Disclaimer: Representing my own opinion and not of the AG’s Office or CA DOJ Bureau of Forensic Services.

All Information provided is for educational purposes only.
Purpose of presentation

- Provide a simplified overview of THC metabolism
- Collection of blood
  - How do these Impact per se’
Pharmacokinetics

What the body does to the drug. Is the process by which a drug is moved through the human body.

- Absorption
- Distribution
- Metabolization
- Elimination
Absorption

- **Routes of Administration**
  - Inhaled – Quick absorption and rapid delivery to brain
  - Oral – Slow absorption (30-120 min)
  - Oral mucosal/sublingual – Fast (30 min)
  - Rectal – Fast (15 min)
Distribution

- Distribution of THC into tissues – decrease of THC in blood
- THC is highly lipophilic (likes fatty tissue) – such as heart, lungs, brain, liver and adipose tissues
Metabolism

- delta-9-THC is broken down by liver into:
  - 11-OH-THC (active metabolite)
  - COOH-THC (inactive metabolite)

- Other compounds
  - Cannabinol (CBN)
  - Cannabidiol (CBD)
  - Cannabigerol (GBG)
Elimination

- THC is stored in fat cells
  - Slowly eliminates back into blood
    - Mechanism for baseline levels of THC in chronic users

- Eventually eliminated in urine and feces
  - COOH-THC most common metabolite in urine
EFFECT OF COLLECTION TIME ON BLOOD THC CONCENTRATIONS

- Hartman et al 2016 *Clinical Chemistry*
- delta-9-THC decreases by 73% in first 30 minutes
- delta-9-THC decreases by 90% 1.4 h post dose
- The average blood collection is 1.5-4 hours after stop/crash.
- Recommend to get blood before starting DRE
Effect of Blood Collection Time on Measured $\Delta^9$-Tetrahydrocannabinol Concentrations: Implications for Driving Interpretation and Drug Policy

Rebecca L. Hartman,1 Timothy L. Brown,2 Gary Milavetz,3 Andrew Spurgin,3 David A. Gorelick,1,4 Gary R. Gaffney,5 and Marilyn A. Huestis1*

BACKGROUND: In driving-under-the-influence cases, blood typically is collected approximately 1.5–4 h after an incident, with unknown last intake time. This complicates blood $\Delta^9$-tetrahydrocannabinol (THC) interpretation, owing to rapidly decreasing concentrations immediately after inhalation. We evaluated how decreases in blood THC concentration before collection may affect interpretation of toxicological results.

CONCLUSIONS: Forensic blood THC concentrations may be lower than common per se cutoffs despite greatly exceeding them while driving. Concentrations during driving cannot be back-extrapolated because of unknown time after intake and interindividual variability in rates of decrease.

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WHAT’S THE MEAN/MEDIAN THC LEVEL IN CURRENT CALIFORNIA APPREHENDED DRIVERS?

- Data delta-9-THC levels in cases (data from 7 public labs years 2009-2016).
  - 60% of cases - levels are below 5 ng/mL**
  - DOJ data reveals the average delta-9-THC level is around 5 ng/mL from July 2017 – July 2018. More than 50% of cases are below 5 ng/mL

**Data collected by OCCL through a survey
REFERENCES

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- Pharmacology of Marijuana, Oberbarnscheidt and Miller, Journal of Addiction Research and Therapy, 2017, S11:012,

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