

Cannabis and gastrointestinal health: What is the evidence?

Galaxie Story, PhD, RD



Disclosures

- I have no actual or potential conflict of interest in relation to this presentation
- The opinions expressed in this presentation are my own and do not necessarily reflect the views of my employer or any affiliated organizations

Outline

- Cannabis 101
- Endocannabinoid system
- Cannabis and the gastrointestinal system
 - IBS
 - IBD
 - Nausea and Vomiting
 - Hyperemesis syndrome
- Wrap up
 - RD's role



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History of cannabis terminology – ever evolving

- Marijuana (marihuana) was used to describe cannabis in Mexico dating back to the 1800s
- Some believe the term was used to “stoke anti-Mexican sentiment” in the US
- Names and references have evolved generation to generation

weed (weed)

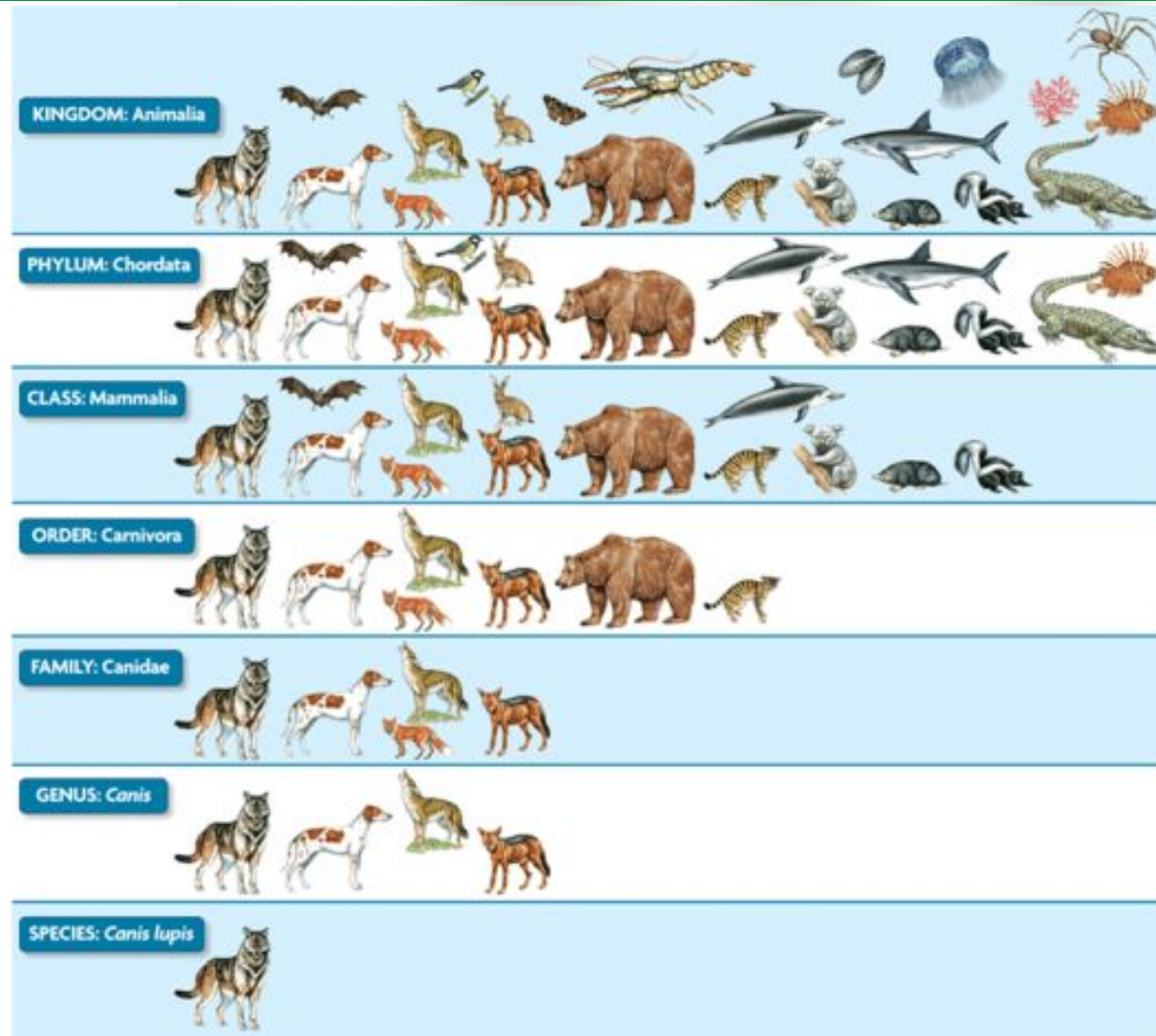
marijuana (mar-uh-wah-nuh)

pot (pot)

chronic (kron-ik)

cannabis (kan-uh-bis)

How do we name living things? Taxonomy!



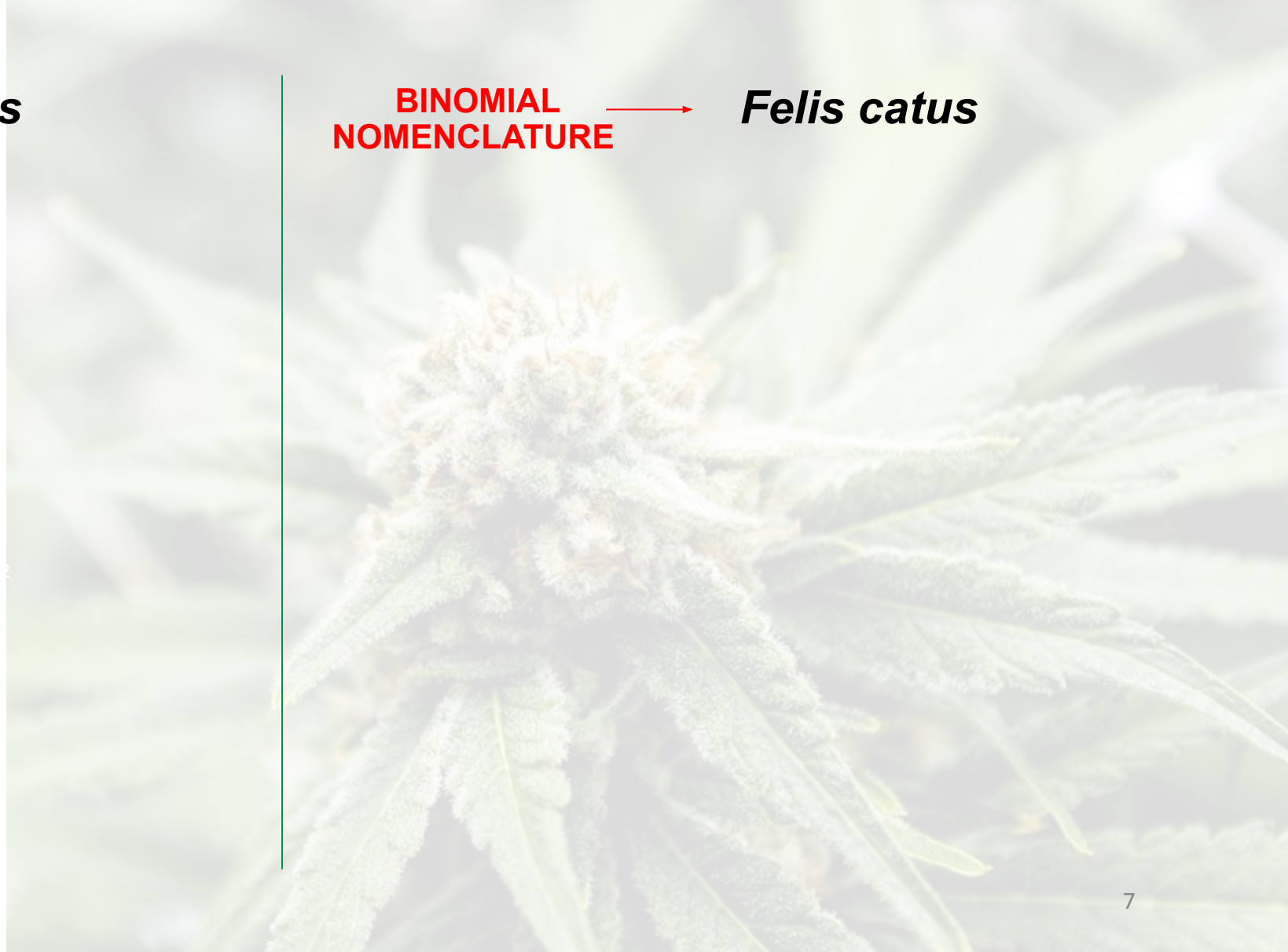
BINOMIAL →
NOMENCLATURE

Image: landscapesandletters.com

How do we name living things? Taxonomy!

**BINOMIAL
NOMENCLATURE** → ***Canis familiaris***

**BINOMIAL
NOMENCLATURE** → ***Felis catus***



Charm and Mamas are different types of cats, but they are both cats

COMMON NAME →

Dog



Marlon is at the Dakin Humane Society



Chance is at the Dakin Humane Society

COMMON NAME →

Cat



Charm is at the Dakin Humane Society



Mamas is at the Dakin Humane Society

What is the difference between cannabis, marijuana, and hemp?

BINOMIAL NOMENCLATURE



Cannabis sativa



What is the difference between cannabis, marijuana, and hemp?

BINOMIAL NOMENCLATURE

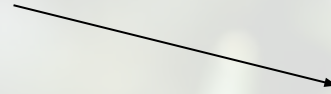


Cannabis sativa



Marijuana

- Variety of cannabis that are bred for high levels of THC
- Two subspecies often referred to:
 - Sativa
 - Indica
- Moving towards classifying by “chemovars”



Hemp

- Variety of cannabis that is cultivated for more industrial purposes
- Have less than 0.3% THC

“Cannabis” is a catch all term

COMMON NAME → **Cannabis**

Marijuana

- Variety of cannabis that are bred for high levels of THC
- Two subspecies often referred to:
 - Sativa
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Hemp

- Variety of cannabis that is cultivated for more industrial purposes
- Have less than 0.3% THC

Historical use of cannabis dates back 5,000 years

- Cannabis has been used for over 5,000 years
- Evidence of its use medicinally around 400 AD
- Used medicinally in the US starting in the 19th century – first described in 1850
- Prohibition under the Controlled Substances Act of 1970

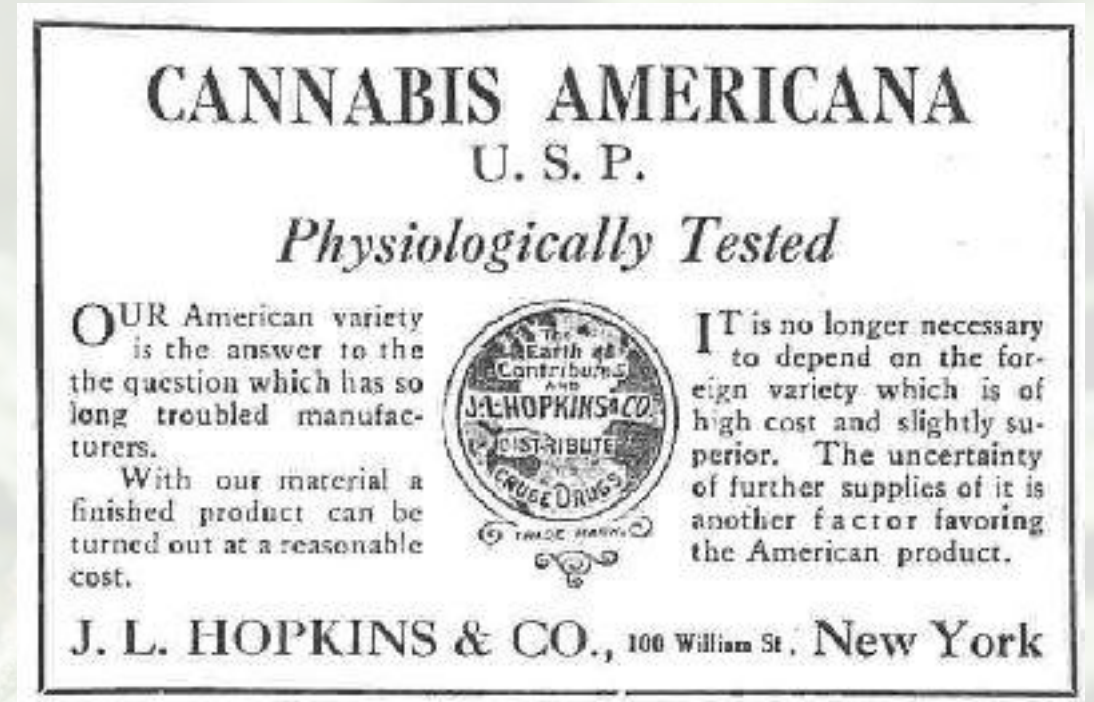
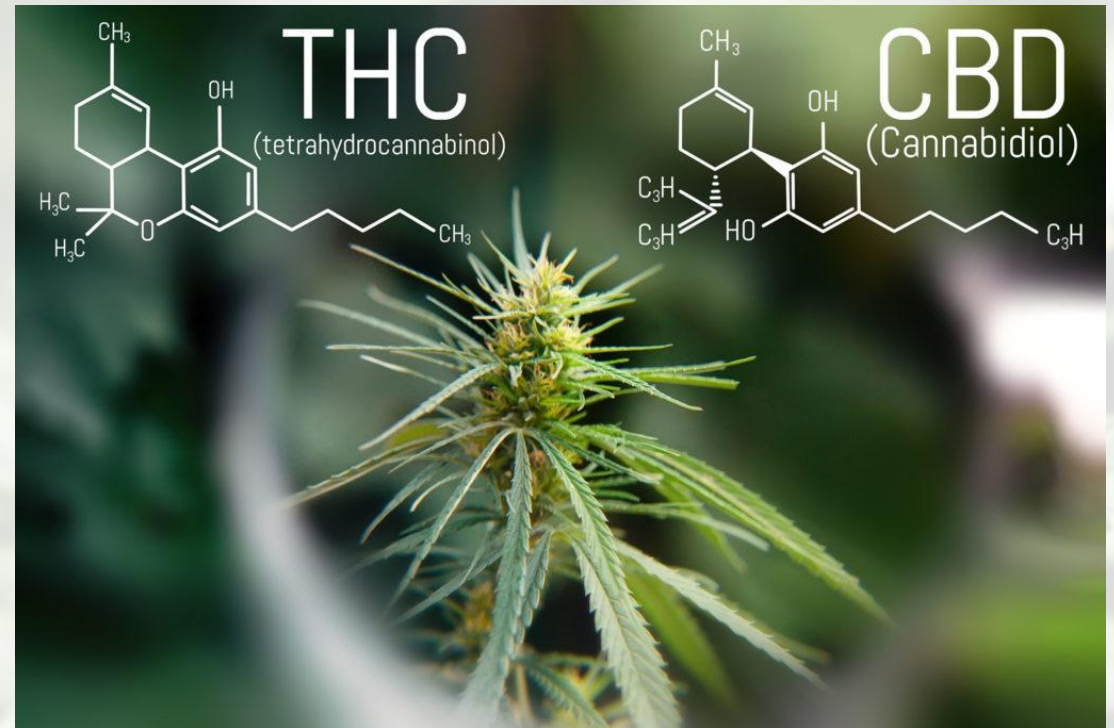


Image: Wikipedia

The legal status is hotly debated because of THC

- delta9-tetrahydrocannabinol (THC) is the active compound in cannabis that is intoxicating
- THC is a **cannabinoid**

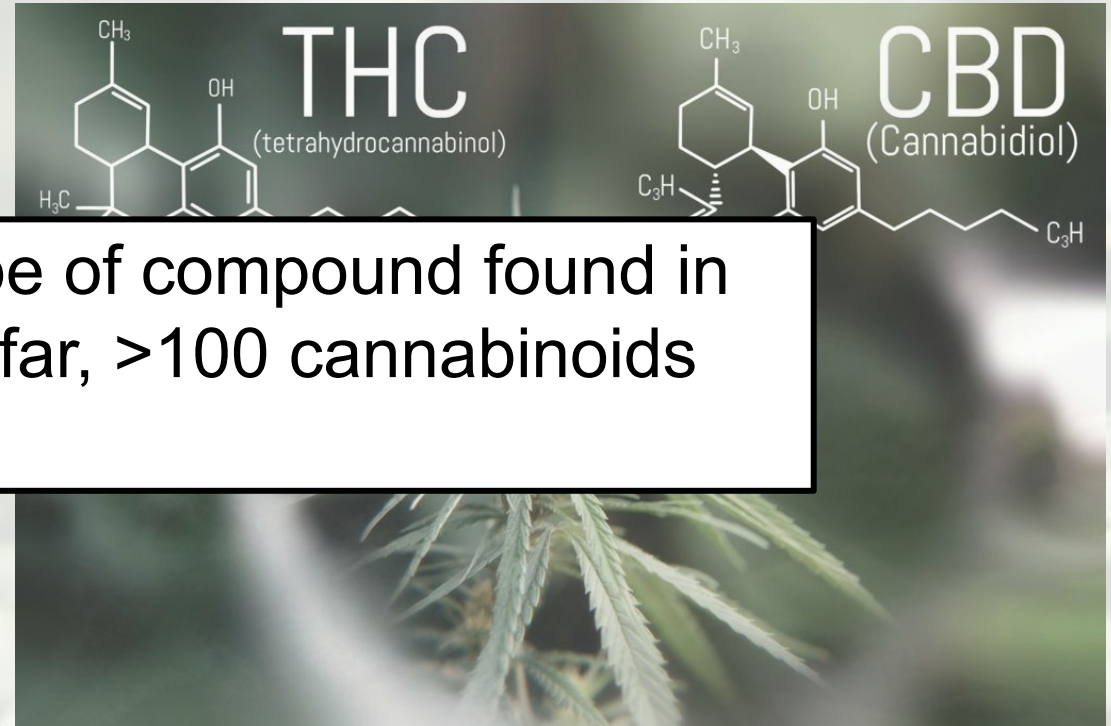


The legal status is hotly debated because of THC

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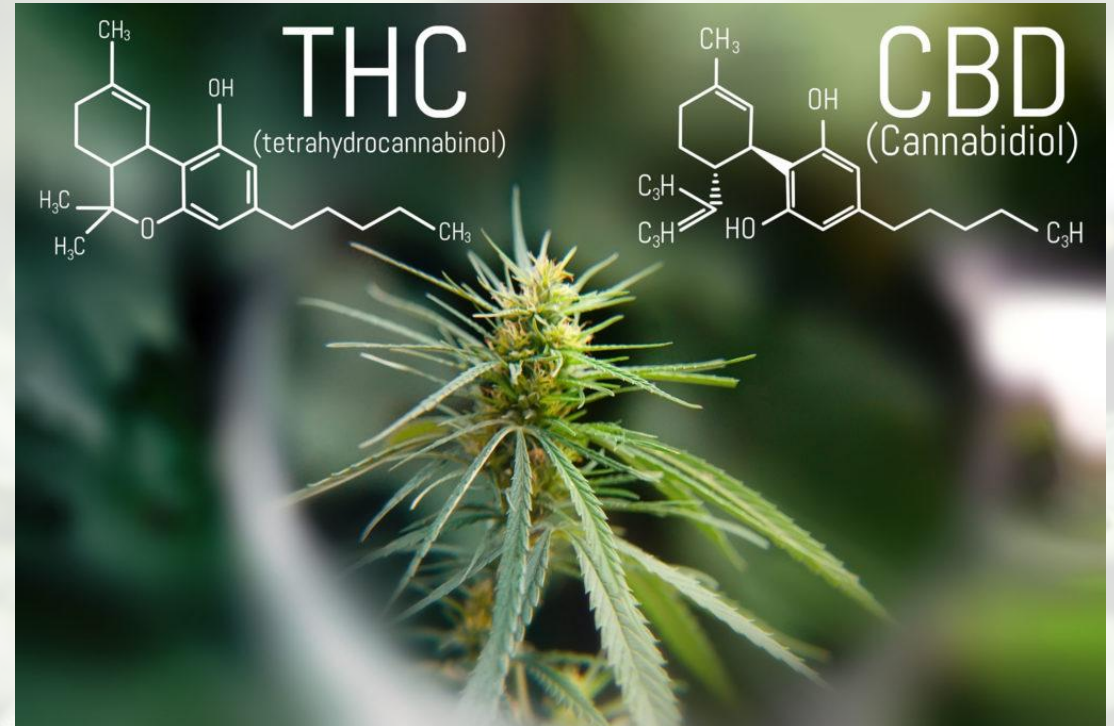
- THC is a ca

Cannabinoids are a type of compound found in the cannabis plant. So far, >100 cannabinoids have been identified.



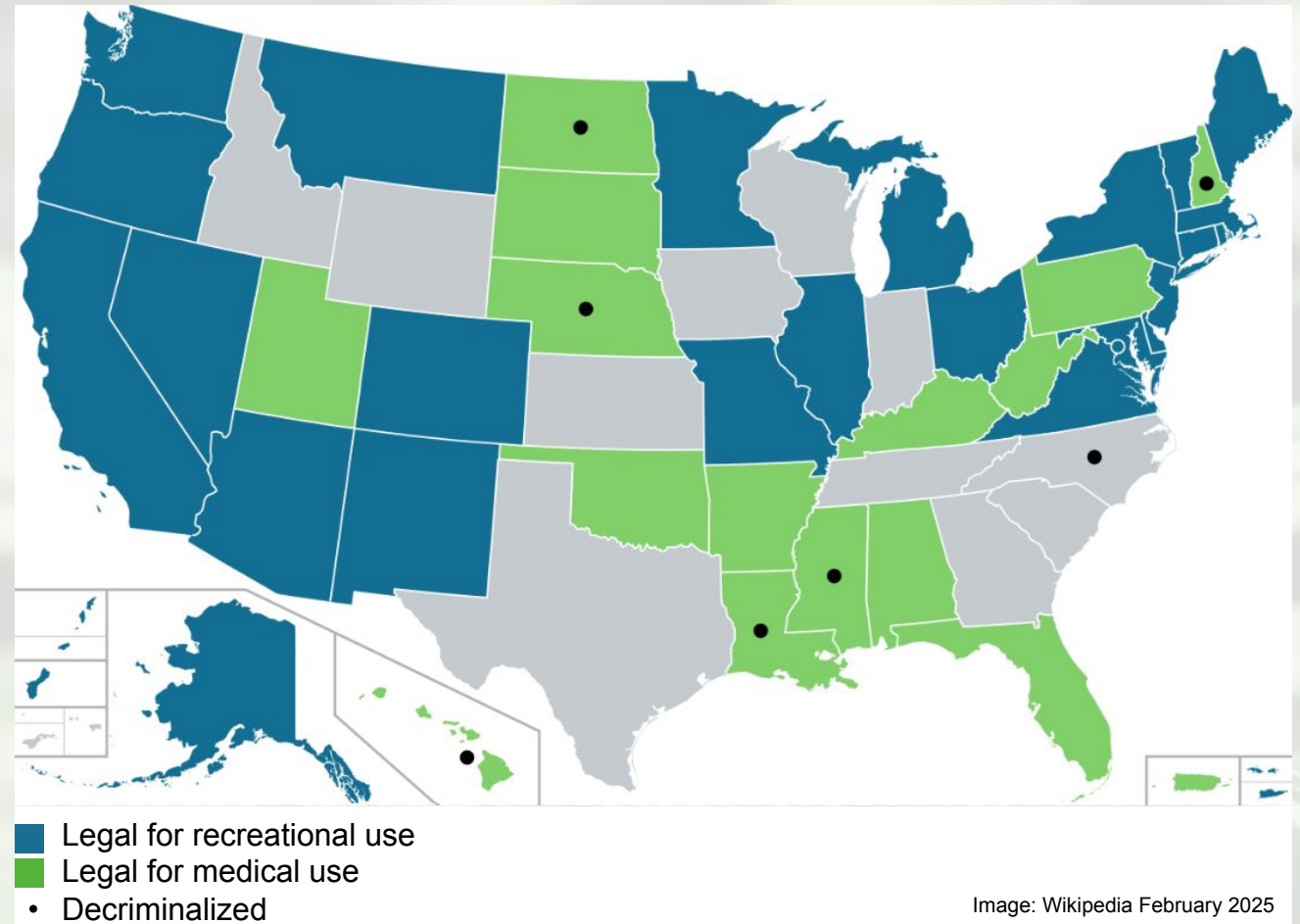
The legal status is hotly debated because of effects of THC

- delta9-tetrahydrocannabinol (THC) is the active compound in cannabis that is intoxicating
- THC is a cannabinoid
- If cannabis has >0.3% THC, is it classified as a Schedule I substance under the Controlled Substances Act



Legal status varies throughout the United States

- Recreational adult use cannabis is legal in 24 States
- Medical cannabis is legal in 39 states



Not all cannabinoids are intoxicating

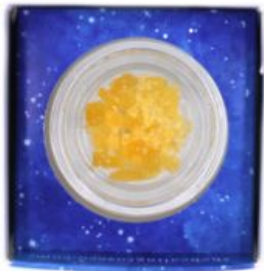
- Cannabidiol (CBD) and minor cannabinoids like CBG and CBN are not intoxicating
- Will not induce a “high” feeling
- Products are widely available with little regulation
- Intoxicating vs. Psychoactive
 - Language matters



Image: Whatley Long Plain Farm – Hemp Field (Douglas Hook / MassLive)

Non-intoxicating cannabinoid supplements can be further classified

- Compounds differ based on processing
 - Full spectrum
 - Broad spectrum
 - Isolate



Broad Spectrum CBD
CO2 Distillate

Image: Healing Rose



CBN Isolate - 1g | 99.6%
CBN



Full Spectrum CBD
CO2 Distillate

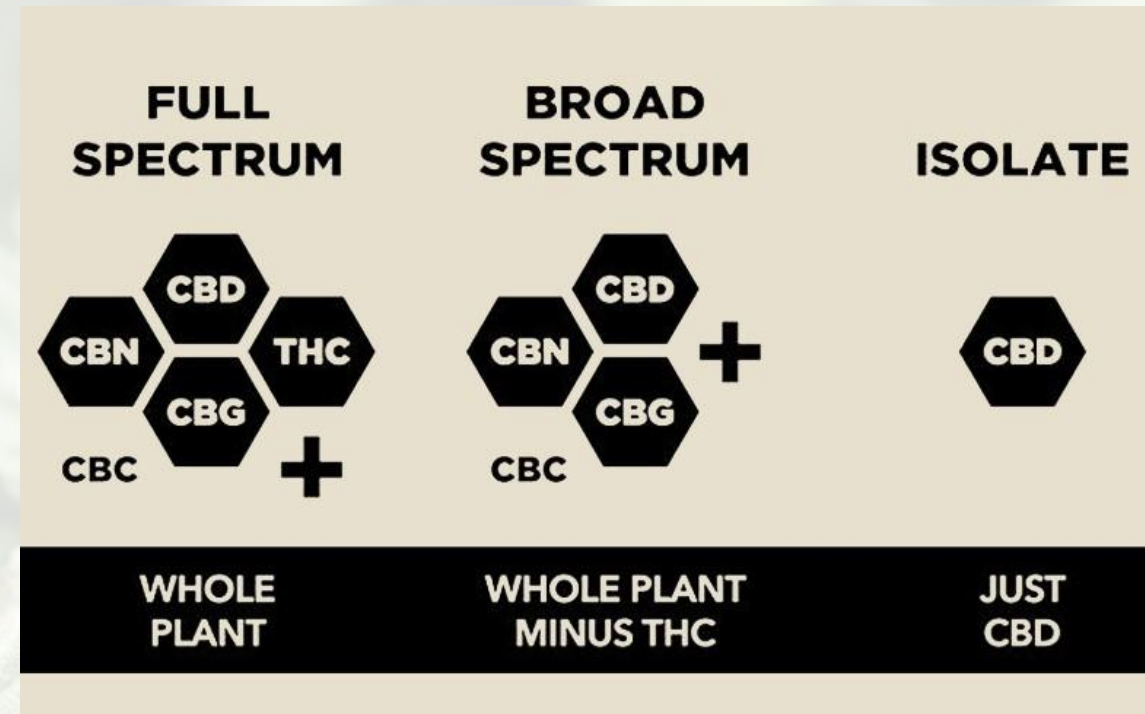


Image: mariejeanne-cbd.com

Cannabinoid supplements are widely available

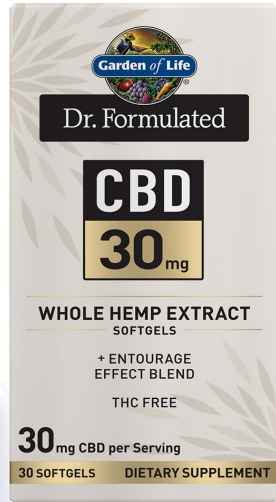


Image: Flawless CBD shop

Image: Extract Labs

Categories

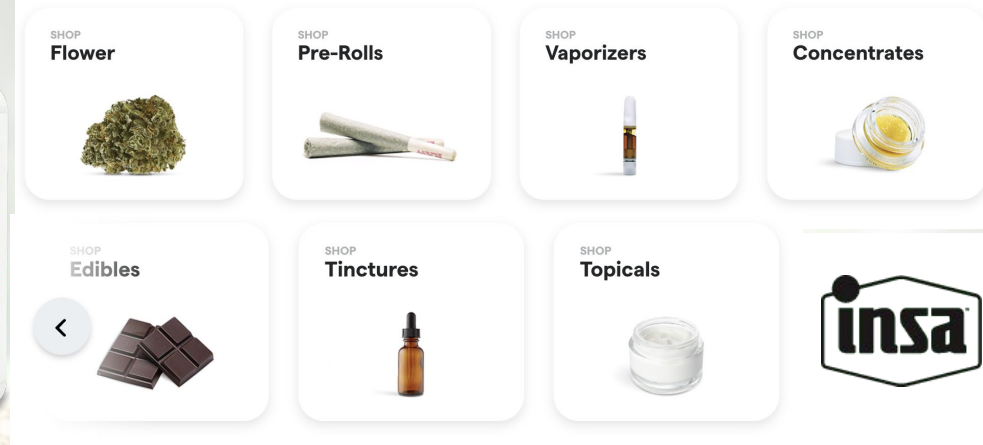


Image: Healing Rose

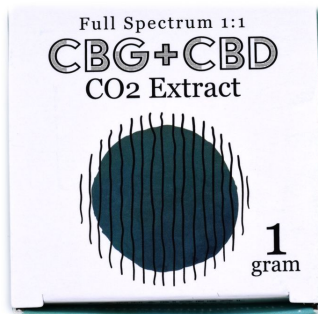


Image: Healing Rose

All Edibles

- Chocolates
- Gummies
- Drinks
- Capsules / Tablets
- Chews
- Hard Candy
- Lozenges

Image: NETA



Image: Upstate Elevator



Hemp seeds do NOT contain cannabinoids



Image: Target.com



Image: Instacart.com



Image: Target.com



Image: Target.com

The cannabis market is rapidly expanding

- Cannabis is the most commonly used illegal drug in the US
- ~18% of Americans have used it at least once as of 2019 (CDC)

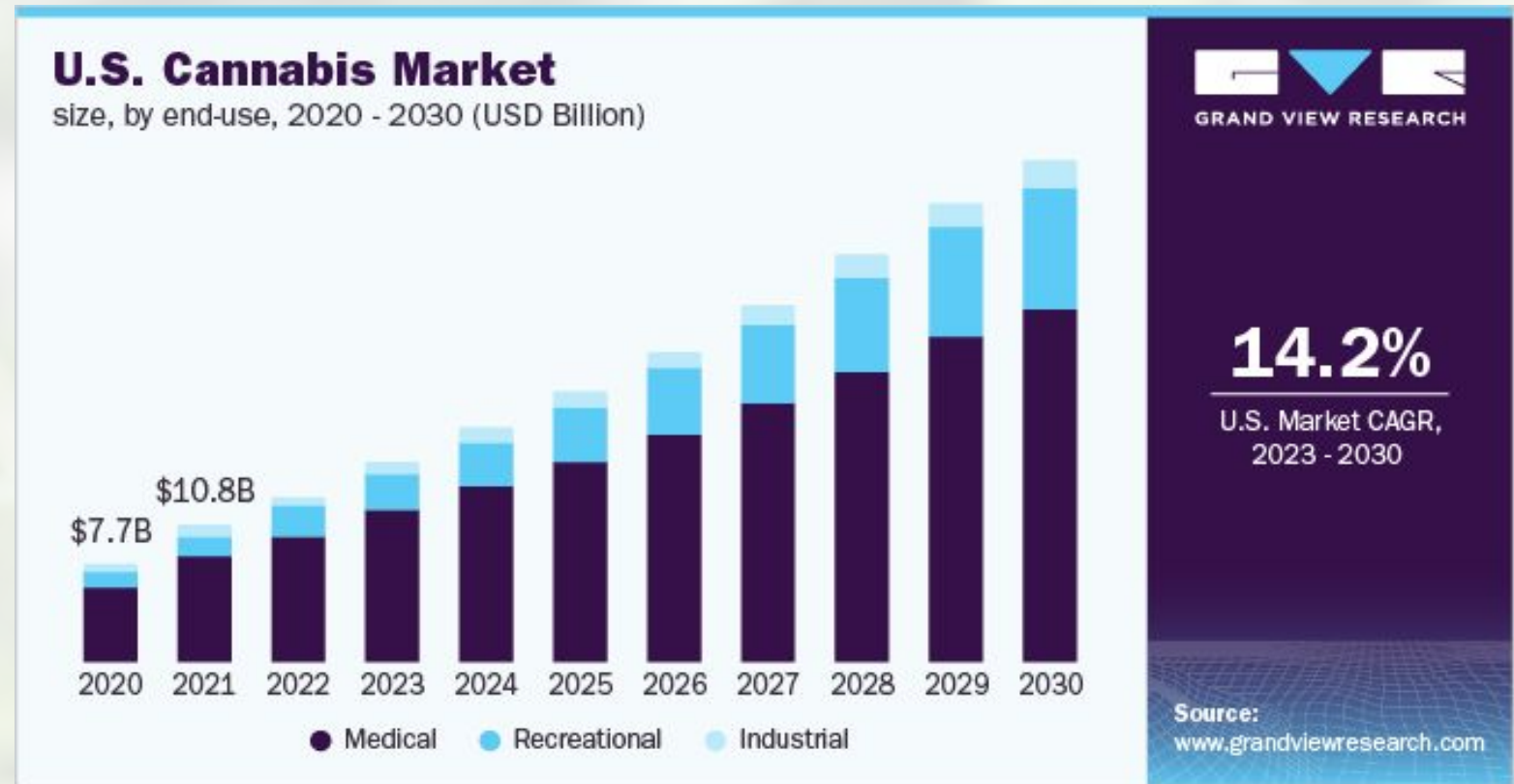
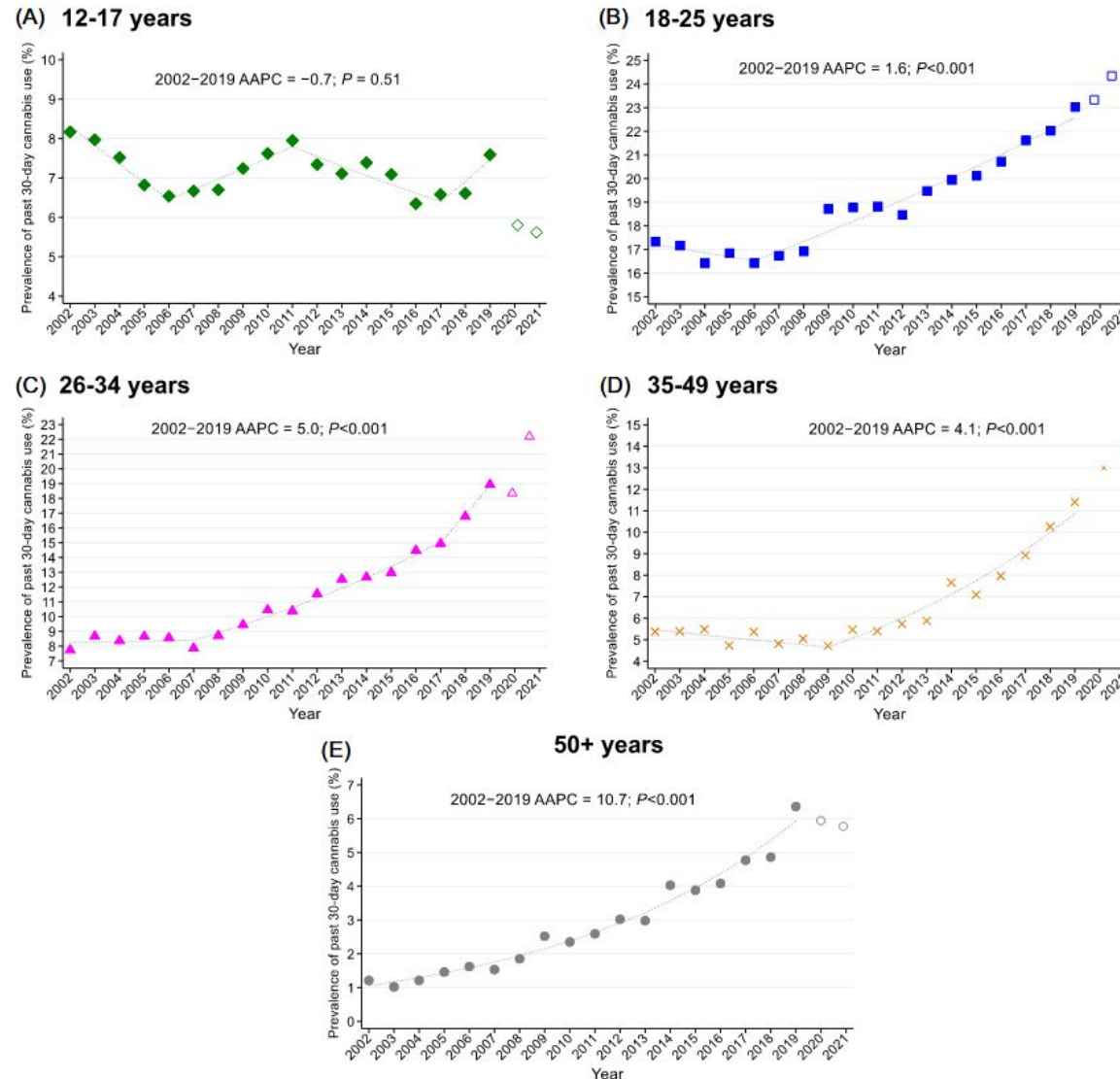


Image: Grand View Research

TRUE or FALSE?

Cannabis use is only increasing across younger age groups (<50 years old).

False! Cannabis use is increasing across all age groups aside from 12-17 years



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What is the endocannabinoid system?

- Chemicals and receptors found throughout the body
- Two primary **endocannabinoid** receptors have been identified... SO FAR
 - CB1
 - CB2
- The receptors interact with endocannabinoids
 - Anandamide (AEA)
 - 2-Arachidonoylglycerol (2-AG)
- Phytocannabinoids (like CBD and THC) can interact with receptors

Where is the endocannabinoid system? Everywhere!

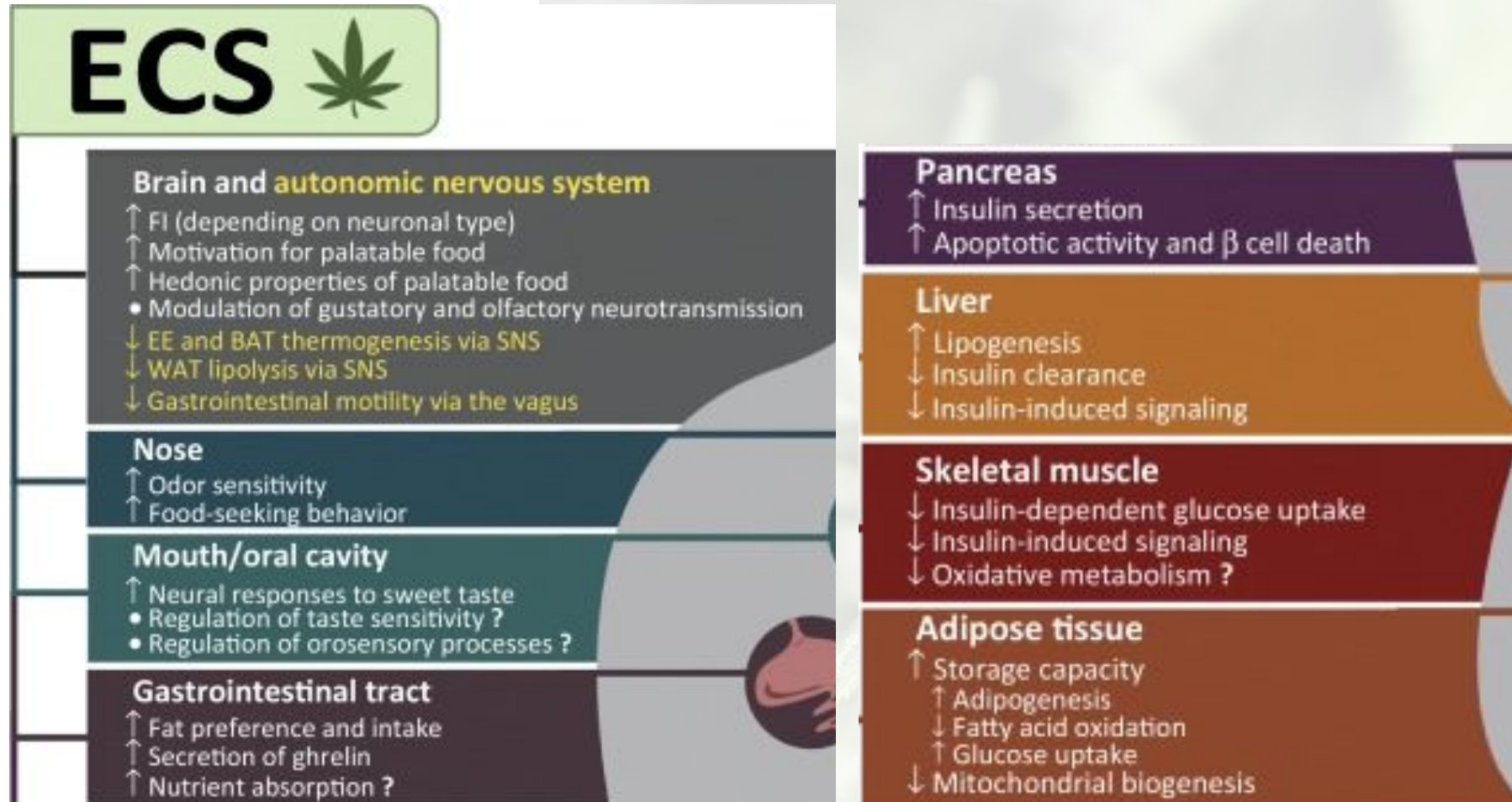


Figure Adapted From: Mazier et al., Trends in Endocrinology & Metabolism, 2015

The endocannabinoid and gastrointestinal function

- CB receptors are found on immune and neural cells in the GI tract
- Influence intestinal contractions
- Implicated in visceral pain
- Inflammatory response

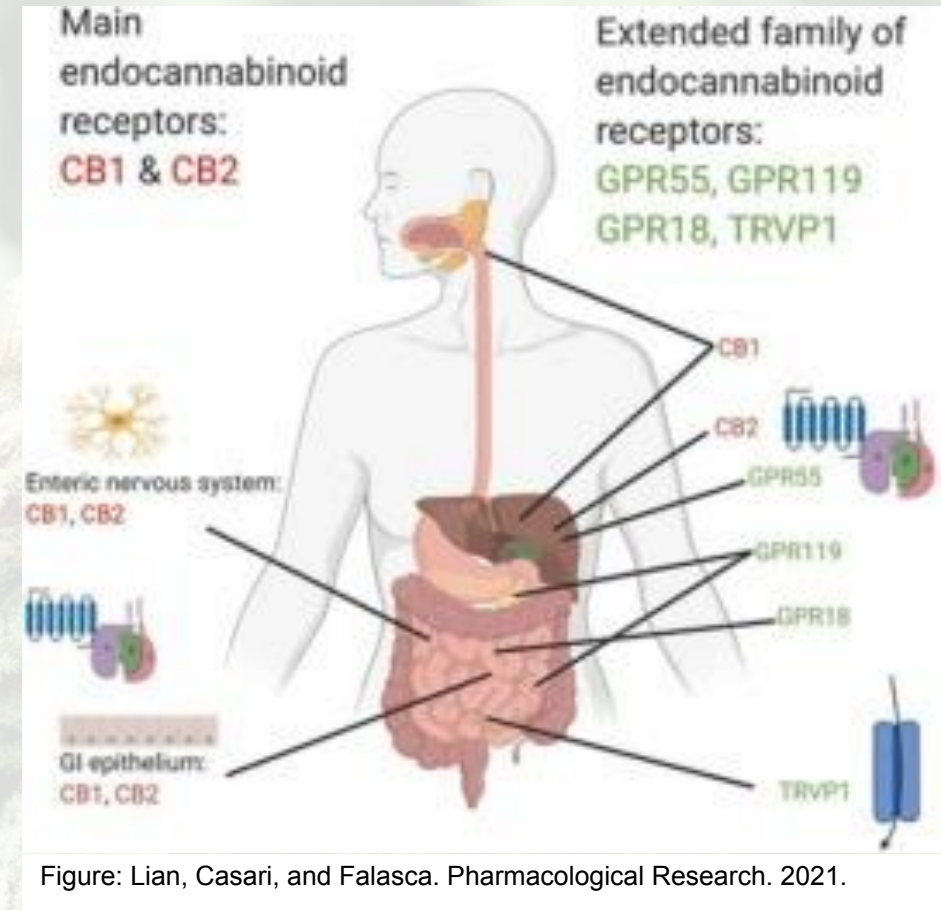


Figure: Lian, Casari, and Falasca. Pharmacological Research. 2021.

The endocannabinoid system has been implicated in and gastrointestinal diseases and dysfunction

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nature > nature reviews gastroenterology & hepatology > review articles > article

Review Article | Published: 27 September 2022

Targeting the endocannabinoid system for the treatment of abdominal pain in irritable bowel syndrome

Stuart M. Brierley, Beverley Greenwood-Van Meerveld, Giovanni Sarnelli, Keith A. Sharkey , Martin

Storr & Jan Tack

Nature Reviews G

1680 Accesses



Gastroenterology
Volume 151, Issue 2, August 2016, Pages 252-266



Reviews and Perspectives
Reviews in Basic and Clinical Gastroenterology and Hepatology

The Role of the Endocannabinoid System in the Brain–Gut Axis

Keith A. Sharkey¹  , John W. Wiley²

- ¹ Hotchkiss Brain Institute and Snyder Institute of Chronic Diseases, Department of Physiology and Pharmacology, University of Calgary, Calgary, Alberta, Canada
- ² Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan

Received 28 January 2016, Accepted 11 April 2016, Available online 29 April 2016, Version of Record 22 July 2016.







Ernst J. Kuipers and Vincent W. Yang, Section Editors

frontiers | Frontiers in Immunology | Sections ▾ | Articles | Research Topics | Editorial Board

SYSTEMATIC REVIEW article

Front. Immunol., 22 December 2021
Sec. Autoimmune and Autoinflammatory Disorders
Volume 12 - 2021 | <https://doi.org/10.3389/fimmu.2021.790803>

Endocannabinoid System as a Promising Therapeutic Target in Inflammatory Bowel Disease – A Systematic Review

 Szymon Hryhorowicz^{1*},  Marta Kaczmarek-Ryś¹,  Aleksandra Zielińska¹,  Rodney J. Scott^{2,3},  Ryszard Słomski¹ and  Andrzej Pławski¹

Open Access Review

Cannabinoids and Endocannabinoid System Changes in Intestinal Inflammation and Colorectal Cancer

by  Viktoriia Cherkasova ,  Olga Kovalchuk  and  Igor Kovalchuk 

Department of Biological Sciences, University of Lethbridge, Lethbridge, AB T1K 7X8, Canada
* Authors to whom correspondence should be addressed.

Cancers 2021, 13(17), 4353; <https://doi.org/10.3390/cancers13174353>

Received: 11 August 2021 / Accepted: 25 August 2021 / Published: 28 August 2021

(This article belongs to the Special Issue **New Insights into Colorectal Cancer**)

Download

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Versions Notes

The endocannabinoid system has been implicated in and gastrointestinal diseases and dysfunction

Targeting the endocannabinoid system for the treatment of abdominal pain syndrome

Stuart M. Brierley, Beverley Green

Storr & Jan Tack

Nature Reviews Gastroenterology & Hepatology

1680 Accesses | 5 Citations



Reviews and Perspectives

Reviews in Basic and Clinical Research

The Role of the Endocannabinoid System in the Brain-Gut Axis

Keith A. Sharkey

¹ Hotchkiss

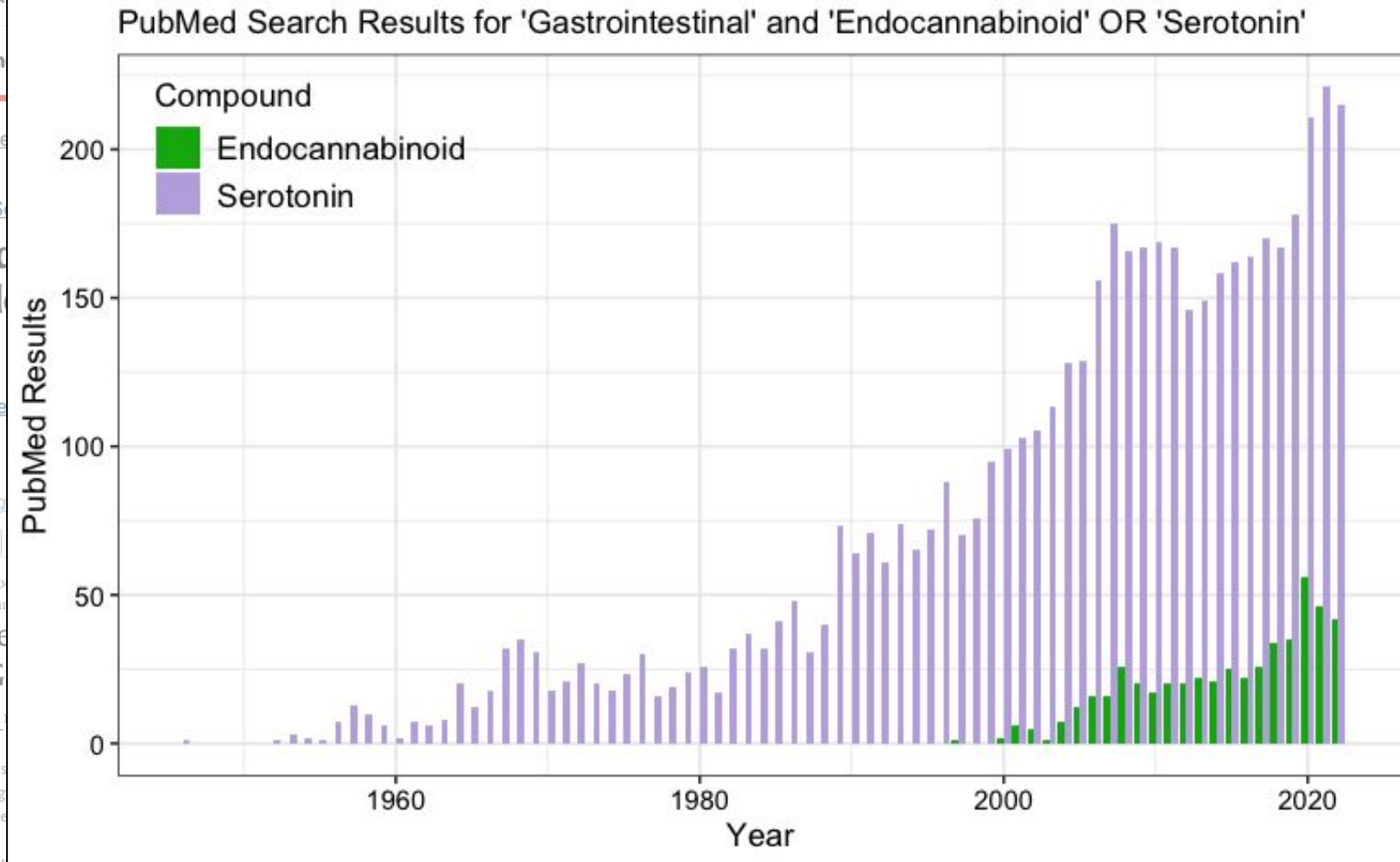
Physiology

² Department

Received 28 January 2016

22 July 2016.

Ernst J. Kuipers and Vincent W. Yang, Section Editors



... as a Promising Inflammatory Bowel Disease

Aleksandra Zielińska¹, Rodney J. Scott

... and ... The University of Newcastle and Hunter Medical Research ... Australia

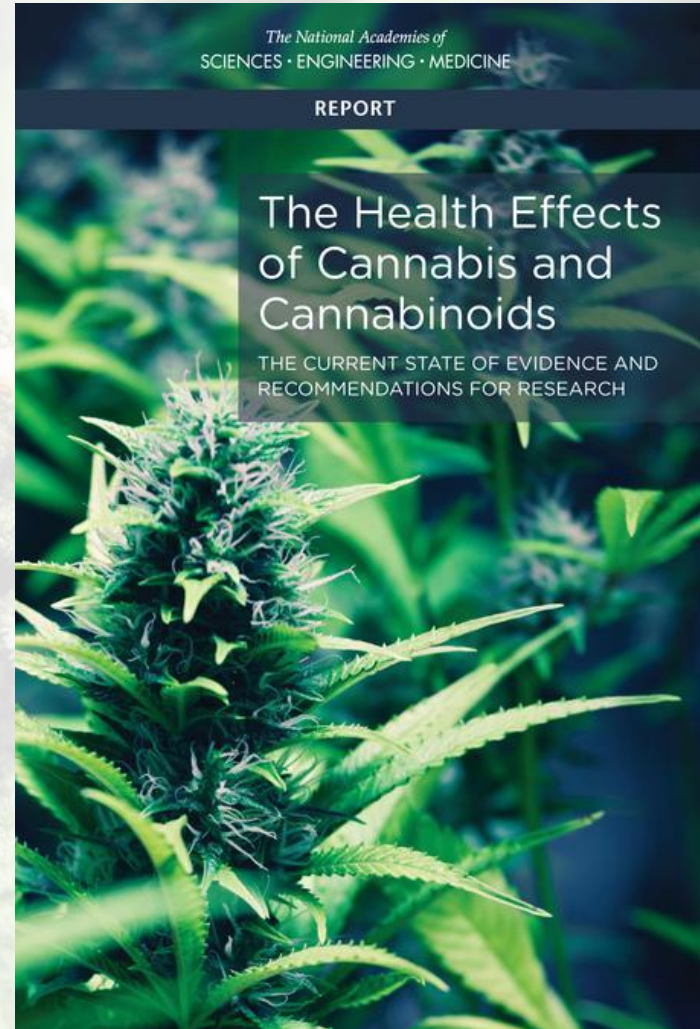
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Evidence for cannabis and cannabinoids therapeutics overall

- “...substantial evidence (ranging in modest to moderate effect) for benefit from cannabis or cannabinoids for **chronic pain, chemotherapy-induced nausea and vomiting, and patient reported symptoms of spasticity associated with multiple sclerosis.**” National Academies
- FDA approval of Epidiolex (cannabidiol) in 2018 to treat rare forms of **epilepsy**



ClinicalTrials.gov is a good place to start when scoping out what kind of human-subject research is being conducted

NIH U.S. National Library of Medicine
ClinicalTrials.gov
[Find Studies](#) [About Studies](#) [Submit Studies](#) [Resources](#) [About Site](#) [PRS Login](#)

[Home](#) > Search Results

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18 Studies found for: **Cannabis | IBD**
 Also searched for **Inflammatory bowel disease, Irritable bowel, and Marihuana.** [See Search Details](#)

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Showing: 1-10 of 18 studies studies per page Show/Hide Columns

Row	Saved	Status	Study Title	Conditions	Interventions	Locations
1	<input type="checkbox"/>	Recruiting	Inflammatory Bowel Diseases (IBD) Cannabis Registry	<ul style="list-style-type: none"> Crohn Disease Ulcerative Colitis Pouchitis Healthy 	<ul style="list-style-type: none"> Drug: Medical Cannabis 	<ul style="list-style-type: none"> Dep. of Gastroenterology, Tel Aviv Sourasky Medical Center Tel Aviv, Israel
2	<input type="checkbox"/>	Withdrawn	GI Medical Cannabis Study on IBD	<ul style="list-style-type: none"> Inflammatory Bowel Diseases Neuropathic Pain 	<ul style="list-style-type: none"> Other: Medical Marijuana 	
3	<input type="checkbox"/>	Unknown †	Cannabis for Inflammatory Bowel Disease	<ul style="list-style-type: none"> Crohn's Disease 	<ul style="list-style-type: none"> Drug: smoking of 	<ul style="list-style-type: none"> Meir hospital

Filters

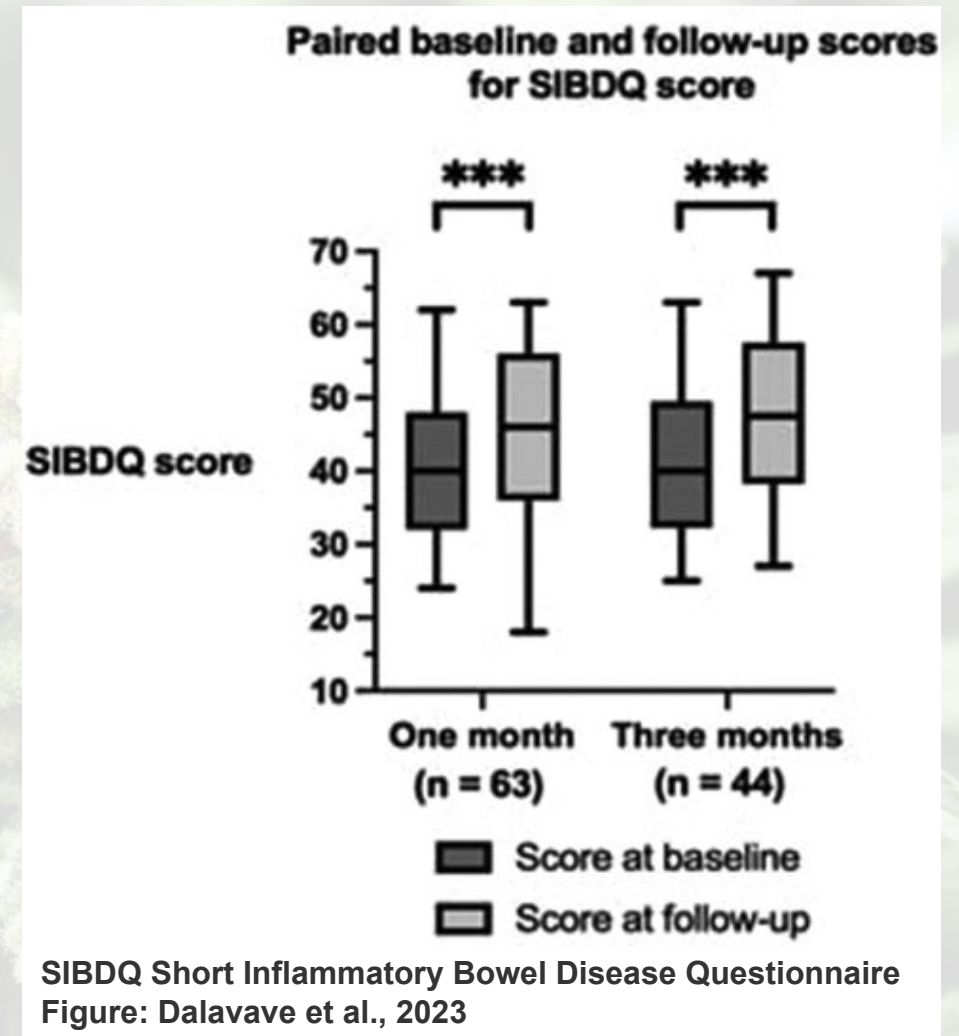
Status

Recruitment ⓘ :

- Not yet recruiting
- Recruiting
- Enrolling by invitation
- Active, not recruiting
- Suspended

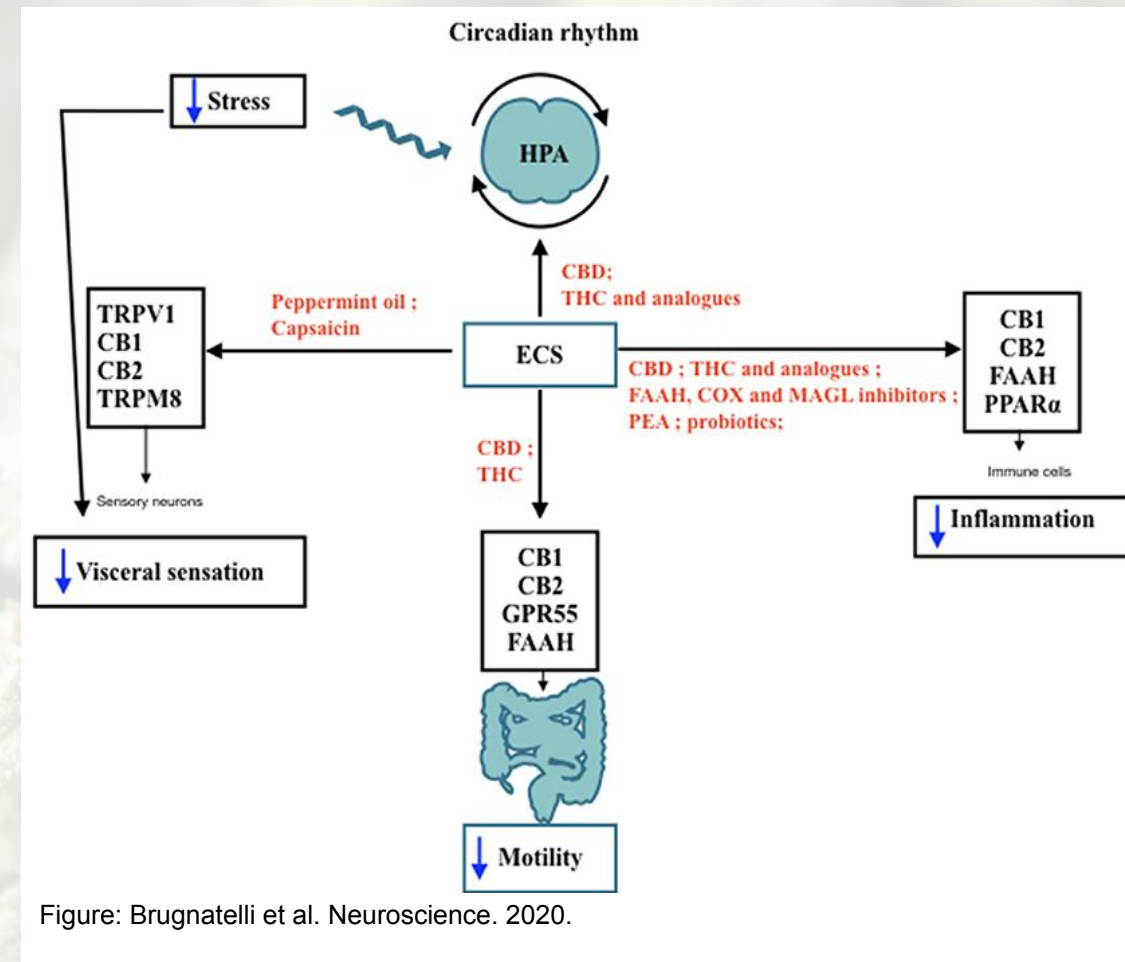
Limited evidence has found that cannabis may improve quality of life for people with IBD – but not inflammatory markers

- Dalavaye et al. reported improvements in IBD-specific health-related quality of life scores and in anxiety & sleep specific outcomes
- Picardo et al. reported improvements in quality of life and specific GI symptoms
- More research is needed to understand these relationships
 - Substantially more robust research is required to change practice guidelines and clinical recommendations



The endocannabinoid system is a potential target for treating IBS

- Limited clinical trials
- Potential management of:
 - Visceral pain
 - Motility
 - Subclinical inflammation
 - Gut-brain interactions



Chemotherapy Induced Nausea and vomiting

- "Conclusive evidence that oral cannabinoids are effective antiemetics in the treatment of chemotherapy-induced nausea and vomiting" National Academies
 - Dronabinol and nabilone (THC)



Annals of Oncology
Volume 31, Issue 11, November 2020, Pages 1553-1560



Original Article
Oral THC:CBD cannabis extract for refractory chemotherapy-induced nausea and vomiting: a randomised, placebo-controlled, phase II crossover trial

P. Grimison^{1,2}, A. Mersiades², A. Kirby², N. Lintzeris³, R. Morton², P. Haber⁴, I. Olver⁵, A. Walsh², I. McGregor⁶, Y. Cheung², A. Tognela⁷, X¹¹, E. Abdi¹², S. Clarke¹³, ...M. Stockler²

★ Cannabis and Cannabinoid Research > Vol. 6, No. 4 > Mini-review

Therapeutic Potential of Cannabidiol, Cannabidiolic Acid, and Cannabidiolic Acid Methyl Ester as Treatments for Nausea and Vomiting

Erin M. Rock, Cheryl L. Limebeer, Roger G. Pertwee, Raphael Mechoulam, and Linda A. Parker

Published Online: 5 Aug 2021 | <https://doi.org/10.1089/can.2021.0041>

Cannabis hyperemesis syndrome is more frequently reported but not well understood

- Nausea and episodic vomiting
- Potential variant of cyclical vomiting syndrome
- Generally relieved by hot showers
- No clear diagnosis criteria
- Persistent intake at high doses
- Treatment: cannabis use cessation
 - Duration is unknown – 3 months to 4 years reported

Symptoms of Cannabinoid Hyperemesis Syndrome

Nausea



Tendency to use extremely hot baths/showers for relief



Stomach pain



Difficulty eating or keeping food down



Weight loss



Severe vomiting and/or diarrhea, sometimes for days or weeks



Source: Annals of Internal Medicine, March 2019; Base & Clinical Pharmacology & Toxicology, January 2018; BMJ Journals Gut, October 2004

BUSINESS INSIDER

Image: businessinsider.com

Cannabis hyperemesis syndrome is more frequently reported but not well understood

B3c. Cannabinoid Hyperemesis Syndrome (CHS)

*Diagnostic criteria** *Must include **all** of the following:*

1. Stereotypical episodic vomiting resembling cyclic vomiting syndrome (CVS) in terms of onset, duration, and frequency
2. Presentation after prolonged use of cannabis
3. Relief of vomiting episodes by sustained cessation of cannabis use

**Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis*

Supportive remark

*May be associated with pathologic bathing behavior (*prolonged hot baths or showers*)*

Research has been limited due to legal challenges

- History of schedule I substance
 - DEA announced plan to reschedule as schedule III substance in 2024, rulemaking is ongoing
- No standard dosing parameters have been established
- Different study designs/methodologies
 - Difficult if not impossible to compare results



Image: Forbes.com

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What role can RDs play with cannabis in medical nutrition therapy?

- Staying up to date on the rapidly evolving research
- Understanding the legalities of medical cannabis
- Understand the different formulations and delivery methods



Image: AARP.org

What role can RDs play in discussing cannabis use and therapy?

- Non-judgement
- Remove stigma
- “Do you use cannabis or cannabis products?”
 - Administration route?
 - Specific cannabinoids?
 - Dose? Frequency?
 - Effects?



Image: health.harvard.edu

Alcohol is also a drug – why do we think of cannabis and alcohol so differently?

Alcohol

[En español](#)



Key Takeaways

- Alcohol is among the most used drugs, plays a large role in many societies and cultures around the world,¹ and greatly impacts public health.^{2,3} More people over age 12 in the United States have used alcohol in the past year than any other drug or tobacco product, and alcohol use disorder is the most common type of substance use disorder in the United States.⁴

TRUE or FALSE?

Alcohol is a drug.

TRUE or FALSE?

Alcohol is a drug.

TRUE or FALSE?

Cannabis is a schedule III drug.



TRUE or FALSE?

Cannabis is a schedule III drug.

This is in process but has NOT been finalized yet! Keep advocating!

Thank you! Questions?

Contact information: galaxie.story@gmail.com