Cannabis in the Commonwealth

The Basics of Caring for Medical Cannabis Patients

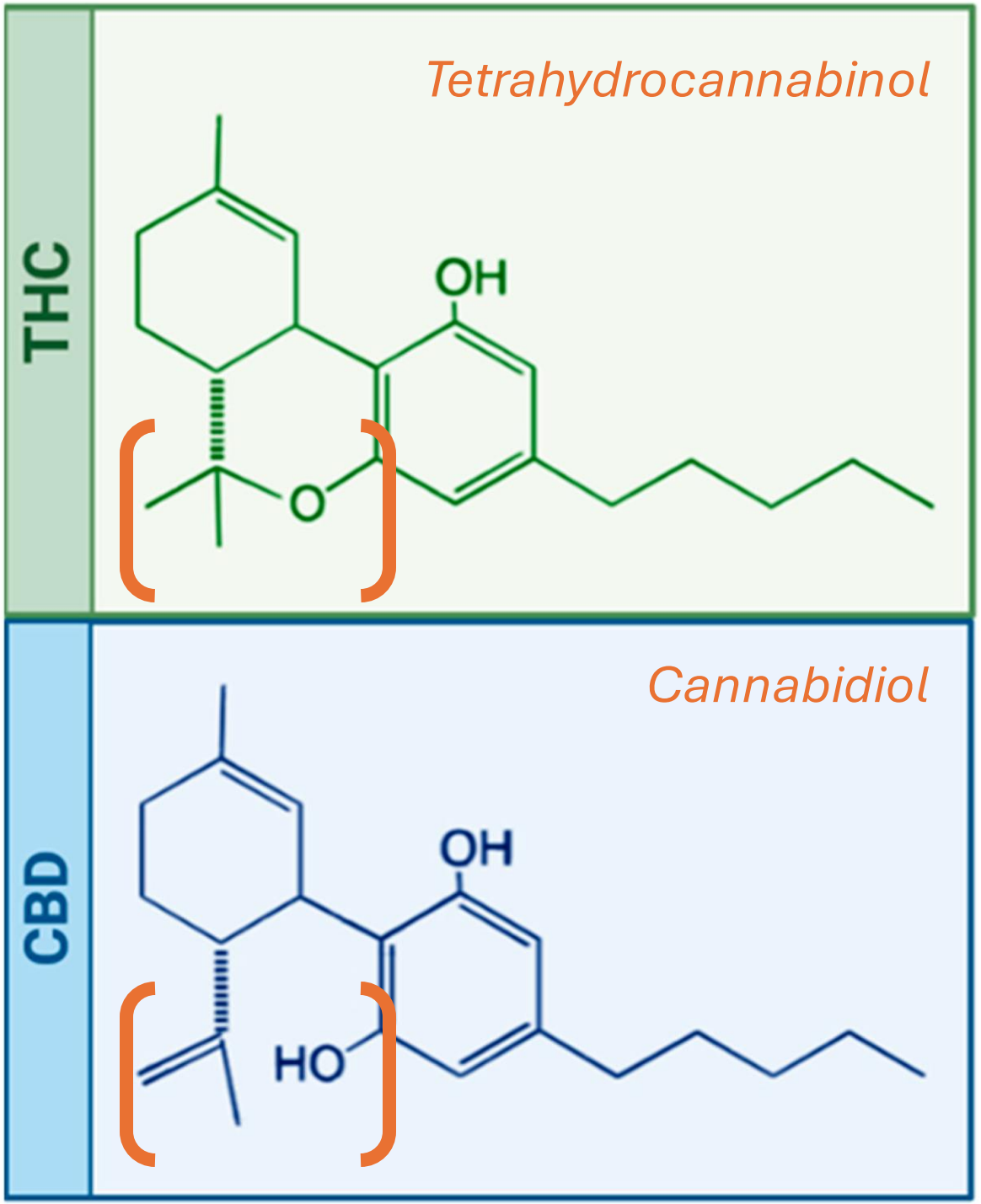
Amber Cann, PharmD, MBA, MS

hello@ambercann.com
ambercann.com

Session Objectives

- Describe the endocannabinoid system and how exogenous cannabinoids interact with it to produce pharmaceutical effects.
- Identify the conditions for which cannabis may be recommended in Kentucky.
- Summarize the adverse effects, drug interactions, and contraindications of cannabis-based medicines.

Major Cannabinoids: THC and CBD



Small differences in the chemical structures of THC and CBD change the receptors to which these compounds bind.

Cannabinoids on the Market

Dronabinol

Synthetic THC capsules

MARINOL

Nabilone

Synthetic THC analog capsules

CESAMET

Nabixomols

Plant-derived 1:1 THC:CBD oral mucosal spray

SATIVA

Cannabidiol

Plant-derived oral solution

EPIDIOLEX

Endocannabinoid System

The ECS is a complex regulatory system that works alongside hormone and neurotransmitter signaling in *every* body system.

Endocannabinoid System

CB1 Receptors

- Brain/CNS
- Reproductive system
- Cardiovascular system
- Skeletal muscle
- GI tract and liver
- Adipose
- Nociceptive neurons

CB2 Receptors

- WBCs
- Tonsils, spleen, thymus
- Brain/CNS

The ECS is a complex regulatory system that works alongside hormone and neurotransmitter signaling in every body system.

Endocannabinoid System

CB1 Receptors

Psychotropic effects
Appetite
Pain perception

CB2 Receptors

Immune response
Inflammation

Routes of Administration

Oral

Tinctures - moderate onset time

Gummies - slow onset time

Active metabolite after 1st pass metabolism

Suited for long-acting relief of chronic symptoms

Inhalation

Raw plant material - fast onset

Resins/extracts – high THC content

Ideal for immediate relief of acute symptoms

Routes of Administration

Topical

Currently no reliable vehicle to deliver drug across multiple layers of skin for systemic absorption

Ophthalmic

Similar barriers to topical delivery

Nanoparticle formulations in development

Chronic Pain

is the *most* common condition for which cannabis is recommended, and the most common condition for which patients report using cannabis.

Cancer Pain

is the most common symptom reported among patients in palliative care.

Chronic / Cancer Pain

ECS modulates pain signaling in the CNS in several ways.

- Blocks ascending pain signals to the brain
- Reduces stimulation of descending pain signals from the periphery
- Induces analgesic transmitter release

Qualifying Conditions in KY

- **Cancer** of any stage or type
- Chronic, severe, intractable, OR debilitating **pain**
- **Epilepsy** or any other intractable seizure disorder
- Chronic **nausea** or cyclical vomiting syndrome
- **PTSD**

Multiple studies have demonstrated that adding cannabis-based medicine early in a chemotherapy regimen:

- Lowers opioid dose needed to manage pain
- Minimizes CINV
- Lowers pre-treatment anxiety

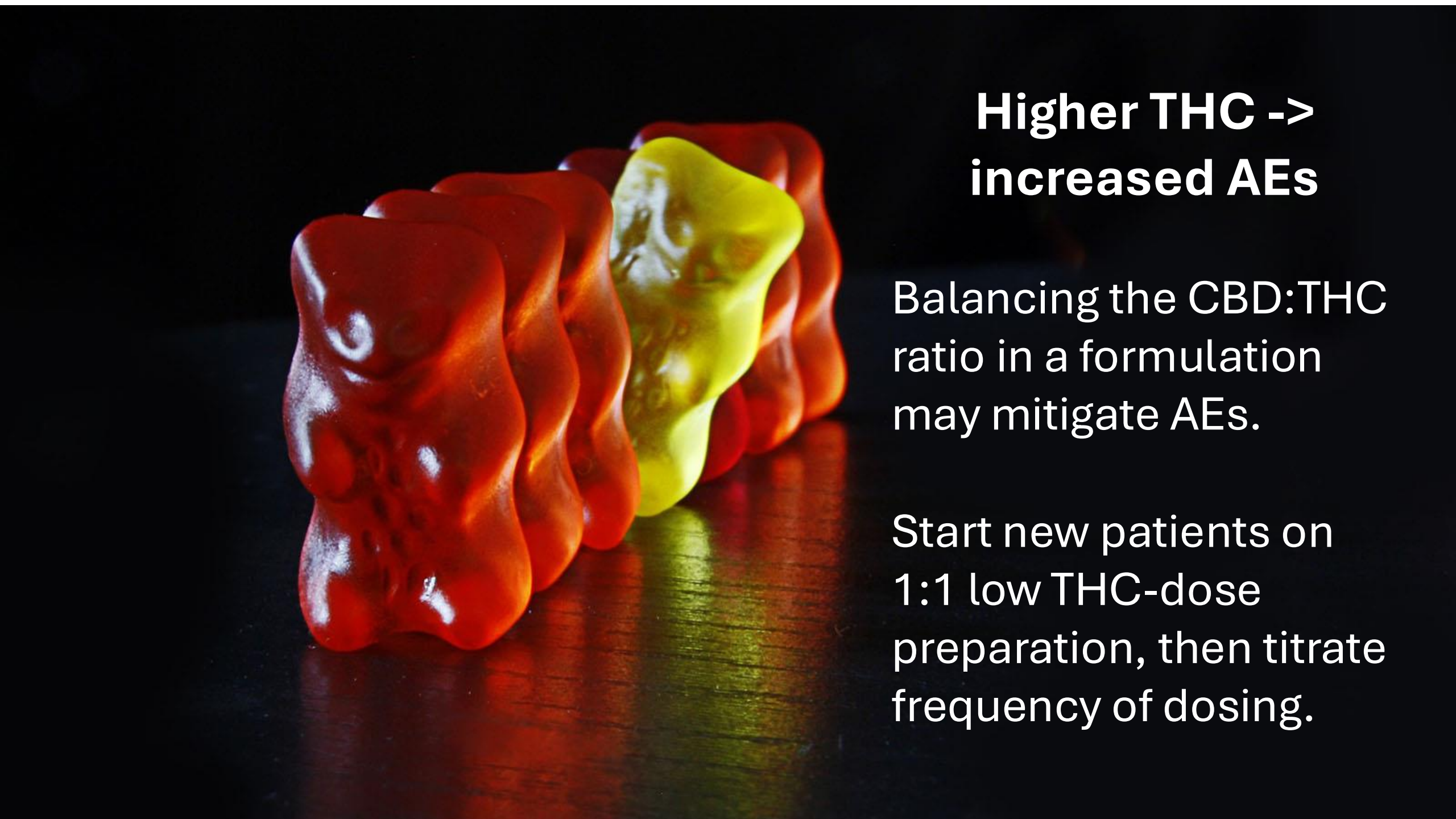
Don’t wait! Cannabis is not a ‘last resort.’

Adverse Effects

Sedation (additive with CNS depressants)
Diminished motor coordination
Increased appetite

Nausea (at higher THC doses)
Paranoia/agitation (at higher THC doses)

Tachycardia
Brief spikes in blood pressure



Higher THC -> increased AEs

Balancing the CBD:THC ratio in a formulation may mitigate AEs.

Start new patients on 1:1 low THC-dose preparation, then titrate frequency of dosing.

Pregnancy & Lactation

The current consensus is cannabis should be completely avoided during pregnancy & lactation.

The ECS forms in the early stages of fetal development, and neuronal connections flourish during infancy.

Drug Interactions

CYP enzymes are responsible for metabolizing 60-80% of all pharmaceuticals.

Substances can inhibit, induce, competitively bind, or change the shape of CYP enzymes, potentially changing action of the drugs they metabolize.

- **Inhibitors** delay the metabolism of the target drug
- **Inducers** enhance the action of the enzyme on the target drug, hastening its metabolism

Drug Interactions

To anticipate potential risks:

1. Check a OTC/Rx drug monograph for CYP enzyme info
2. Cross reference with the CYP enzymes affected by cannabinoids

Most studies on cannabis CYP interactions are pre-clinical (non-human models), so data is imperfect.

The route of administration significantly changes the likelihood of interactions.

CYP Drug Interactions

1A	2C	3A
THC inhibits when inhaled	High polymorphism contributes to varied function	Cannabis interactions are substrate specific – may inhibit or induce
CBD inhibits when taken before another 1A drug	THC and CBD inhibit	Most likely when CBD/THC is taken along with another drug
*tobacco, caffeine , melatonin	*anti-epileptics, NSAIDs, diazepam, warfarin, clopidogrel	*approx. 30% of all meds

CYP Drug Interactions

2D6

THC/CBD are anxiolytics, often given alongside other psych meds

CBD can inhibit this enzyme at high doses

*opiates, antipsychotics, TCAs, SSRIs, SNRIs, tamoxifen

Terpenes

Limited data suggest some naturally-occurring terpenes have the ability to modulate effect and enzyme activity

Entourage

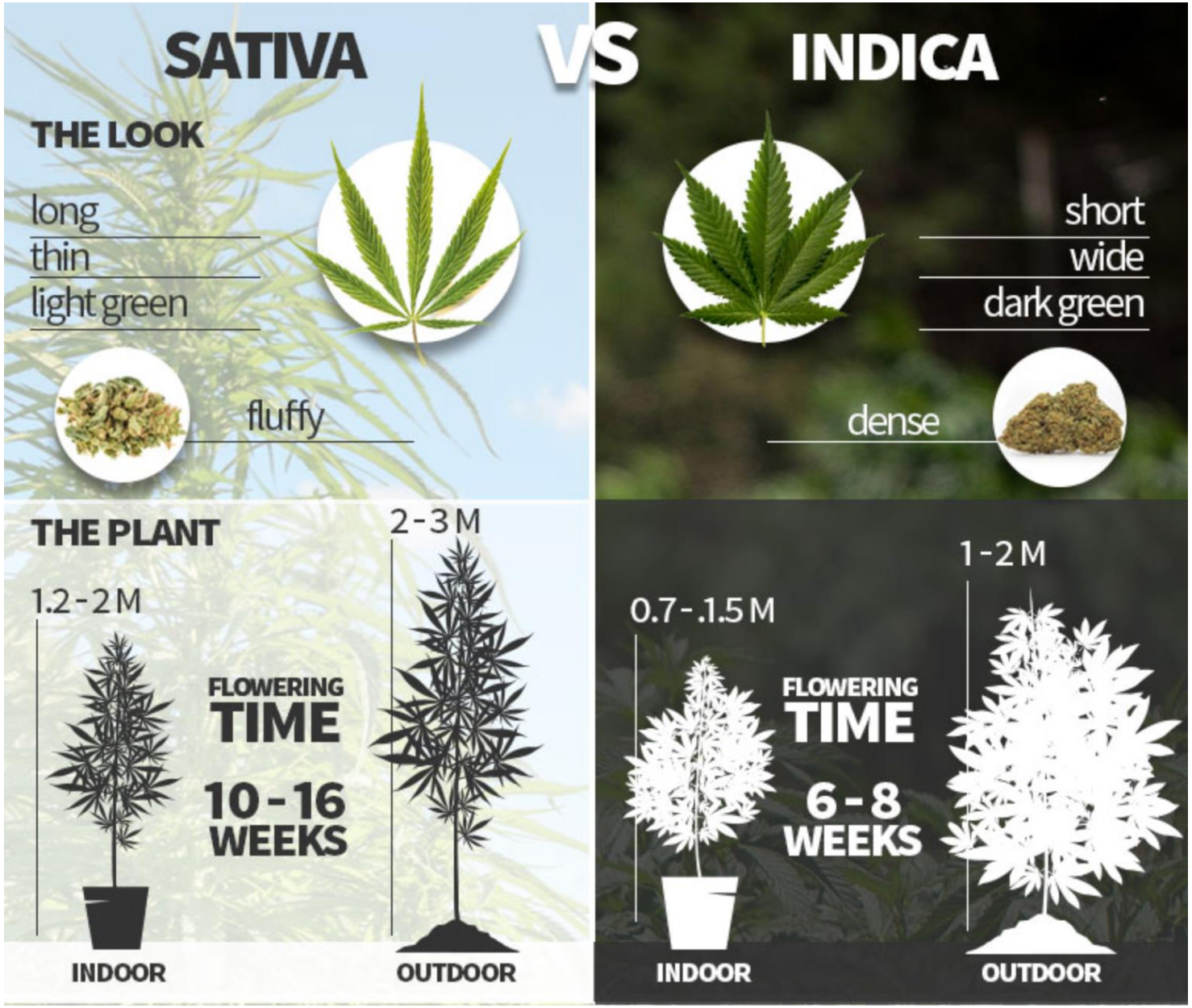
Cannabinoids interact with each other, contributing to the "entourage" phenomenon

Route of administration will also change the likelihood and/or potency of interactions.

~~Indica~~

~~Sativa~~

Plants found growing wild may be genetically distinct, but cannabis sold for consumption is a result of decades of hybridization.



https://www.cannaconnection.com/blog/11392-difference-indica-sativa-ruderalis-hybrid-plants

Strain Names are Confusing

Hybrid

Blue Dream

Indica

Lemon Cherry Gelato

Sativa

Horchata

Hybrid

OG Kush

Hybrid

22 Red

Hybrid

24K Blue Dream

Hybrid

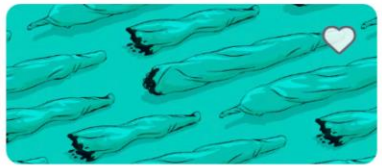
24K Gold

Hybrid

2 Scoops

Hybrid

303 OG Kush



Hybrid

309 Og

Hybrid

33 Bananas

Hybrid

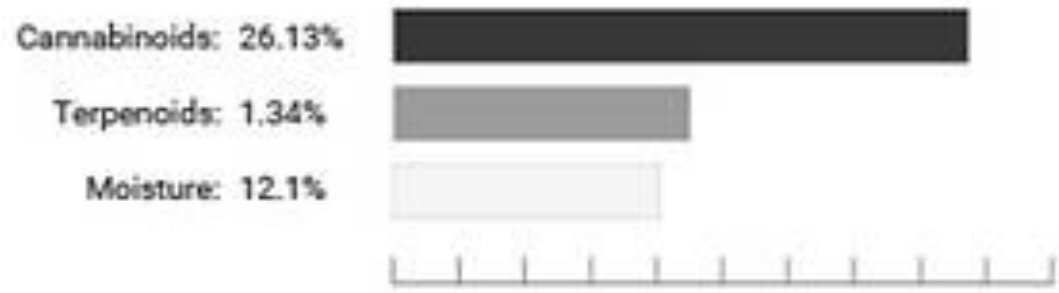
33 Mints

https://weedmaps.com/strains

Chemovars & Chemotypes

- Cannabis is a diverse crop
- Over 100 aromatic and psychoactive compounds
- The cannabinoid and terpene mix creates a distinct *experience*
- Patients and cannabis clinicians need detailed info about a product's components
- Dispensaries and producers should make COAs readily accessible

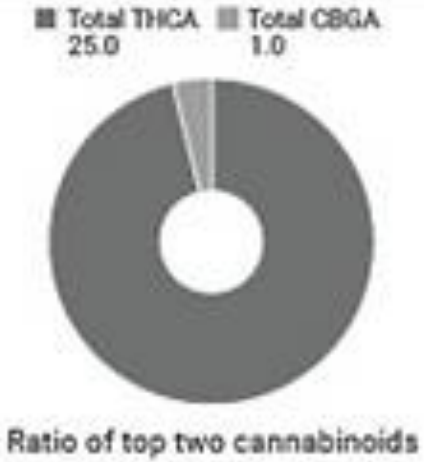
GENERAL



Scan this QR code for the complete test results from SC Labs

Class:	LCU1G
Sample Type:	Flower
Business Name:	Brand XYZ Cannabis
License Number:	100000N000
Sample ID:	123456N789
Date Collected:	01/10/2021
Date Issued:	01/12/2021

CANNABINOIDS



Ratio of top two cannabinoids

Cannabinoids	Weight %
THCA	24.2%
CBGA	0.9%
THC	0.5%
THCVA	0.1%
CBG	0.1%
CBDA	0.1%

FLAVOR

EFFECTS*

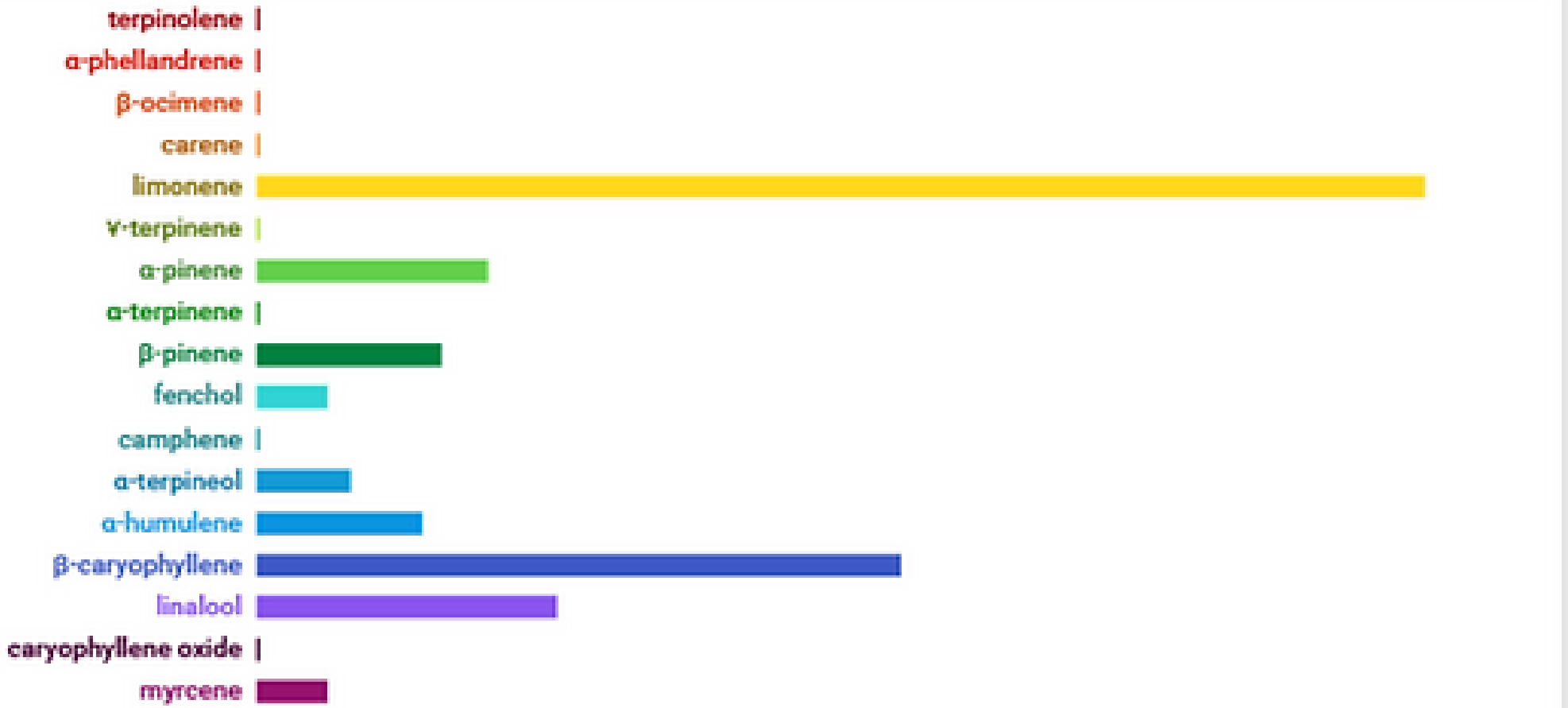
AROMA

Aroma Flavor

ENTOURAGE

*May vary with individual, dose, and time after administration.

PHYTOPRINT®



Company Name
1234 Hemp Lane #10
Fort Lauderdale, FL 33062
(999) 999-9999
client email

Certificate Of Analysis

ISO/IEC 17025:2017 Accreditation #103104

Order #: 99999
Order Name: FT - FLOWER 40 - DRIFT INDICA - 3.5G LAC
Batch #: 99999999
Received: 07/20/2020
Complete: 08/24/2020

Sample Analysis
Date/Time: 07/22/2020 09:53:50
Tech: Jazmine Adams (2332)
SOP: 400.01
Final weight/volume: 0.19500/40

Sample Prep
Date/Time: 07/25/2020 11:30:46
Tech: putri prawita (3359)
SOP: 400.01

Internal Batch 99999
Batch Number 99999
Date: 07/25/2020

CANNABINOID PROFILE:

Shimadzu Integrated UPLC-PDA

THC Label Claim
17%

CBD Label Claim
1%

Cannabinoids	LOQ	Dilution	12% moisture	Actual %	Dry weight(%)	mg/g
D9-THC	10 PPM	400	0.484%	0.492%	0.550%	4.921
THCA	10 PPM	400	11.099%	11.283%	12.613%	112.834
CBD	10 PPM	400	N/D	N/D	N/D	N/D
CBDA	20 PPM	400	0.033%	0.034%	0.038%	0.340
CBDV	20 PPM	400	N/D	N/D	N/D	N/D
CBC	10 PPM	400	0.022%	0.022%	0.025%	0.223
CBN	10 PPM	400	N/D	N/D	N/D	N/D
CBG	10 PPM	400	0.022%	0.022%	0.025%	0.220
CBGA	20 PPM	400	0.263%	0.268%	0.299%	2.676
D8-THC	10 PPM	400	0.057%	0.057%	0.064%	0.575
THCV	10 PPM	400	N/D	N/D	N/D	N/D
TOTAL THC					10.387%	103.876
TOTAL CBD					0.030%	0.298
TOTAL CANNABINOIDS					12.178%	121.789

10.387%
Total THC

38.90%
THC Label Accuracy %

0.030%
Total CBD

97.00%
CBD Label Accuracy %

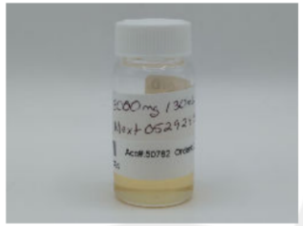
New Bloom Labs

Certificate of Analysis

Abhaya Holding Co.
PO Box 3052
Clarksville, IN 47130
abhayaholdingco@gmail.com
502-640-3439

Sample: 06-04-2024-50782
Sample Received:06/04/2024;
Report Created: 06/05/2024; Expires: 06/05/2025

3000mg / 30mL FSD Mext 05292436-01
Ingestible , Tincture



0.019 % Total THC	0.019 % Δ-9 THC
10.221 % Total Cannabinoids	10.115 % Total CBD

Cannabinoids

Complete

(Testing Method:HPLC, CON-P-3000)
Date Tested: 06/04/2024

Analyte	LOD %	LOQ %	Mass %	Mass mg/g
Δ-8-Tetrahydrocannabinol (Δ-8 THC)	0.0099	0.0148	**0.032**	**0.317**
Δ-9-Tetrahydrocannabinol (Δ-9 THC)	0.0099	0.0148	**0.019**	**0.191**
Δ-9-Tetrahydrocannabinolic Acid (THCA-A)	0.0099	0.0148	ND	ND
Δ-9-Tetrahydrocannabiphorol (Δ-9-THCP)	0.0099	0.0148	ND	ND
Δ-9-Tetrahydrocannabivarin (Δ-9-THCV)	0.0099	0.0148	ND	ND
Δ-9-Tetrahydrocannabivarinic Acid (Δ-9-THCVA)	0.0099	0.0148	ND	ND
R-Δ-10-Tetrahydrocannabinol (R-Δ-10-THC)	0.0099	0.0148	ND	ND
S-Δ-10-Tetrahydrocannabinol (S-Δ-10-THC)	0.0099	0.0148	ND	ND
9R-Hexahydrocannabinol (9R-HHC)	0.0099	0.0148	ND	ND
9S-Hexahydrocannabinol (9S-HHC)	0.0099	0.0148	ND	ND
Tetrahydrocannabinol Acetate (THCO)	0.0099	0.0148	ND	ND
Cannabidivarin (CBDV)	0.0099	0.0148	**0.034**	**0.337**
Cannabidivarinic Acid (CBDVA)	0.0099	0.0148	ND	ND
Cannabidiol (CBD)	0.0099	0.0148	**10.115**	**101.149**
Cannabidiolic Acid (CBDA)	0.0099	0.0148	ND	ND
Cannabigerol (CBG)	0.0099	0.0148	ND	ND
Cannabigerolic Acid (CBGA)	0.0099	0.0148	ND	ND
Cannabinol (CBN)	0.0099	0.0148	ND	ND
Cannabinolic Acid (CBNA)	0.0099	0.0148	ND	ND
Cannabichromene (CBC)	0.0099	0.0148	**0.022**	**0.217**
Cannabichromenic Acid (CBCA)	0.0099	0.0148	ND	ND
Total			**10.221**	**102.211**

Scan me!

Key Points

Many patients you care for are ALREADY using cannabis!

Take away the stigma – ask about cannabis use in every interaction.

Patience is required to find the right formulation and dose.

hello@ambercann.com
ambercann.com

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