

MEDICAL CANNABIS DOSING



Key Considerations*

1. Patient tolerance profoundly influences the required starting dosage.
2. Dosing timing varies based on condition, onset of symptoms and personal situation. Most conservative timing is at home at night – prior to bed.
3. Acute versus Chronic conditions may affect delivery mode selection:
 - Buccal = Fast Acting (10-30 min.), Moderate Therapeutic Window, No First Pass Metabolism
 - Inhalation = Fastest Acting (5-10 min.), Shorter Therapeutic Window, No First Pass Metabolism
 - GI Route = Slow Onset (1-3 hrs.), Longest Therapeutic Window, Affected by First Pass Metabolism
4. Product Categories:
 - Sublingual Tinctures (Buccal/GI Route = hybrid because patients end up swallowing part of their dose)
 - Oral Thin Films (Buccal Absorption)
 - Metered-Dose Inhalers (Inhalation)
 - Lozenges (GI Route)

DEBILITATING MEDICAL CONDITIONS	GB SCIENCES PRODUCTS ¹
Intractable Pain	THC-Rich or Balanced 1:1
Cancer - Pain	Balanced 1:1
Cancer - Chemotherapy-Induced Nausea & Vomiting	THC-Rich
AIDS/Positive HIV Status -Adjunctive Treatment	THC-Rich
Cachexia or Wasting Syndrome	THC-Rich
Seizure Disorders	CBD-Rich
Epilepsy	CBD-Rich
Multiple Sclerosis	Balanced 1:1
Spasticity	THC-Rich or Balanced 1:1
Severe muscle spasms	THC-Rich or Balanced 1:1
Parkinson's Disease	THC-Rich
Glaucoma	THC-Rich
PTSD	THC-Rich
Autism Spectrum Disorder	CBD-Rich
Crohn's Disease	THC-Rich
Muscular Dystrophy - Pain	Balanced 1:1

1-These recommendations are supported by data from US FDA-registered, randomized, double-blind, placebo-controlled human trials. However, these products have not been evaluated by the US Food and Drug Administration. They are not intended to diagnose, treat, cure, or prevent any disease. Use caution when using any cannabis-based product. Consult your physician for guidance.

FINDING OPTIMAL DOSAGES WITH GB SCIENCES = “START LOW, GO SLOW, STAY LOW”*

GBSL THC-RICH SUBLINGUAL TINCTURE (GBSL-THCR-TI)

- **Potency:** 300mg THC/30mL (10mg THC/mL). **Initial recommendation:** Naïve patients take 0.25mL (2.5mg THC) 1 time per day for 1 week. Experienced patients take 0.5mL (5.0mg THC) 1 time per day for 1 week. **If desired relief is not achieved after 1 week:** Patients may take initial dose 2 times per day for 2 weeks. **If desired relief is not achieved after 3 weeks:** Patients may take initial dose 3 times per day for 2 weeks. **For greater relief:** Naïve patients may increase initial dose in a stairstep manner by adding 0.25mL to initial dose for a 2-week period until desired relief is achieved (e.g., progress from initial 0.25mL to 0.5mL to 0.75mL to 1.0mL). Experienced patients may increase initial dose in a stairstep manner by adding 0.5mL to initial dose for a 2-week period until desired relief is achieved.

GBSL BALANCED 1:1 SUBLINGUAL TINCTURE (GBSL-1:1-TI)

- **Potency:** 150mg CBD:150mg THC/30mL (5mg CBD:5mg THC/mL). **Initial recommendation:** Naïve patients take 0.5mL (2.5mg CBD:2.5mg THC) 1 time per day for 1 week. Experienced patients take 1.0mL (5mg CBD:5mg THC) 1 time per day for 1 week. **If desired relief is not achieved after 1 week:** Patients may take initial dose 2 times per day for 2 weeks. **If desired relief is not achieved after 3 weeks:** Patients may take initial dose 3 times per day for 2 weeks. **For greater relief:** Patients may increase initial dose in a stairstep manner by adding 0.5mL to initial dose for a 2-week period until desired relief is achieved.

GBSL CBD-RICH SUBLINGUAL TINCTURE (GBSL-CBDR-TI)

- **Potency:** 1200mg CBD:60mg THC/30mL (40mg CBD:2mg THC/mL). **Initial recommendation:** Pediatric patients take 0.25mL (10mg CBD:0.5mg THC) every 8 hours for 2 weeks. Adult patients take 0.5mL (20mg CBD:1mg THC) every 8 hours for 2 weeks. **For greater relief:** Patients may increase initial dose in a stairstep manner by adding 0.25mL to initial dose for a 2-week period until desired relief is achieved.

*Caroline MacCallum, Ethan Russo. "Practical considerations in medical cannabis administration and dosing", European Journal of Internal Medicine 49 (2018) 12-19.

Homeostasis: Role of the Endocannabinoid System (ECS) in Humans

1. **Balance:** The ECS establishes and re-establishes physiological homeostasis within or between organ systems.
2. **Components of the ECS**
 - **Cannabinoid-Sensitive Receptors** include CB1, CB2, TRPV1, TRPV2, TRPA1, TRPM8, GPR18, GPR55, GPR119, etc., which are differentially distributed throughout organ systems
 - **Endocannabinoids** are endogenously-produced human cannabinoids, which are analogous to the plant cannabinoids, and they include: anandamide, 2-AG, PEA, etc.
 - **Synthetic and Catabolic Enzymes** produce and degrade the endocannabinoids in response to environmental signals. They include NAPE-PLD and DAGL-a for synthesis, and FAAH, COX2, or MAGL for degradation.
3. **Clinical Endocannabinoid Deficiency (CECD)** refers to certain disorders that seem to be caused by low production of endocannabinoids or dysregulation of the ECS. These CECD-linked disorders include: fibromyalgia, irritable bowel syndrome, migraines, etc.

Phytocannabinoids: Cannabis Molecules Mimic Structure & Function of Endocannabinoids

1. **Phytocannabinoids & Balance:** When ingested, plant-based phytocannabinoids can interact with the human ECS and re-establish physiological homeostasis within or between organ systems.
2. **Phytocannabinoids Interact with: Cannabinoid-Sensitive Receptors:** Phytocannabinoids signal through CB1, CB2, TRPV1, TRPV2, TRPA1, TRPM8, GPR18, GPR55, GPR119, etc., which are differentially distributed throughout organ systems. **Synthetic and Catabolic Enzymes:** Phytocannabinoids can be degraded by the catabolic enzymes in the ECS, so they don't build up like some synthetic cannabinoids.
3. **Phytocannabinoids May Alleviate Clinical Endocannabinoid Deficiency (CECD)** through replacement of low endocannabinoid levels or by activating/de-activating ECS regulatory pathways that may be chronically out of balance in some patients.

Potential Side Effects²:

² <https://www.mayoclinic.org/drugs-supplements-marijuana/art-20364974>

- Psychosis and schizophrenia, depersonalization disorder
- Decreased IQ and cognitive ability
- Decreased reaction times
- Diminished short- and long-term memory
- Dizziness
- Dry mouth
- Tachycardia
- Anxiety
- Extreme sleepiness/fatigue
- Auditory and visual hallucinations

Potential Drug Interactions²:

- Cannabis use may increase the effects of alcohol.
- Anticoagulants, anti-platelet drugs, herbs and supplements reduce blood clotting. Cannabis may change how the body processes these drugs and supplements, possibly increasing the risk of bleeding.
- Cannabis use in combination with CNS depressants may cause an additive sedative effect.
- Cannabis use with use of protease inhibitors (antiviral drugs) may reduce their effectiveness. Human studies suggest that delta-9 THC may reduce their effectiveness, therefore, GBSL Balanced 1:1 or CBD-Rich may be preferable to a THC-Rich therapy.
- Mixing cannabis with selective serotonin reuptake inhibitors may increase the risk of mania. Monitor side effects closely.