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CMT-CONNECT

WEBINAR!

CANNABIS & CBD FOR CMT

4/20 @12PM EST

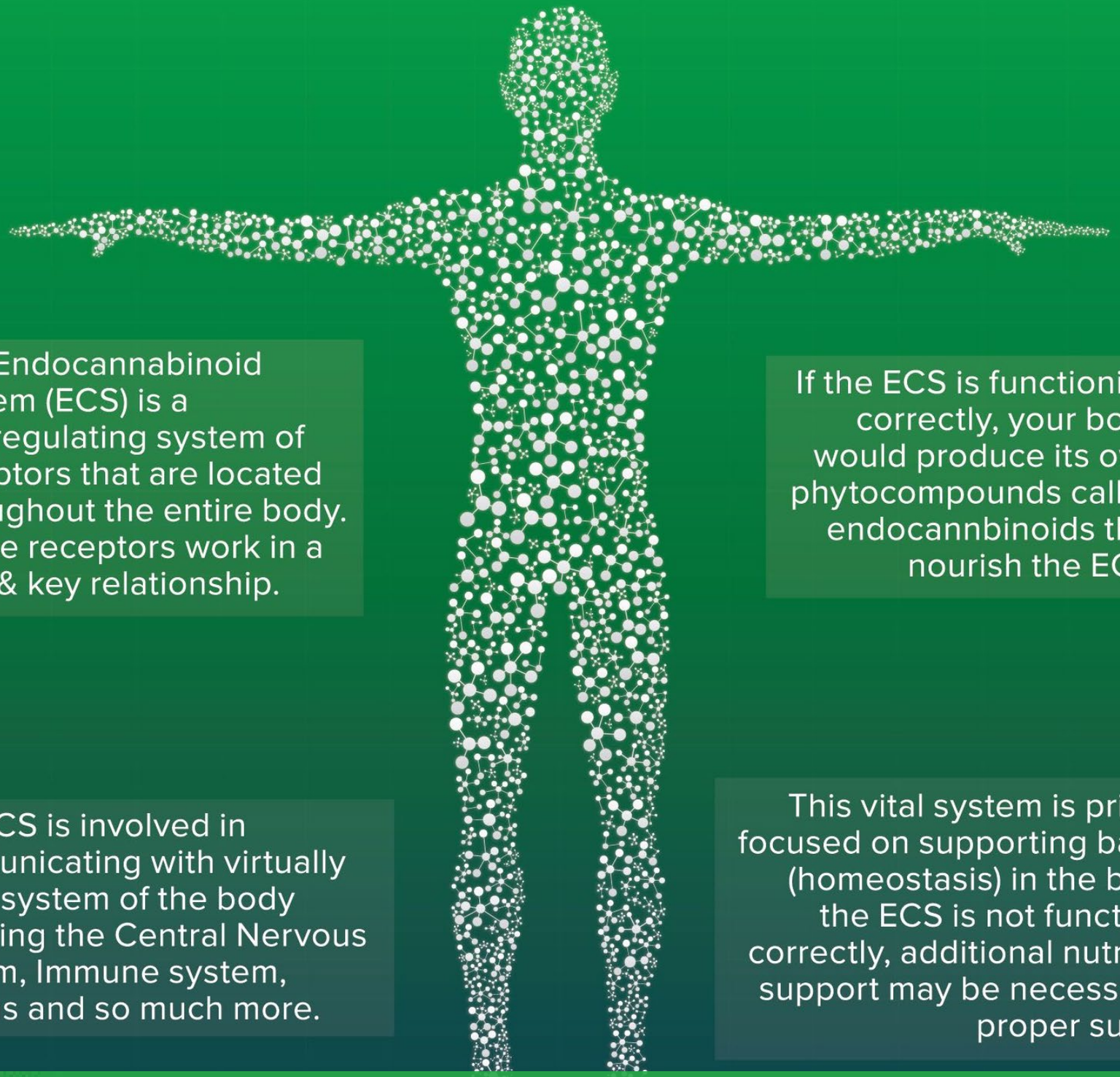
Register today!

Thanks for Joining! We'll be starting momentarily!

The Endogenous Cannabinoid System

The Endocannabinoid System, Phytocannabinoids, and the Health Conditions Influenced by Cannabinoids

THE **ENDOCANNABINOID** SYSTEM



1 The Endocannabinoid System (ECS) is a self-regulating system of receptors that are located throughout the entire body. These receptors work in a lock & key relationship.

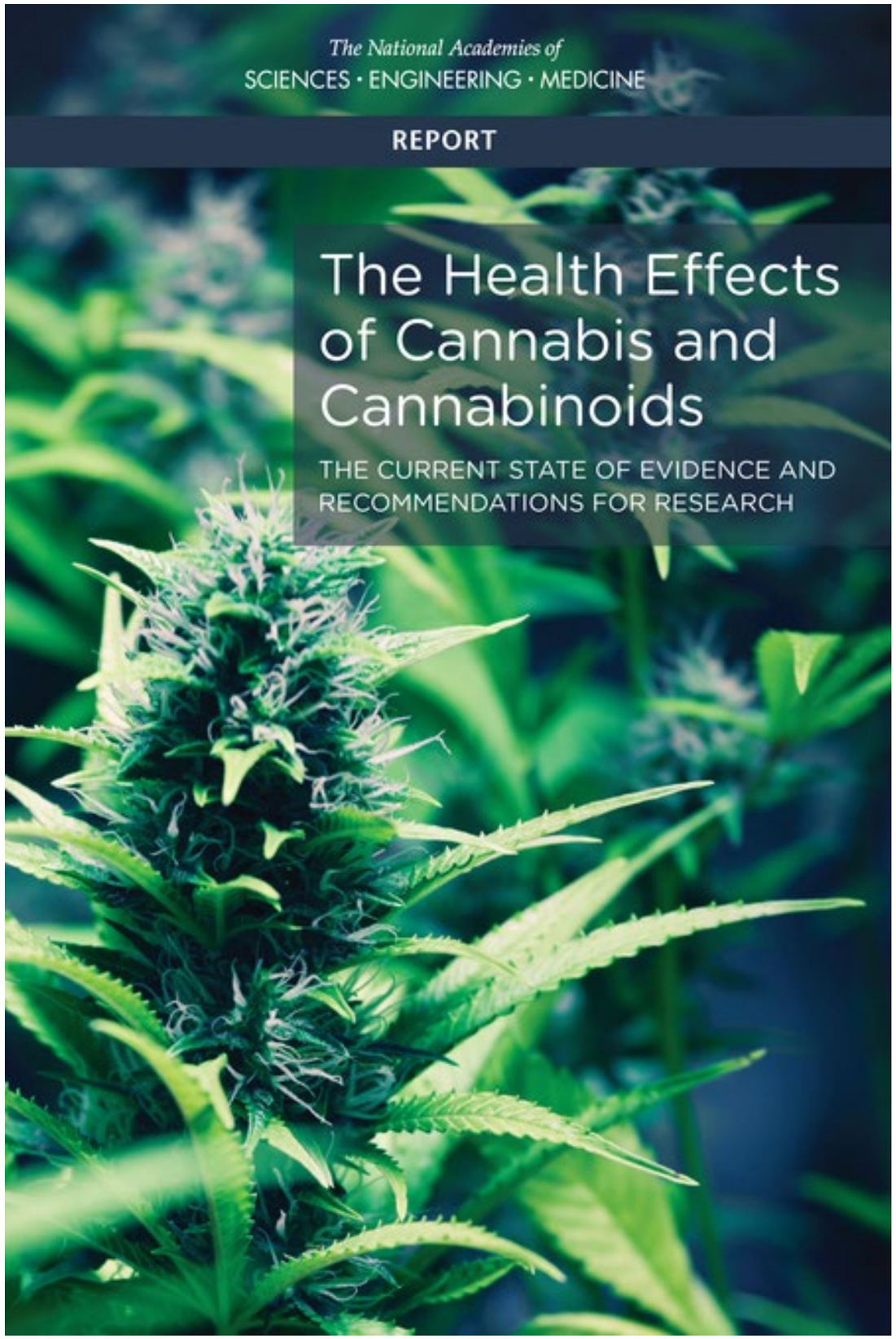
2 If the ECS is functioning correctly, your body would produce its own phytocompounds called endocannbinoids that nourish the ECS.

3 The ECS is involved in communicating with virtually every system of the body including the Central Nervous System, Immune system, Organs and so much more.

4 This vital system is primarily focused on supporting balance (homeostasis) in the body. If the ECS is not functioning correctly, additional nutritional support may be necessary for proper support.

SOUTHERN VERMONT WELLNESS
CHAMPLAIN VALLEY DISPENSARY

COMPASSION. VITALITY. DIRECTION.



Per the National Academies of Sciences, Engineering, & Medicine:

There is ***conclusive or substantial evidence*** that cannabis or cannabinoids are effective:

- For the treatment of **chronic pain** in adults
- As anti-emetics in the treatment of chemotherapy-induced **nausea and vomiting**
- For improving patient-reported **multiple sclerosis spasticity symptoms**

There is ***moderate evidence*** that cannabis or cannabinoids are effective for:

- Improving **short-term sleep outcomes** in individuals with sleep disturbance associated with obstructive sleep apnea syndrome, fibromyalgia, chronic pain, and multiple sclerosis

Cannabidiol [CBD]

- CBD is a cannabinoid found in the Cannabis plant.

- The 2018 Farm Bill legally defines hemp as:

“the plant Cannabis sativa L. and any part of that plant, including the seeds thereof and all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis”.

- CBD is psychoactive because it connects to receptors throughout the nervous system.

- It is **non-intoxicating,** does not create a feeling of being high, THC is responsible for that.

Cannabidiol [CBD]

- CBD interacts with CB1 receptors which are most highly concentrated in the areas of the brain that control cognition and movement. They do not bind to receptors in the brainstem, an area that controls breathing and heart function.

- CBD can deactivate **cytochrome P450** enzymes, and in doing so, alter how we metabolize painkillers, statins, blood thinners, insulin & more.

- Always consult with your HCP prior to taking CBD products if you are on other prescribed medications.

- Every individual will have a different response.

- Cannabis compounds have biphasic properties: low and high doses of the same substance can produce opposite effects. A small dose of CBD could be stimulating and a large dose sedating.

- CBD products do not work for everyone. Some people need THC or other cannabinoids.

Types of Cannabidiol [CBD]

CBD is available in two primary categories: **isolate** and **“full” or “broad” spectrum**.

CBD Isolate is purified CBD that has been extracted and isolated from the other cannabinoids and residual plant material. It is a white powder that is 99% CBD, and is flavorless and odorless.

Full spectrum, or whole plant CBD, means that the other cannabinoids found in the hemp plant, including CBN, CBG, THCV, terpenes, and trace amounts of THC **remain in the extract**. These may be purchased as an oil, distillate, or powder, although the powders are usually >96% CBD.

Both forms are available in tablets, capsules, oils, tinctures, lotions, salves, etc.

METHODS OF CONSUMPTION:
ONSETS & DURATION OF EFFECT

METHOD	PRODUCTS	ONSET	DURATION
Inhalation	Flower, Vape & Concentrates	Immediate - 5 Minutes	1 - 3 Hours
Sublingual	Tinctures, Oral Sprays & Lozenges	15 - 60 Minutes	2 - 6 Hours
Ingestion	Infused Foods & Beverages	30 - 120 Minutes	4 - 8 Hours
Topical	Lotions & Salves	Local & Fast-Acting, Within 30 Minutes	1 - 4 Hours
Transdermal	Patches & Gels	Systemic & Fast-Acting, Within 30 Minutes, Generally Non-Intoxicating	4 - 8 Hours
Internal	Suppositories	Systemic & Fast-Acting, Within 30 Minutes, Generally Non-Intoxicating	2 - 6 Hours

Regulating Cannabidiol [CBD]:
The 2018 Farm Bill

2018 Farm Bill:

Defines hemp (and its cannabinoids and derivatives) as an agricultural commodity under federal law and removes it from scheduling under CSA.

Authorizes the US Department of Agriculture to create standards for commercial hemp production and gives states, U.S. territories, and tribes the ability to create their own plans.

The 2018 Farm Bill Does Not:

Legalize unlicensed hemp production.

Change current state laws or void existing state hemp programs.

Amend federal food and drug laws or make CBD a lawful food ingredient or dietary supplement.

Regulating Cannabidiol [CBD]: The FDA

- All cannabinoids are illegal additives that adulterate food and supplements for humans and animals. Does not differentiate the source of CBD.

- July 2018: According to FDCA (Food, Drug and Cosmetic Act), CBD products are drugs because they are intended for use in the diagnosis, cure, mitigation treatment of prevention of disease. As such they require FDA approval.

- CBD products are not supplements under the Dietary Supplement Health and Education Act (DSHEA), because the FDA has previously authorized investigation into CBD as a drug (Epidiolex).

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease. If you have a medical condition, are pregnant, lactating or consuming prescription medication, please consult with your healthcare provider before use.

METHODS OF CONSUMPTION:
ONSETS & DURATION OF EFFECT

METHOD	PRODUCTS	ONSET	DURATION
Inhalation	Flower, Vape & Concentrates	Immediate - 5 Minutes	1 - 3 Hours
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Medical Cannabis vs Cannabidiol [CBD]

- Over 100 identified cannabinoids, Delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD).
- Entourage Effect = Chemical Teamwork
- Other components in the plant hold therapeutic properties.
- Cannabinoid & terpene content varies within plant, between plants & across harvests.
- These small differences can make a difference in therapeutic effect for each individual.

Terpenes

- Terpenes are **volatile aromatic molecules** studied profusely in the fields of aromatherapy and medicine.
- 200+ terpenes have been found in cannabis, 20+ are tested for regularly in the industry.
- Play a key role in **plant immune systems**, including repelling insects and animal grazers; attracting pollinators and preventing fungal, bacterial and viral growth (they do the same for humans).
- They are responsible for both the fragrance and many of the the therapeutic effects of cannabis/hemp.
- A September 2011 report by Dr. Ethan Russo in the *British Journal of Pharmacology* discussed the wide-ranging therapeutic attributes of terpenoids noting that cannabinoid-terpenoid interactions, **"could produce synergy with respect to treatment of pain, inflammation, depression, anxiety, addiction, epilepsy, cancer, fungal and bacterial infections."**

HERBAL

+ FOUND IN AROMA BOILING POINTS
MEDICAL PROPERTIES CANNABIS VARIETIES

Ocimene

+ Mint, Parsley, Basil, Mango
- Herbal, Sweet, Woods
- 212°F, 100°C
- anti-fungal, anti-septic, decongestant, anti-bacterial
- Golden Goat, Strawberry Cough, Kush Group, Sour Diesel, Green Crack, Headband

Fenchol

+ Basil
- Floral, Piney, Woods, Lemony
- 394°F, 201°C
- OG Group, Black Mamba, Skywalker, Kush Group, Blue Cheese, Headband, Gelato
- Jack Herer, Pineapple Jack, Afghani, Pineapple Kush, OG Group, Durban Poison, XJ-13

Borneol

+ Mugwort, Wormwood, Sagebrush, Tropical Trees, Ginger
- Herbal, Woods
- 415°F, 213°C
- sedative, used for relaxation, anti-inflammatory, anti-nociceptive, anti-coagulant, drug potentiator
- Amnesia Haze, Golden Haze, Kush Group, Blue Cheese, OG Group

Bisabolol

+ German Chamomile
- Tangy, Citrus, Floral, Sweet
- 307°F, 153°C
- apoptosis in models of leukemia, anti-inflammatory, anti-bacterial
- Harle-Tsu, Headband, ACDC, Oracle, Grape Stomper, Royal Kush, Royal Highness, Blue Cheese, XJ-13

Phytol

+ Green Tea, Green Plants
- Light Floral, Jasmine, Green Tea
- 399°F, 204°C
- inhibits the enzyme that degrades the neurotransmitter GABA, relaxant, prevents Vitamin A teratogenesis, immunosuppresant
- Sour Diesel, Cheese, Blue Cheese, Blue Dream, OG Group

Isoborneol

+ Mugwort, Wormwood, Sagebrush, Tropical Trees, Ginger
- Herbal, Woods
- 415°F, 213°C
- antiviral, inhibitor of herpes simplex virus type 1
- Amnesia Haze, Golden Haze

Menthol

+ Corn Mint, Peppermint
- Mint, Menthol
- 414°F, 212°C
- analgesic, topical treatment of inflammation
- Arjan's Haze #3

Isopulegol

+ Mint
- Mint, Herbal
- 414°F, 212°C
- gastroprotective, anti-inflammatory, reduces seizure severity in animal studies, anti-microbial
- Kosher Tangie, Headcheese, Truffula Tree, AMS, Big Bang

Cymene

+ Cumin, Thyme, Coriander, Oregano
- Orange, Carrot, Turpentine
- 351°F, 177°C
- anti-inflammatory, prevents acute lung injury, anti-biotic
- Purple Panty Dropper, Jack Herer, Mango Sherbert, Don Carlos

Pulegone

+ Catnip, Mint, Pennyroyal
- Mint, Camphor
- 430°F, 221°C
- acetylcholinesterase inhibitor, aids memory
- OG Kush, Headband

FLORAL

+ FOUND IN AROMA
BOILING POINTS MEDICAL PROPERTIES
CANNABIS VARIETIES

Linalool

+ Lavender, Bergamot
- Floral
- 388°F, 198°C
- anti-anxiety, sedative, anti-convulsant, pain relief, anti-depressant
- Lavender, Headband, Amnesia Haze, LA Confidential, OG Group, Tangerine Dream, AK47

Geraniol

+ Rose, Geraniums, Tobacco
- Floral
- 447°F, 231°C
- anti-oxidant, anti-fungal, anti-bacterial, anti-spasmodic, neuroprotectant
- Lavender, Amnesia Haze, Headband, Great White Shark, Black Mamba, Skywalker, Death Star OG

HOPPY

+ FOUND IN AROMA
BOILING POINTS MEDICAL PROPERTIES
CANNABIS VARIETIES

Myrcene

+ Hops, Mango, Lemongrass
- Hoppy, Herbal, Earthy
- 333°F, 167°C
- antiseptic, sedative, anti-bacterial, anti-fungal, anti-inflammatory
- Blue Dream, Grand Daddy Purple, Northern Lights, Amnesia, Kush Group, Chemdawg

α-humulene

+ Hops, Coriander, Basil
- Hoppy, Earthy
- 388°F, 198°C
- anti-bacterial, pain relief
- Girl Scout Cookies, White Widow, Sour Diesel, Durban Poison, Grand Daddy Purple, Kush Group

Geranyl acetate

+ Citronella, Lemongrass, Sassafras, Rose
- Floral, Fruity
- 473°F, 245°C
- anti-microbial
- Headband, Gelato, Orange Cookies

These statements have not been evaluated by the FDA and are not intended to diagnose, treat or cure any disease. Always check with your physician before starting a new dietary supplement program.

www.terpenesandtesting.com

SOUTHERN VERMONT WELLNESS
CHAMPLAIN VALLEY DISPENSARY

COMPASSION. VITALITY. DIRECTION.

THE WOODS & THE EARTH

+ FOUND IN AROMA BOILING POINTS
MEDICAL PROPERTIES CANNABIS VARIETIES

α-Pinene

+ Pine, Rosemary, Parsley
Turpentine, Pine, Dill
311°F, 155°C
bronchodilator, asthma, anti-inflammatory, aids memory
Jack Herer, Blue Dream, AK-47, Romulan, Harlequin, Kush Group, Cloudburst

Terpinolene

+ Pine, Conifers, Nutmeg, Lilacs
Woods, Smoke, Herbal
343-347, 361°F, 173-175, 183°C
anti-oxidant, anti-cancer, sedative
Jack Herer, Pineapple Jack, Afghani, Pineapple Kush, OG Group, Durban Poison, XJ-13

Terpineol

+ Pine, Lapsang Souchong tea
Lilac
426°F, 219°C
anti-oxidant, sedative, anti-inflammatory, anti-malarial, anti-anxiety
Jack Herer, White Widow, Girl Scout Cookies, OG Group, Black Mamba, Skywalker, Blue Cheese

Carene

+ Pine, Cedar
Sweet, Pungent, Woods
340°F, 171°C
dry out excess bodily fluids (tears, mucus); central nervous system depressant, memory retention, anti-inflammatory
Super Lemon Haze, Skunk #1, Jack Herer, Blueberry Muffin, Trainwreck, XJ-13

Camphene

+ Trees, Citronella, Ginger
Pungent, Musky, Earthy
318°F, 159°C
pain relief, anti-oxidant
Strawberry Banana, OG Group, Black Mamba, Skywalker, Kush Group, ACDC, Girl Scout Cookies, Truffula Tree

Camphor

+ Camphor tree, Rosemary
Pungent
408°F, 209°C
readily absorbed through skin, produces cooling sensation like menthol, slight local anesthetic, anti-microbial substance
Black Mamba, Skywalker

Cedrene

+ Cedar
Woods, Cedar
503°F, 262°C
anti-microbial, anti-fungal, anti-cancer

Guaiol

+ Guaiacum/Cypress trees
Woods, Pine, Rose
198°F, 92°C
antimicrobial, anti-inflammatory
Chocolope, White Widow, Harlequin, Kush Group, Medical Mass, Dream Queen

Phellandrene

+ Eucalyptus
Mint, Citrus, Pepper
341°F, 171°C
anti-depressant, anti-cancer, expectorant
Jack Herer, Trainwreck, Arjan's Haze #3, Arjan's Strawberry Haze, XJ-13

Eucalyptol

+ Eucalyptus, Bay Leaves, Tea Tree, Wormwood, Basil
Mint, Earthy, Cool
349°F, 176°C
anti-fungal, Alzheimer's, anti-inflammatory, asthma, anti-bacterial
Super Silver Haze, Headband, ACDC

PEPPERS & SPICE

+ FOUND IN AROMA
BOILING POINTS MEDICAL PROPERTIES
CANNABIS VARIETIES

β-Caryophyllene

+ Black Pepper, Clove, Cinnamon
Peppery, Spicy, Earthy
260°F, 130°C
epilepsy, anti-anxiety, chronic pain, muscle spasms, insomnia
Girl Scout Cookies, White Widow, Super Silver Haze, Black Mamba, Skywalker, Pineapple Express, Kush Group, Hash Plant, AK47, XJ-13

Sabinene

+ Oak, Norway Spruce, Carrot, Nutmeg
Pine, Orange, Spicy
326°F, 164°C
benefits liver function and digestion, relieves arthritis, and soothe skin conditions
Super Silver Haze, Arjan's Ultra Haze #1

CITRUS

+ FOUND IN AROMA
BOILING POINTS MEDICAL PROPERTIES
CANNABIS VARIETIES

d-Limonene

+ Citrus fruits, Juniper
Citrus
349°F, 176°C
anti-depressant, GERD, assists with skin absorption of other terpenes
Sour Diesel, Lemon Skunk, Trainwreck, Bubba Kush, OG Group, Black Mamba, Skywalker, AK47

Valencene

+ Valencia Oranges
Citrus, Sweet, Herbal, Woods
253°F, 123°C
anti-inflammatory
Tangie, Agent Orange

Nerolidol

+ Citrus fruits, Jasmine, Tea Tree Oil
Rose, Citrus, Woods
252°F, 122°C
sedative, potent anti-fungal and anti-malarial activity, anti-oxidant, anti-fungal
Jack Herer, OG Group, Gorilla Glue #4, San Fernando Valley

Caryophyllene Oxide

+ Clove, Pepper, Lemon Balm, Lavender, Rosemary
Peppery, Spicy, Earthy
536°F, 280°C
anti-fungal, anti-coagulant
Durban Poison, XJ-13

Regulating Medical Cannabis: Federal

- Cannabis is a Schedule I controlled substance and federally illegal.

- The **Controlled Substances Act (CSA)** defines cannabis as “all parts of the plant Cannabis sativa L − and every compound, manufacture, salt, derivative, mixture or preparation of such plant, its seeds or resin.”

- **2013 Cole Memo** instructed U.S. attorneys to focus on drug cartels and cross-border trafficking, not marijuana businesses complying with state regulatory schemes. Jeff Sessions rescinded the Cole Memo on Jan. 4th 2018.

- **Rohrabacher-Blumenauer Amendment** prohibits the DOJ from using federal funds to interfere with state-legal MMJ laws and companies. It does not protect adult use markets. It needs to be renewed each year as part of the federal budget process.

Regulating Medical Cannabis: State by State

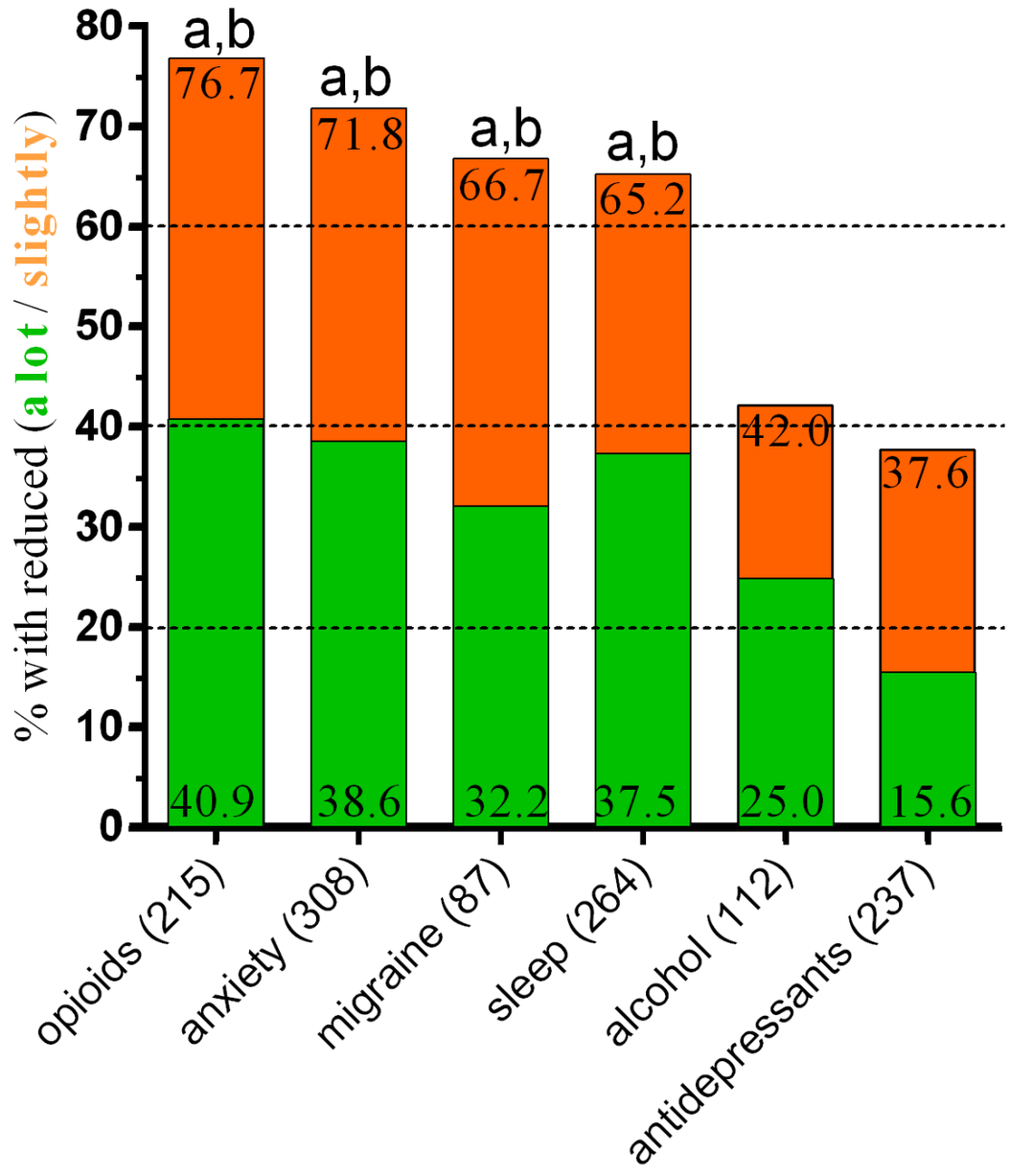
1996: CA is first state to legalize medical cannabis in Proposition 215/Compassionate Use Act of 1996

2018: 33 States + DC have Medical Marijuana
10 states + DC have some form of legalized cannabis
17 States with laws specifically about legal CBD (as of 5/18/18)

Each state has different rules regarding:

- licensing process: vertical integration vs silos
- staff requirements including FBI background checks
- testing & labeling requirements
- which products can be sold in each market
- how much consumers can purchase
- reciprocity across patient programs

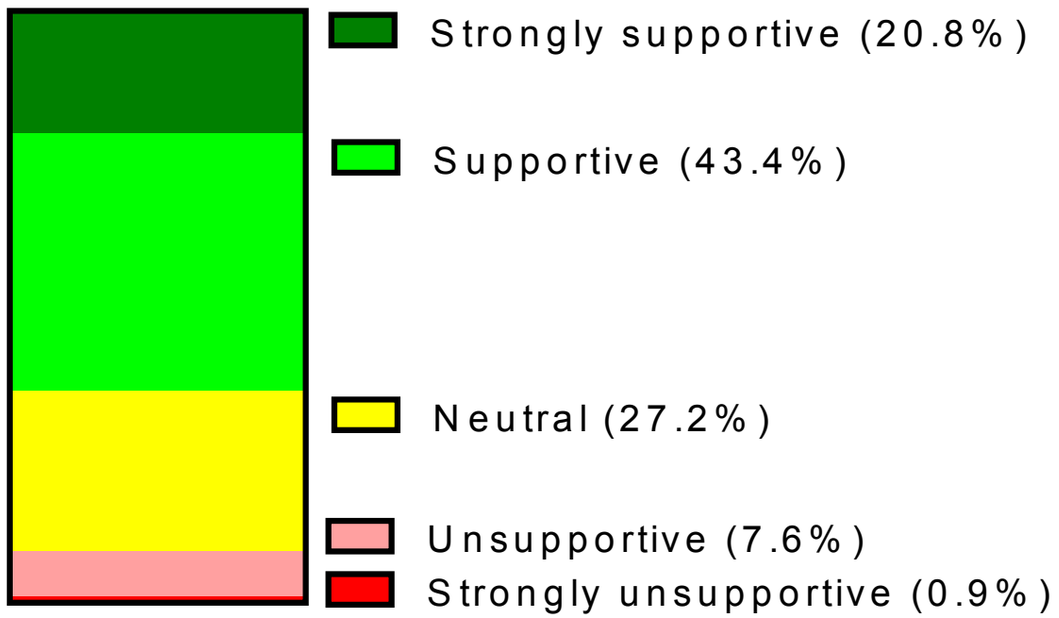
Substitution Effect

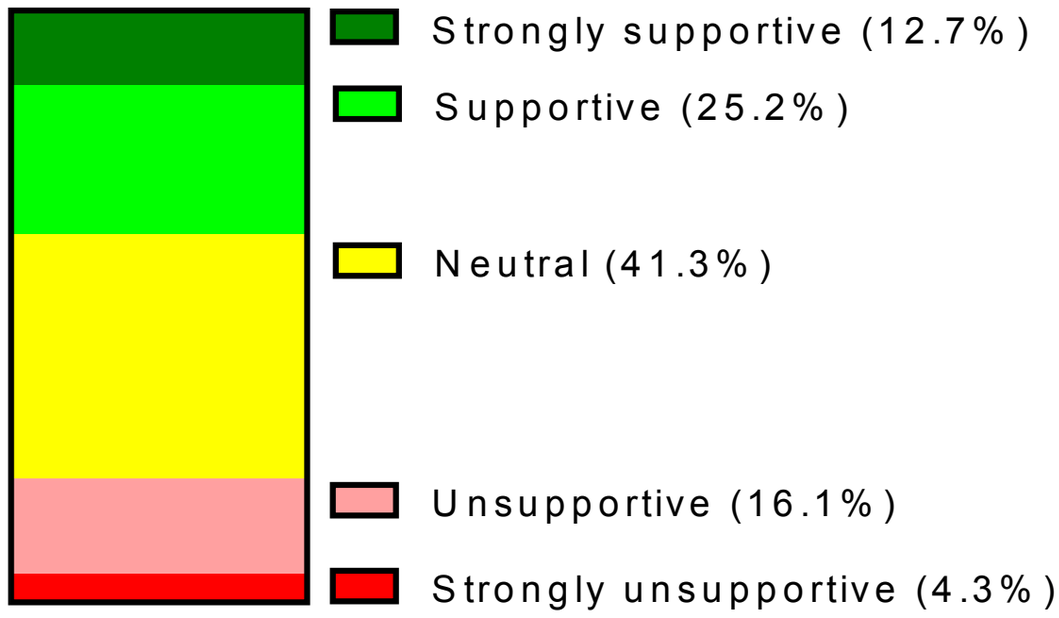


Piper et al. *J Psychopharmacology* 2017; 31: 569-75

a,b = $p < .001$ versus antidepressants

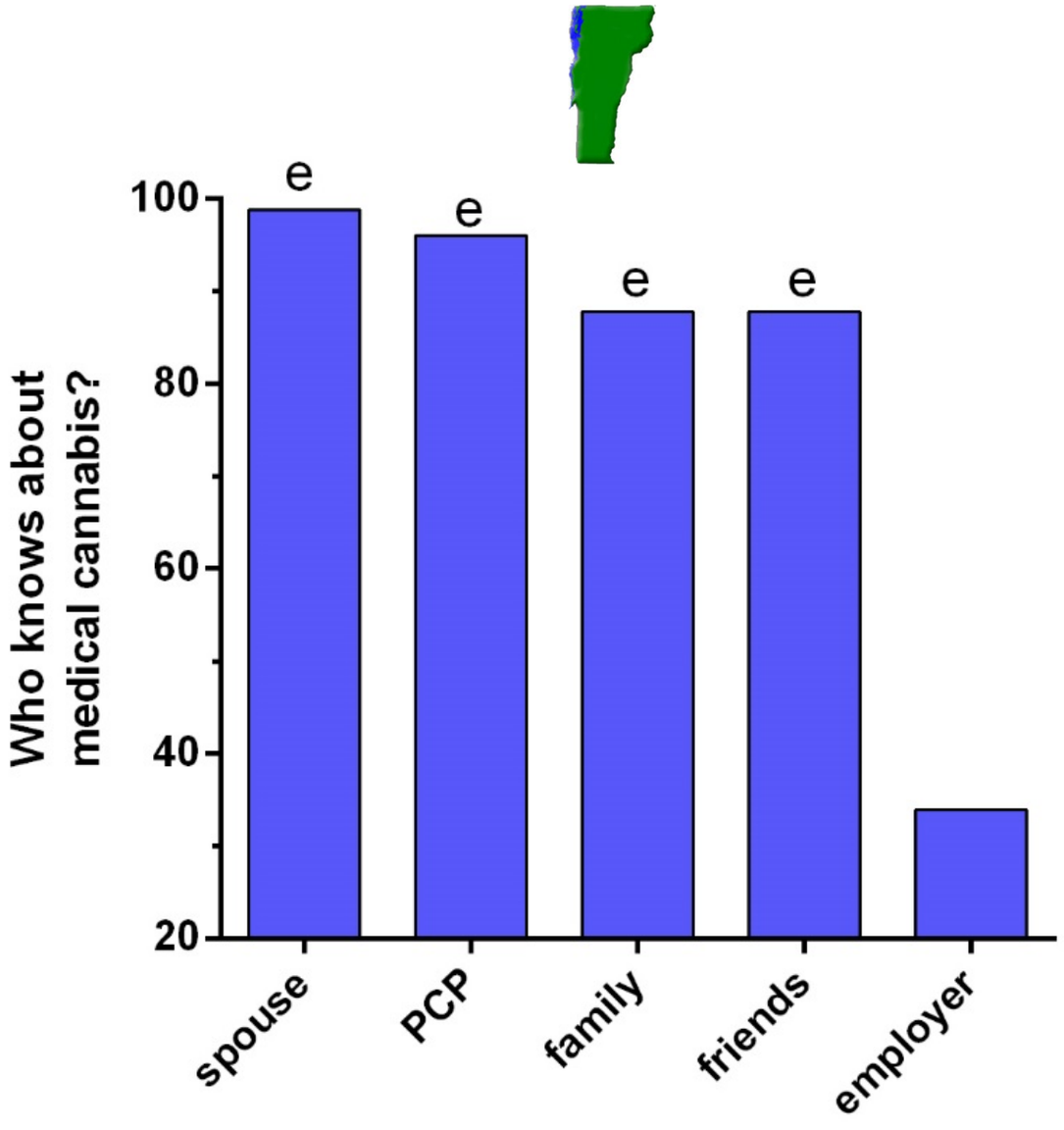
Attitudes of health care provide

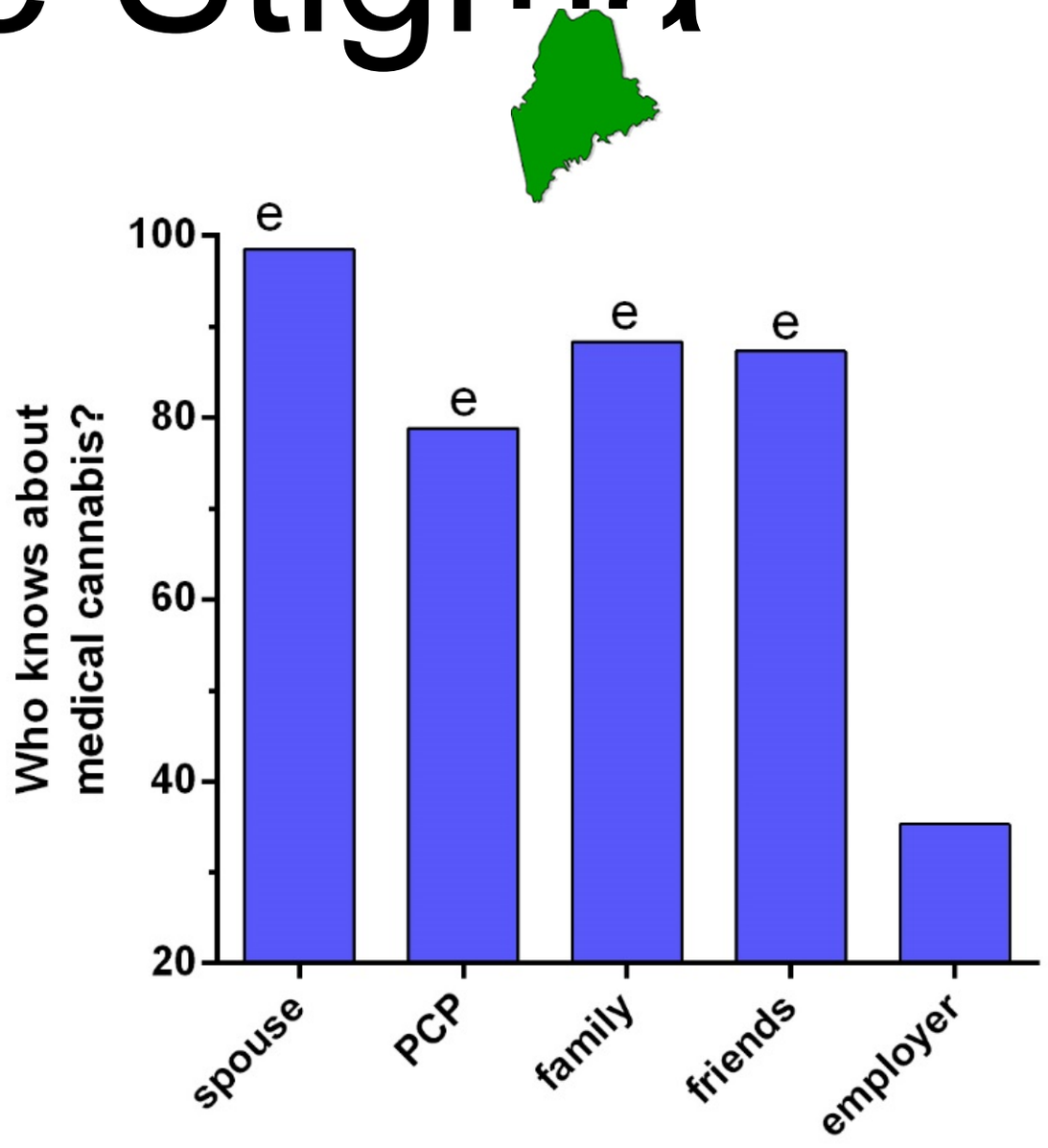




al. *J Psychopharmacology* 2017; 31: 569-75

Selective Stigma





001 versus employer, PCP: Primary Care Provider

Piper et al. *J Psychopharmacology 2017;* 31

Thank You!

CANNABIS & CBD FOR CMT

WWW.SURVEYMONKEY.COM /R/HNFCANNABIS

CMT & Cannabis Survey!

Champlain Valley Dispensary/Southern Vermont Wellness

CVD/SVW is Vermont's largest medical cannabis provider, with dispensaries in Burlington and Brattleboro. Our goal is to provide safe, compliant, high quality medical cannabis products that help our patients lead more active lives and have a better daily existence. We are committed to a continuous process of learning and improving in serving the needs of patients and healthcare professionals in Vermont.

cvdvt.org

Vermont Marijuana Registry

The Vermont Marijuana Registry (VMR) is a program located within the Department of Public Safety whose purpose is to implement the provisions of 18 V.S.A. Chapter 86, Therapeutic Use of Cannabis - as they pertain to registered patients, caregivers, and the creation and operation of four dispensaries. The VMR's primary purpose is to assist individuals applying for a registry identification card and oversee the operations of the four registered dispensaries in Vermont that provide marijuana for symptom relief to registered patients.

medicalmarijuana.vermont.gov

The University of Vermont's Free Cannabis Speakers Series

Clinicians need access to high quality education on up-to-date research and clinical applications of cannabis for therapeutic use. Researchers, professionals and students need education on cannabis law, policy, plant biology, chemistry, and its biological effects on the human body. At the forefront of academic health care, the University of Vermont College of Medicine programs help address the increasing need for research-based and relevant medical cannabis education across the country.

learn.uvm.edu/com/program/cannabis-speaker-series-from-botany-to-medicine/

Project CBD

Project CBD is a nonprofit educational service dedicated to promoting and publicizing research into the medical utility of cannabidiol (CBD) and other components of the cannabis plant. It is intended to update providers and patients about developments in cannabinoid science, promote research, and emphasizes whole plant cannabis therapeutics (not just THC or or CBD).

projectcbd.org

The Society of Cannabis Clinicians

The Society of Cannabis Clinicians (SCC) is a 501c3 nonprofit organization dedicated to educating physicians about the medical use of cannabis. Its mission is to unite into one association members of the various medical specialties and allied professionals with this common purpose.

cannabisclinicians.org

United Patients Group

United Patients Group is an unparalleled resource and trusted leader in medical cannabis for physicians, patients and organizations. UPG acts as a virtual hand for patients and offers CME education and consulting to physicians and medical institutions. UPG believes that education is paramount in understanding the potential for medical cannabis treatment and acts as a conduit between worldwide medical institutions and the medical cannabis industry.

unitedpatientsgroup.com

Patients Out of Time

Provides information to health care professionals, patients, and caregivers about cannabis. Clinical conferences, information about the therapeutic basis of cannabis, and indications for use are also provided.

patientsoutoftime.org

The Realm of Caring

ROC improves lives through research, education, and advocacy. By funding and conducting research, ROC learns more about cannabis and its effects while legitimizing the therapy. Education empowers consumers to select the best products for their individual needs, and informs health care professionals about options for their patients. Through advocacy, ROC spreads the truth about cannabis and expands access to those in need.

theroc.us

Healer.com

Healer's goal is to create a positive and supportive community of like-minded medical cannabis patients as a transparent, trusted source of cannabis information and a respected authority on its safe and smart use. Healer.com educational programs provide the essential basics of dosage and delivery methods.

healer.com

pharmacy

MDPI

Discussion

Weighing the benefits and risks of medical marijuana use: A brief review

Allison Karst

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Received: date; Accepted: date; Published: date

Abstract: Despite federal prohibition of medical marijuana possession, sale, and use, marijuana use continues to escalate as individual state legalization persists and expands. The purpose of this discussion is to provide a brief summary of the evidence regarding both potential benefits and risks of medical marijuana use.

Keywords: Medical marijuana, marijuana, cannabis

Despite federal prohibition of medical marijuana possession, sale, and use, marijuana use continues to escalate as individual state legalization persists (Table 1). As the medical marijuana landscape rapidly changes, it is imperative that healthcare providers stay up-to-date on available evidence regarding benefits and risks of use. While it is important to note potential benefits demonstrated in specific disease states, evidence in most qualifying indications is insufficient, with the majority lacking randomized controlled trials (RCTs) (Table 2).

21 **Table 1.** Qualifying indications by state.[1]

	State[1]																														
Qualifying Conditions	AK	AR	AZ	CA	CO	CT	DC	DE	FL	HI	IL	MA	MD	ME	MI	MN	MO	MT	ND	NH	NJ	NM	NV	NY	OH	OR	PA	RI	UT	VT	WA
Alzheimer's Disease		X	X				X	X			X			X	X		X		X	X					X	X		X	X		
ALS (Lou Gehrig's Disease)		X	X			X	X	X	X		X	X		X	X	X	X		X	X	X	X		X	X		X		X		
Autism							X										X										X		X		
Arthritis		X		X			X															X									
Cachexia (or Anorexia)	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X		X	X			X		X	X	X	X
Cancer	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cerebral palsy						X	X																								
Chronic or Debilitating Disease		X				X	X				X			X			X		X	X	X	X		X			X				
Chronic pain	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Crohn's Disease		X	X			X	X		X	X		X		X	X	X	X	X	X	X		X			X		X	X	X	X	X
Cystic Fibrosis						X	X																								
Fibromyalgia		X			X		X				X								X						X						
Glaucoma	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X
Hepatitis C		X	X				X				X	X		X	X		X		X	X		X			X			X			X
HIV/AIDS	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Migraine				X			X										X														
Multiple Sclerosis	X	X				X	X		X	X	X	X		X			X		X	X	X	X		X	X		X		X	X	
Nausea	X	X	X	X	X		X	X		X	X		X	X	X			X	X	X		X	X			X		X		X	X
Parkinson's Disease						X	X		X		X	X		X			X			X		X		X	X		X			X	
Persistent Muscle Spasms		X	X	X	X	X	X	X	X	X			X		X	X	X	X	X	X	X		X			X	X	X	X		X
Peripheral neuropathy		X			X		X				X						X					X		X			X				
Psoriasis						X	X																								
PTSD		X	X		X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X
Seizures (or Epilepsy)	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Terminal Illness							X	X	X							X	X				X	X					X			X	X
Tourette's syndrome		X					X				X						X								X						
Ulcerative Colitis		X				X	X							X											X						

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Table 2. Potential benefits of marijuana[1-33].

Qualifying Condition	Summary/Quality of Evidence
Amyotrophic Lateral Sclerosis (ALS)[2-3]	**Insufficient evidence**; Single RCT showed no significant difference on primary or secondary outcomes
Alzheimer's Disease[2, 4-9]	No published RCTs. Cochrane systematic review concluded that there is **insufficient evidence** that oral cannabinoids are effective for the treatment of behavioral disturbances associated with dementia. There is **limited evidence** that oral cannabinoids are **ineffective**.
Autism[10]	Data limited to animal model-based research, small case series or single case reports
Arthritis[11]	While there is moderate evidence in chronic pain, there is **insufficient evidence** in arthritic conditions
Cachexia/Anorexia[2,11-15]	FDA-approved product available (dronabinol); low quality evidence
Cancer[16]	RCTs only in supportive care measures; preliminary evidence of anti-proliferative properties indicates an area of future research
Cerebral Palsy[2]	Low to moderate evidence for symptoms of cerebral palsy, such as pain, spasms, and seizures; however, there is **insufficient evidence** in this specific population for recommendations
Chronic Pain[2,11,17-18]	Substantial evidence for benefit with cannabis; moderate evidence for benefit with nabiximols
Crohn's Disease[19-20]	**Insufficient and inconclusive evidence**
Cystic Fibrosis[2]	Preliminary evidence only; No RCTs; **insufficient evidence**
Fibromyalgia[21-22]	Cohort studies only, no RCTs for pain in fibromyalgia; **moderate evidence in sleep improvement**
Glaucoma[2, 23-27]	Significantly lowers intraocular pressure (IOP) for 4 hours; **Insufficient evidence** to indicate that marijuana is safer or more effective than existing pharmacotherapy or surgery for reduction of IOP
Hepatitis C[2]	No RCTs; **insufficient evidence**
Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS)[28-31]	Moderate evidence for FDA-approved product (dronabinol); Low quality evidence suggesting that cannabinoids and marijuana are associated with weight gain in patients with HIV/AIDS
Migraine[32]	Retrospective chart review demonstrated decreased frequency of migraines; No RCTs; **insufficient evidence**
Multiple Sclerosis (MS) or Persistent Muscle Spasms[2,33-36]	Moderate quality evidence to suggest benefit
Nausea[2,17,37]	FDA-approved products available (nabilone, dronabinol); Low quality evidence for benefit with marijuana
Parkinson's Disease[38-40]	Results of trials studying the use of oral cannabinoids in Parkinson's Disease have been **controversial and inconclusive**. Most importantly, there have been **no RCTs** examining marijuana specifically in this population.
Peripheral Neuropathy[2,11,18]	**Moderate to substantial evidence** to suggest benefit of cannabinoids in peripheral neuropathy
Psoriasis[2]	No RCTs; **insufficient evidence**
Post-Traumatic Stress Disorder (PTSD)[41-44]	Insufficient evidence; potential harm
Seizures[45-47]	Moderate quality evidence for use of cannabidiol (CBD) (but not marijuana) as adjunctive therapy in patients with refractory seizures

Tourette's Syndrome[10]	**Limited evidence** that Δ-9-tetrahydrocannabinol (THC) capsules are an effective treatment for improving symptoms of Tourette syndrome
Ulcerative Colitis[2]	No RCTs; **insufficient evidence**

Throughout the literature, marijuana and oral cannabinoids (dronabinol, nabilone, oral THC) have been associated with adverse effects, including serious adverse effects and withdrawal from studies. The most commonly reported adverse effects include asthenia, balance problems, disorientation, gastrointestinal effects, euphoria, somnolence, dry mouth, fatigue, hallucinations, paranoia, and agitation.[11,17]

Significant evidence exists regarding the negative effects of marijuana use on mental health and neurologic function. Marijuana users are at risk for tolerance, dependence, and withdrawal.[4,18,44] Multiple studies have examined negative effects of marijuana on acute and long-term cognition, including impairment in attention, impulse control, decision-making, working memory, and executive function. Additionally, marijuana has been associated with an earlier age of onset of psychotic disorders, an exacerbated course of illness in established psychotic disorders, exacerbation of mania in bipolar disorder, and worsened symptoms of PTSD.[4,11,18,41,44]

Pulmonary, cardiovascular, and carcinogenic effects of marijuana remain controversial.[4,44,48-49] In vivo and in vitro studies have demonstrated that marijuana inhibits several hepatic enzymes (CYP2D6, CYP2C19, CYP2C9, CYP3A4), and preliminary evidence in humanssuggests that marijuana may interact with serum drug concentrations of warfarin and antiretroviral therapies.[16,50-52] However, additional research is warranted in these areas as risk of clinically significant drug interactions is unknown.[53]

When discussing medical marijuana use, it is imperative that pharmacists are knowledgeable about the potential benefits and risks. Disease states with substantial evidence include chronic pain, chemotherapy-induced nausea and vomiting (oral cannabinoids only), and patient-reported spasticity in MS.[2] Further research is warranted, particularly studying products similar to those available in dispensaries today. Because medical marijuana lacks quality standards and FDA regulation, available products have shown significant inconsistencies, with one study revealing that only 17% of edible cannabis products were accurately labeled.[54] It is the responsibility of prescribers and pharmacists to educate patients on potential adverse events and drug interactions. Other pertinent issues to consider are dosing of marijuana and the inability to extrapolate evidence between oral cannabinoids and marijuana due to differences in chemical composition. Due to the limited high-quality evidence and lack of regulation, the potential benefits and risks must be weighed carefully for appropriate clinical decision-making.

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