Overview

- Understanding the endocannabinoid system
- Science of Cannabis
- Difference between hemp and medical cannabis
- Routes of administration
- Dosing
- Adverse Reactions and how to prevent them
- Metabolism and considerations of cannabis
Understanding the endocannabinoid system

Gina Lucero RN
The Discovery of the Endocannabinoid System

- **Endocannabinoids were first discovered by Israeli scientist Raphael Mechoulam.**
- **Another research project lead to the discovery of the Endocannabinoid System.**
- **Both named after the cannabis plant.**
- **Most important physiologic system involved in establishing and maintaining human health.**
- **Endocannabinoids and their receptors are found throughout the body.**
- **Brain, Organs, connective tissues, glands and immune cells.**
- **The cannabinoid system performs different tasks, but the goal is always the same.**
- **Homeostasis.**
• **Promote homeostasis at every level of biological life**

• **Example of this is autophagy**

• **Deadly to effects on malignant tumors**
How does the eCS work?

- Immune system
- Nervous system
- Relationships with the external environment
- Alters human behavior
- Neurogenesis
What are cannabinoid receptors?

- **All vertebrate species**
- **Evolved in primitive animals over 600 million years ago**
- **Present throughout the body**
- **Embedded in cell membranes**
- **More numerous than any other receptor system**
- CB1, CB2
- 2-AG
- Anandamide (both are retrograde messengers)
What are endocannabinoids?

**Found at the intersection of the body’s various systems**

**Decreasing the release of activators**

**Stabilizing**
What are Phytocannabinoids?

- Cannabinoids that are derived from plants
  - Cannabis most well known example
  - Some types of moss
  - Hops
- Chemically similar to our own endocannabinoids
- Able to work on the same receptors in the body
- Difference between Hemp and Medical Cannabis is the THC content
Routes of administration

By Shauni McClung, RN
**Oro-Mucosal/Sublingual Routes of Administration**

**Oral Liquids/oils**
Tinctures (Oil and alcohol based)
Suckers, hard candy, losenges
Hash Oil/Buddha Tears/Rick Simpson Oil (RSO)

**Suggested starting dose for a cannabis naïve patient is 1.25-2.5mg**

Tinctures, hard candies and oils begin absorption in the mouth with initial onset of action beginning as soon as 5 minutes after use. The cannabis is absorbed by the blood vessels in the mouth directly into the bloodstream. When placed sublingually, they provide rapid relief of acute symptoms as they are not altered by the digestive process. Symptom relief can last for 2-3 hours.
**Edibles**

Cookies, brownies, cakes

Capsules

Chocolate, gummies

Infused drinks

*Suggested starting dose 2.5-5mg for cannabis naïve patients*

*Start LOW and go SLOW*

Again, absorption begins in the mouth, small effects can happen in as little as 15 minutes. Once digested, full effects begin to take place in an hour or two (give seniors time to metabolize.) A little bit can go a long way. For diabetics there are many edibles out there that are sugar free. Since edibles are primarily broken down in the liver, there is potential to interfere with certain prescribed medications such as warfarin and antihypertensives.

**Edibles provide longevity for symptom control lasting anywhere from 6-8 hours.**
Inhalation Administration

**Inhaled Medication**

Cannabis Flower (used in a pipe, water bong, dry vaporizer, joint, etc..)

Vaporizers

Inhalers

**Suggested starting dose is 1 puff**

Smoking cannabis is the fastest way to medicate because it hits the bloodstream via the lungs almost immediately providing rapid relief of symptoms.

It is difficult calculate the amount of CBD or THC that is being ingested/absorbed when smoking cannabis flower which is why it is suggested to start with one puff. Within about 5-10 minutes patients may experience some relief of their symptoms along with some feelings of euphoria and psychoactive effects.

*Again, be aware of hypotensive changes.*
Inhalation Administration

**Vaporizers**

Vaping is another mechanism for smoking cannabis by use of oil, wax and other concentrates. They are burned at a lower temperature than flower and don’t produce a strong aroma. Some medical professionals feel that vaping is less harmful to the lungs than smoking dried flower. Effects of vaping are almost immediate, and concentrates are typically much higher in their THC content. These higher concentrations are very effective for patients with severe, chronic pain.

**Smoking methods for vaping:**

- Vape or wax pen (also called a “battery”)
- Nectar straw “Dabbing”
- Oil Rig “Dabbing”

Again, it’s hard to decipher how many milligrams are in each inhalation so it’s best to start LOW and go SLOW, one puff to start.
Inhalation Administration

Inhalers

Inhalers deliver accurately controlled doses of medication directly to the bloodstream via the lungs. Traditionally inhalers are meant to treat a restricted airway due to asthma or COPD. When someone is exposed to an allergen, a pollutant, or have overexerted themselves it causes inflammation in the lungs causing wheezing and shortness of breath. Inhalers are filled with a steroid that works to relax the muscles in the lungs in order to move oxygen.

Cannabis inhalers are different than rescue inhalers. They are to be used for easier and rapid delivery of THC to the system. Some indications for use are:
- Metered doses of pure cannabis distillate
- Cannabis is a natural bronchodilator
- For patients who do not wish to (or cannot) smoke but need rapid relief.
- Discreet and portable
- No aroma
- Can be used sublingually (provides same rapid relief.)
- Easy to use (similar to vaping.)

Cautions for use:
- They are NOT meant to be a rescue inhaler for patients who are having trouble breathing.
- They are NOT meant to treat or replace medications used for asthma or COPD. It is simply a delivery method for THC.
- Keep away from children.
Topical Administration

**Topicals**

Salves, lotions, oils

Bath bombs, bath salts

Transdermal patches

Topicals have been used for thousands of years. They provide relief for arthritic joints, neuropathic pain, inflammation, psoriasis, eczema and headaches. Most topical applications do not cause psychoactive effects as they don’t cross into the central nervous system.

The exception is transdermal patches and bath bombs.

Patches are placed on the underside of the wrist or inner ankle (venous areas) and are absorbed into the bloodstream which can cause a psychoactive effect.

Bath bombs dissolve in your water and are absorbed into mucus membranes in the genitals causing a psychoactive effect, and muscle relaxation (effects will vary depending on concentration.)
Common Medications Replaced by Cannabis

• Ibuprofen, Naproxen, Acetaminophen
• Hydrocodone, Oxycodone, Oxycontin
• Cyclobenzaprine, Carisoprodol, Baclofen
• Diphenhydramine
• Zolpidem/Temazepam
• Lorazepam, Alprazolam
• Senna, Polyethylene Glycol 3350, Docusate
• Quetiapine, Olanzapine
• Metoprolol
• Gabapentin
Drug-Drug Interactions

- Opiates
- Anti-psychotics
- Warfarin
- Benzodiazepines
- Muscle Relaxers
- Hypnotics
- Anticholinergics
- Anti-hypertensives
- Anti-depressants
Metabolism and Considerations of Cannabis

BY Marisa “Charlie” Cecco LPN
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  - regular vs occasional consumers
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Cannabinoid Metabolism: Overview

- Cannabinoids—any various naturally-occurring, biologically active, chemical constituents of hemp or cannabis including some that possess psychoactive properties (THC)¹

- Bioavailability depends on cannabinoid and method of consumption

- Plasma concentration of cannabinoids depends on method of consumption ²

- Cannabinoids metabolized primarily in the liver ²
  - Metabolized by the CYP450 complex ²
Cannabinoid Metabolism: THC

- Tetrahydrocannabinol (THC)- A compound that is physiologically active component in cannabis preparations

- Metabolism by two specific enzymes CYP2C9 and CYP3A4

- Majority processed by CYP3A4 for Delta-8 and Delta-9 THC
Cannabidiol (CBD)- a crystalline non-intoxicating found in cannabis and hemp

Metabolized by specific enzymes CYP1A, CYP1A2, CYP2C9, CYP2C19, CYP2D6, CYP3A4, and CYP3A5

Mainly catalyzed by CYP3A4 and CYP2C19

Metabolites of CBD are partial inhibitors to CYP450
Considerations with Cannabis Use

- Consistent users will have small to moderate levels of cannabinoids in plasma even if it’s been several hours since consumption.\(^2\)

- Occasional users will have small levels for several hours after consumption but not for extended periods.\(^2\)

- Oral routes will have a larger impact of liver metabolism than inhalation routes.\(^2\)

- Cannabis does impact metabolism of pharmaceuticals.\(^4,6\)
Questions?


https://www.labroots.com/trending/cannabis-sciences/13189/role-endocannabinoids-orgasm
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Everyone Deserves a Nurse
122 Bryn Mawr Dr SE Studio 6
Albuquerque, NM 87106