous system

Diabetes
(glucose metabolism in the cells)

Cardiovascular system

Inflammatory response



Metabolism

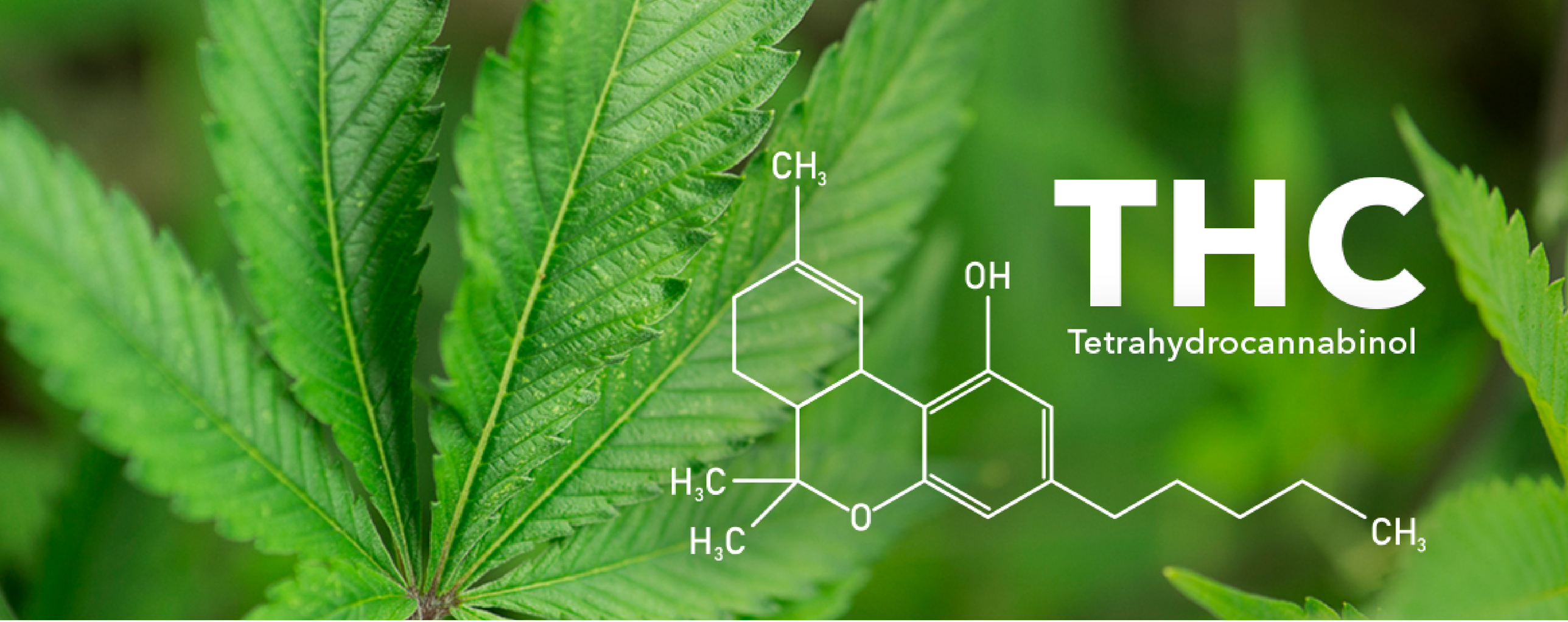
Pain response

Trichomes: crystals coat flowers of female cannabis plant

Heat - transform from solid to gas

Extraction - produce "cannabis oil" - further refined and made into products in the dispensary

Cannabinoids



THC

Δ9-tetrahydrocannabinol

EFFECTS

- Effects are patient-specific
- Relaxing at low doses yet can induce anxiety at higher doses
- Acute episodes of psychosis from high-dose edibles
- Increased hospital admissions were seen in Colorado from both edibles and inhaled products

Go low and slow when medicating with THC

USES

- Anxiety (lower doses, relaxing terpenes and mix with CBD)
- Depression (sativa)
- **Muscle relaxation**
- Pain management
- Nightmares
- Insomnia
- **Increase appetite**
- Neuroprotectant
- Anti-bacterial
- Migraines
- Glaucoma (dose Q24H to Q12h to Q8h)

SIDE EFFECTS

- Tends to happen at higher doses, (although not always)

- Racing heartbeat (even at lower doses) is common and tends to subside for most users within first 30 minutes (*more common with inhalation*)

- Vomiting, falls
- Anxiety
- Psychosis
- Sweating during use or withdrawal

DOSAGES

Average cannabis-naive patient:

- **Oral:** ***starting dose***: **5mg**
  - ***Sensitive*** to meds: **2.5mg**
  - ***Daily*** cannabis user: **10mg**
  - Concentrate user or people with a **high tolerance**: **20mg**

- **Inhaled:** starting dose ONE X **2-3 second puff** / second dose after 10 minutes if needed

- **Sublingual:** **2-3mg** is ideal (MAX of 5mg)

CBD

Cannabidiol

ABOUT

- **Potent anti-inflammatory**
- Free radical scavenger - Studied for CTE (Chronic traumatic encephalopathy)
- Available everywhere! Only get from a high-quality source only - no gas stations
- Products mix CBD with other herbs and marketed for sleep or daytime use
- Great entry point for most patients to begin medicating with cannabis

ABOUT

- People got to know with Charlotte's Web
- Weak affinity for both CB1 and CB2 receptors - may even play a role in 5HT1a receptor for depression
- Bind on areas around the receptor
- Studies show CBD may work on 5HT1a receptor for nausea (not seen in practice)
- Studies show may aid in nausea, although side effects can be appetite suppression and stomach upset so not effective in practice

EFFECTS

Anti-inflammatory

Neuroprotectant

Anti-oxidant

Free radical scavenger

- protect against chemotherapy induced nerve damage

Mild relaxation

Treat mild to moderate pain

Topical applications

- psoriasis
- epidermolysis bullosa
- pain

USES

Inflammation

Insomnia

Psoriasis

Parkinson’s

Nerve Pain

Anxiolytic

Pain

Anti-epileptic (16:1 to 20:1 CBD: THC)

Depression (increases biomarker)

Migraine prevention and treatment

PTSD

Great potential to replace chronic dosing of ibuprofen, naproxen and steroids

SIDE EFFECTS

- Stomach upset or cramping
- Decreased appetite
- Headaches
- Sedation at higher doses
- Check **Epidiolex (GW Pharm)**

DOSAGES

10mg every 8 hours (increase frequency to Q6h or decrease to Q12h if needed)

Increase every 3 to 5 days by around 10mg per dose to allow anti-inflammatory action

Sweet spot 25mg to 50mg Q8 to Q12H

CBN

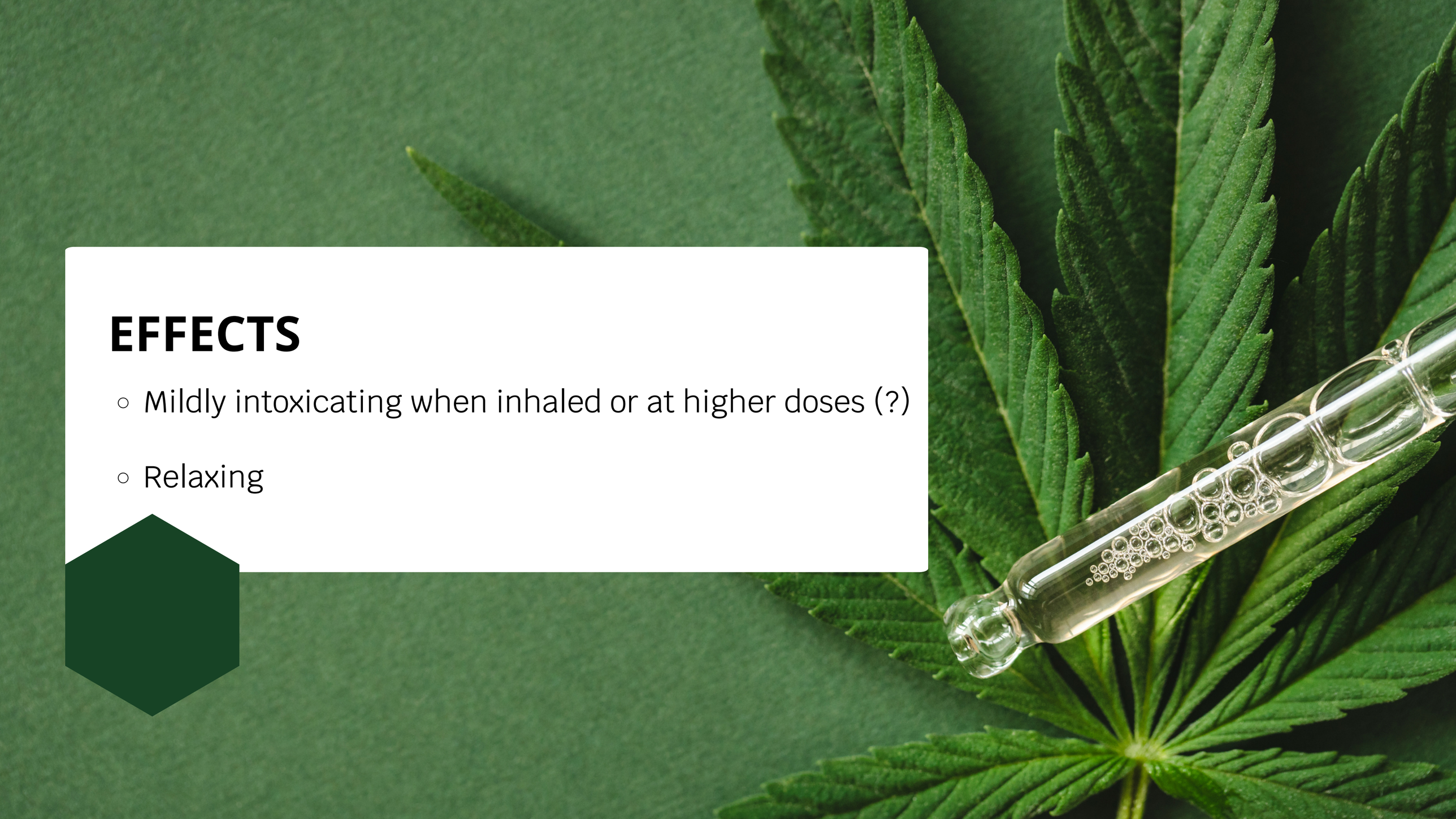
cannabinol

ABOUT

- Formed when THC degrades during the aging process
- Relaxing; may be mildly intoxicating
    - Inhalation may produce more intoxication than edibles
- Use for **anxiety, insomnia or nausea**
- **Sleep aid:** combine indica THC with CBN
- Anti-epileptic

EFFECTS

- Mildly intoxicating when inhaled or at higher doses (?)
- Relaxing



USES

- Anxiety
- Insomnia (combine with other cannabinoids or herbs such as Valerian root, Kava Kava)
- Nausea
- Pain
- Nerve pain
- Anti-epileptic
- Migraine treatment or prevention
- ADHD
- Autism
- Stimulate appetite
- MRSA infections

SIDE EFFECTS

- Intoxicating (?) at very high doses or **when inhaled**
- Drowsiness
- Sedation

CBG

cannabigerol

ABOUT

- Known as the “Mother” cannabinoid

- Found in concentrations less than 1% in most strains
  - growers are working to increase amounts
  - flower and vapes found in "smoke shops" today

- Abundant in low-THC, high-CBD strains

- CBG reacts with CB1 receptors in the brain. It buffers the psychoactivity of THC to alleviate the paranoia caused by higher doses of THC

ENTOURAGE EFFECT

ABOUT

- Great potential as **neuroprotectant** and as an anti-inflammatory molecule

- CBG may have therapeutic potential in treating neurological disorders (e.g., Huntington disease, Parkinson disease, and multiple sclerosis) and inflammatory bowel disease, as well as having antibacterial activity

EFFECTS: CBG

- Agonist at α-2 adronergic receptor (clonidine and guanfacine) therefore may cause changes in blood pressure or induce sedation

- Antagonist at 5-hydroxytryptamine (5-HT1a) receptor (CBD is indirect agonist) therefore it may work to enhance the effects of other different classes of serotonergic antidepressants

- CBG and CBD have neuroprotective effects against oxidative neurotoxicity through a 5-HT1a receptor–mediated mechanism

EFFECTS

- Dampen sympathetic nervous system activity
- Potent anti-inflammatory
- Reduces THC high
- Neuroprotectant
- Slows the proliferation of cancer cells
- Decreases eye pressure

USES

- GI inflammation (Crohn’s, UC, IBS)
- Neurological disorders (Huntington’s disease, MS, Parkinson’s disease)
- Pain
- Nausea
- Slows the proliferation cancer cells
- Study in rats shows increases appetite in HIV patients

USES

- Parkinson’s
- Dementia
- Glaucoma
- Antibacterial (most potent cannabinoid against MRSA)
- Metabolic syndrome

SIDE EFFECTS

- Diarrhea (high dose)
- Appetite stimulant
- Sedation

DOSAGES

- 5mg to start (low dose inhalation b/c sedative effects)
- Average dose 25mg
- Higher dosages may lead to stomach upset (like CBD)

Δ-8-THC

Δ-8-tetrahydrocannabinol

ABOUT

- Δ-8 tetrahydrocannabinol, also known as Δ-8 THC or D8
- Not found in significant amounts in the plant
- Manufactured in a lab from CBD waste
- Mild psychoactive effects
- OTC products can contain harmful additives or by-products

EFFECTS

- Sedating
- Relaxing
- Calming on the stomach
- Mild psychoactive feeling (dose-related?)
- Similar effects to THC without the strong psychotropic side effects
- Largest study to date reported “results suggest that Δ-8-THC may be equally effective for desired purposes of cannabis use and lower in undesirable or adverse effects.”
- **Needs to be better regulated**

USES

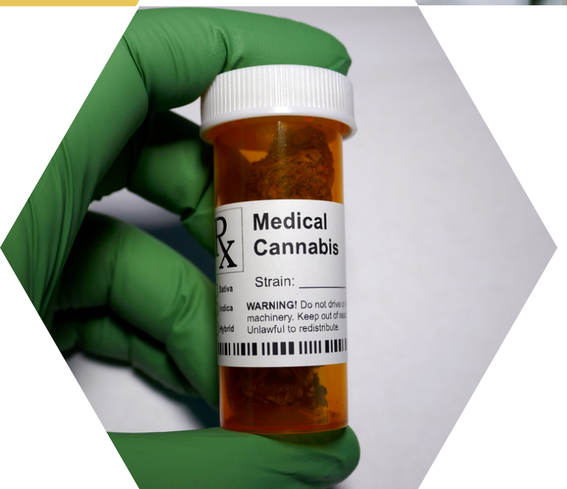
- Anxiety
- Nausea
- Pain
- Stimulate appetite
- Nerve Pain
- Insomnia

SIDE EFFECTS

- Hallucinations
- Vomiting
- Tremor
- Anxiety
- Dizziness
- Confusion
- Loss of consciousness

DOSAGES

- OTC inhaled products may include other ingredients or cannabinoids
- Inhaled products should be started at 1 puff
- 2.5mg to 5mg every 4 to 6 hours



Drug Interactions

Stay on top of emerging drug nteractions

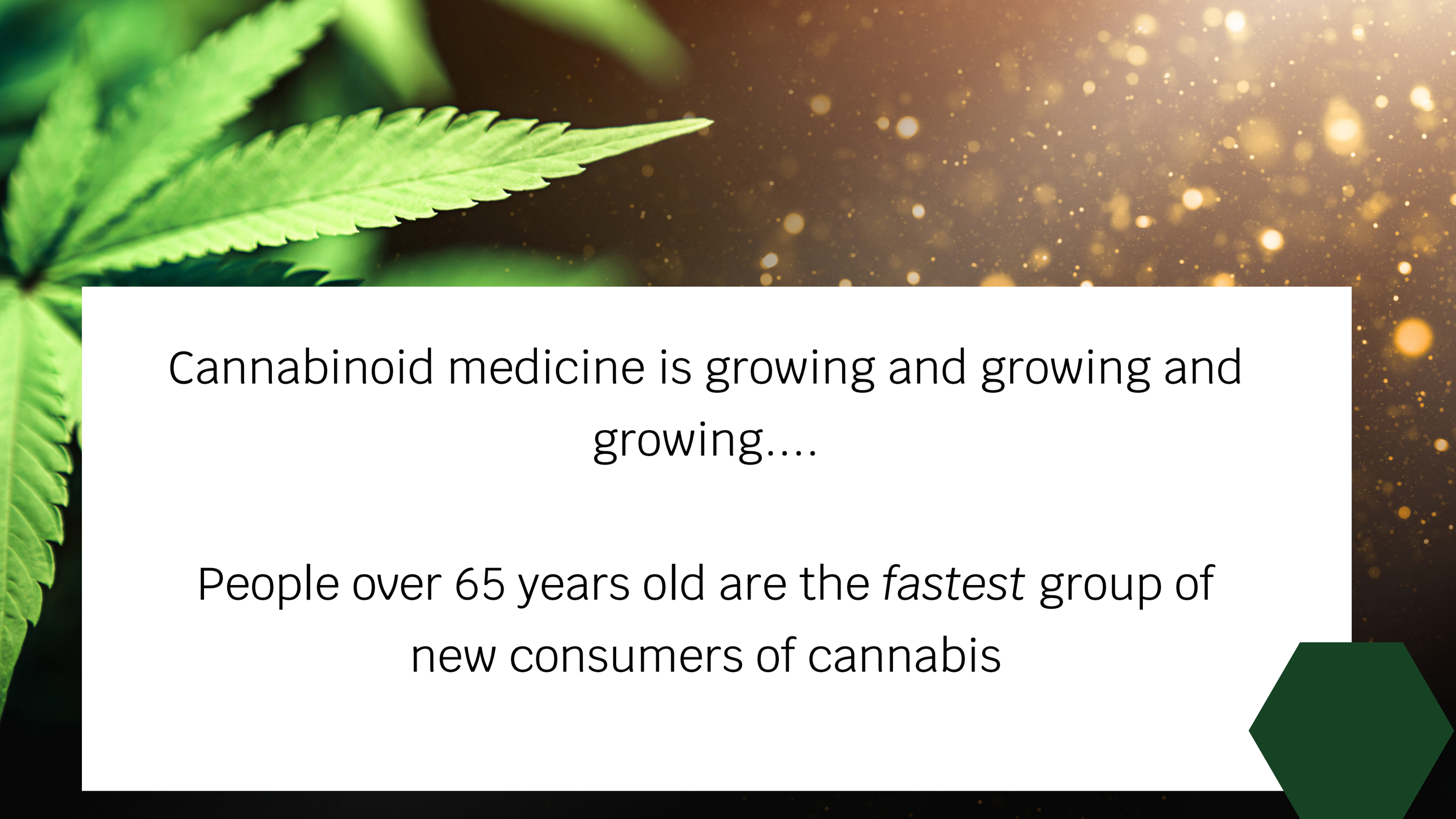
FREE App **Epocrates**:

Epidiolex (GW Pharmaceuticals):
plant-based pharmaceutical **CBD** solution

Dronabinol:
synthetic **THC**

The Realm of Caring

RealmofCaring.org



Cannabinoid medicine is growing and growing and growing....

People over 65 years old are the *fastest* group of new consumers of cannabis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Thank you!