



# New and Common Drugs of Abuse

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# Disclosures

› Nothing to disclose



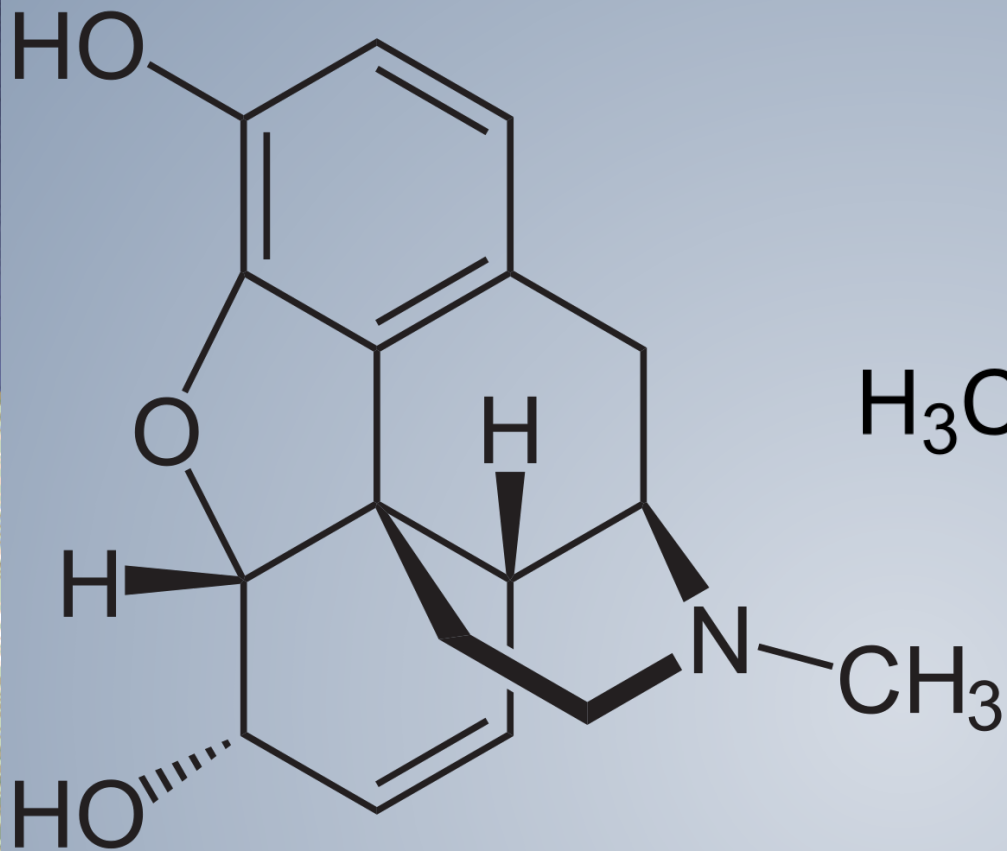
# Outline

- › Opioids:
  - Novel synthetic analogs
  - Special considerations in testing
  - Managing acute intox/withdrawal during resuscitation
- › Opioids cont. Kratom
- › Methamphetamine and analogues
  - › How neurotransmitters can inform treatment
- › Cannabis (delta-8/9 THC)
- › Synthetic cannabinoids

# Opioids definition

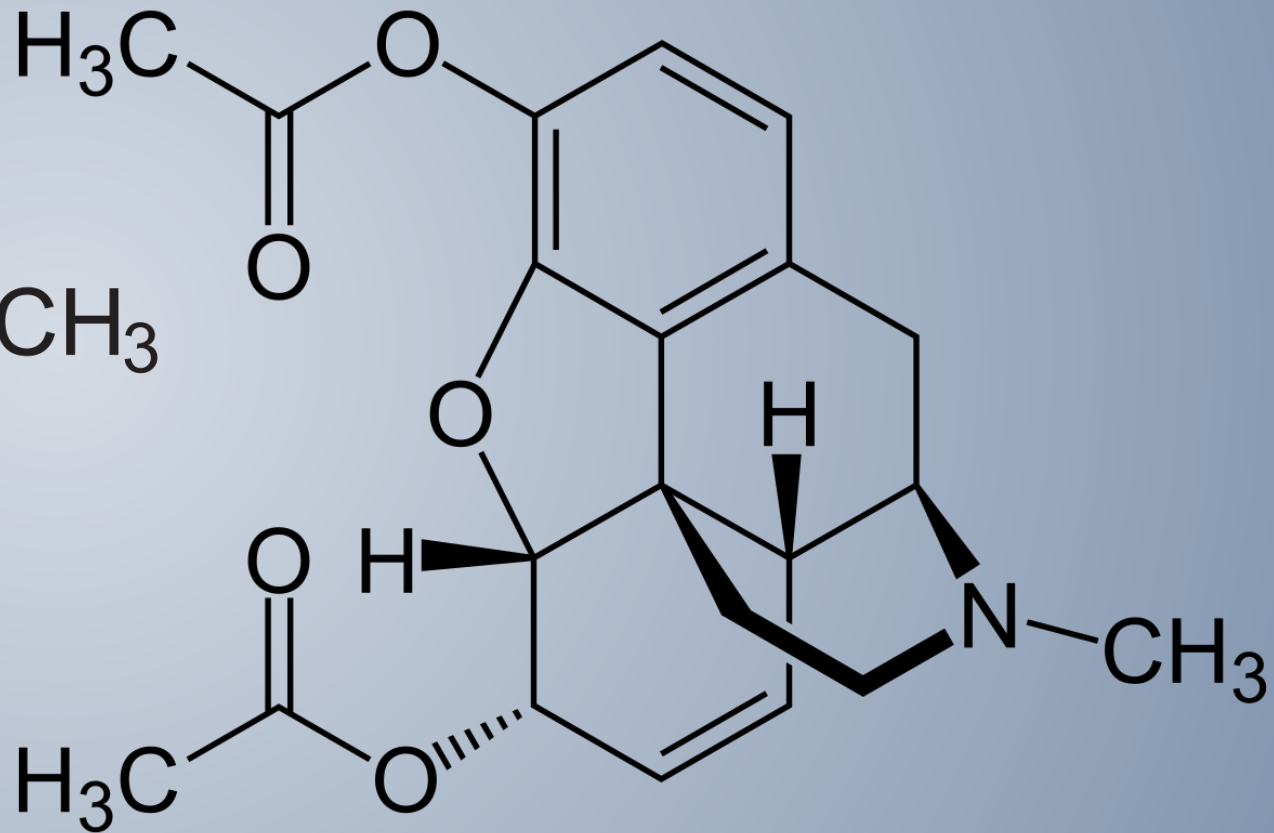
- › Opiate vs opioid
  - Derived from papaver somniferum vs. synthetically altered/created
  - Common theme of binding to opioid receptors (most notably, mu)
  - B-arrestin pathway signaling can be altered in synthetic opioids (functional selectivity)

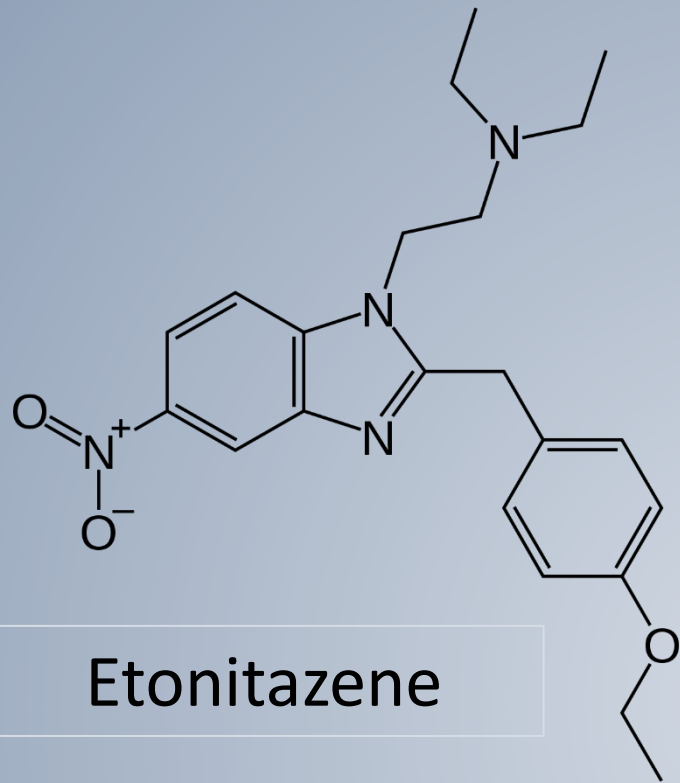




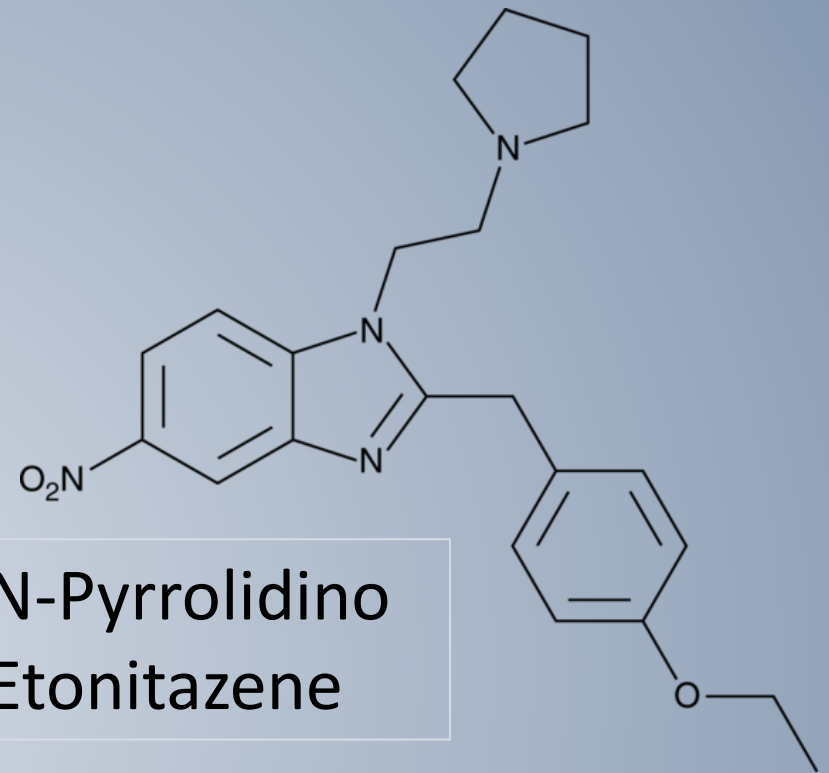
Morphine

Heroin

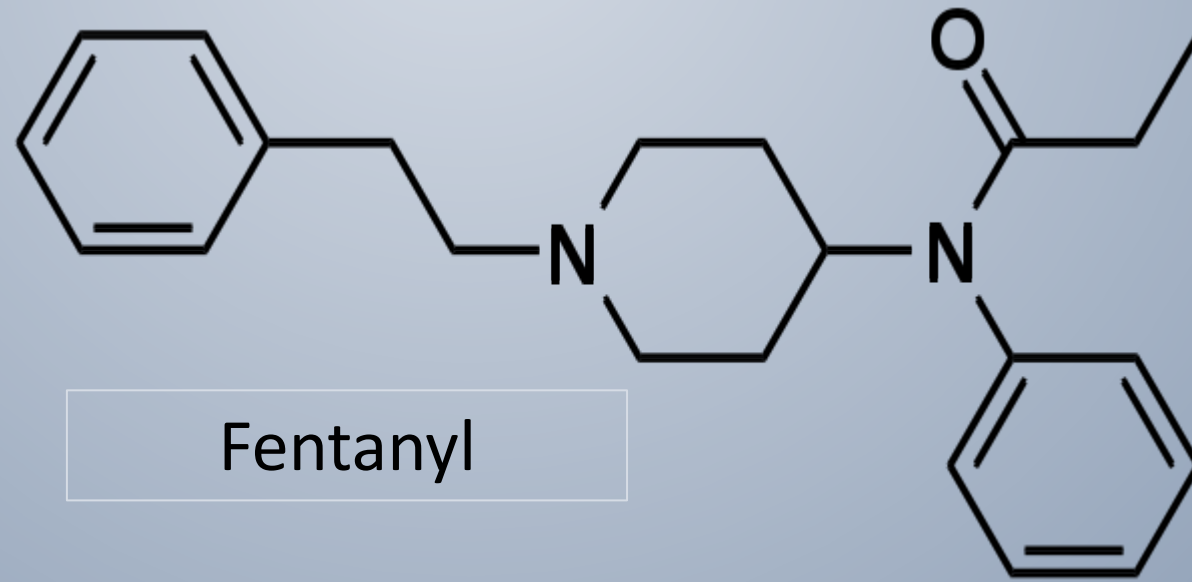




Etonitazene



N-Pyrrolidino Etonitazene



Fentanyl



## Nitazene's et al

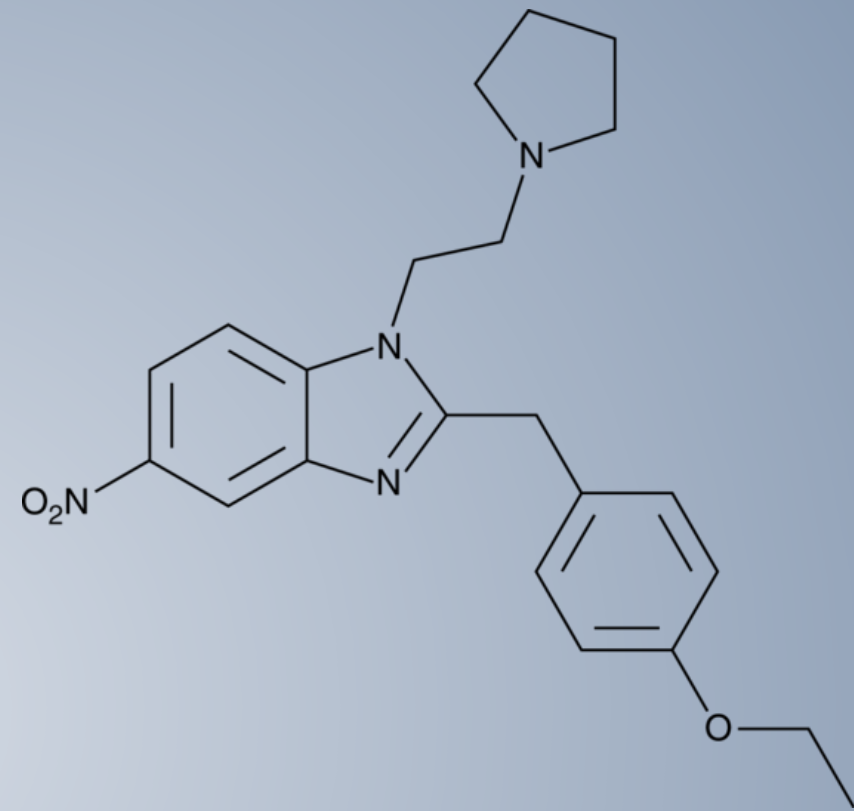
- › “Template” molecules
- › Unclear legality in some cases
  - Bill S.1006 recently introduced
  - Schedules many fentanyl analogues
- › Very difficult to test for
- › Difficult to track
- › May require higher doses of naloxone
- › Bottom line, treat the toxidrome in front of you





## Novel Synthetic

- › N-Pyrrolidino Etonitazene (commonly called PYRO)
  - At least one death in Denver
  - 20x more potent than fentanyl
  - NOT often found alone
  - NOT detected by UDS
  - NOT detected by test strips



(Picture provided by Denver Police Department)





# Opioid acute intoxication and withdrawal

- › Complicates resuscitations
- › Can use naloxone by any route for treatment, but may induce acute withdrawal (remember, goal is respiratory status NOT mental status)
- › Tachycardia and HTN may be related to withdrawal
- › In acute setting with other concomitant issues, prefer opioids to treat acute opioid withdrawal; discuss induction later when stabilized
- › Two opioid pearls:
  - Fentanyl is weakly serotonergic
  - Hydromorphone has highest binding affinity of commonly available opioids in the ED

# Kratom

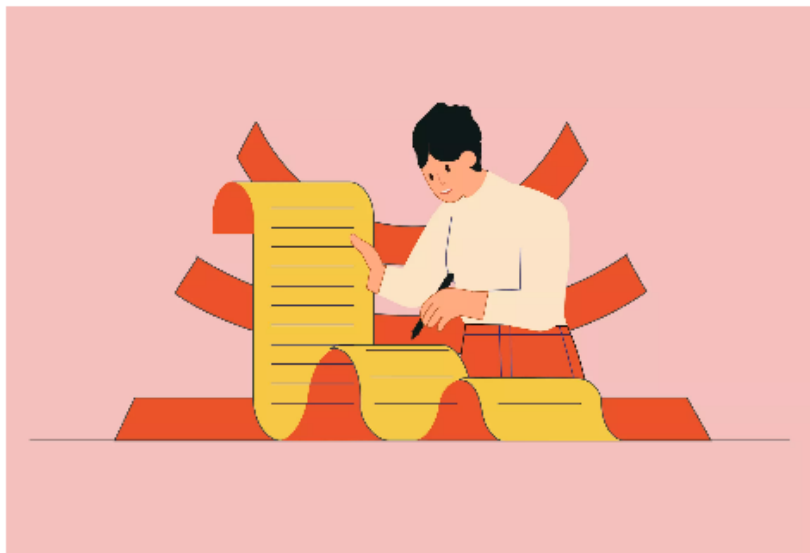
- › *Mitragyna speciosa* is a tropical tree in the caffeine family
- › Has been used for centuries, usually for stimulant effects
- › Commonly sold as pills/powder for direct ingestion or drinking





# Kratom

- › Active ingredients: mitragynine/7-hydroxymitragynine
- › Shows dose dependent effects:
  - Lower doses (often chewing leaves) causes euphoria and increased energy
  - Higher doses (usually extracts) produce more opioid effects
- › Partial agonists of MOR, competitive antagonist at DOR
  - Thought to have profound B-arrestin aberrations, which accounts for the substantially lower rate of respiratory depression seen
  - Used frequently for chronic pain, opioid withdrawal, etc.
- › Increasingly more common, >2 million people have used in the last 12 months



Kratom Guides

# What Is Kratom? Uses, Side Effects, & Safety

Kratom is a powerful psychoactive herb from Southeast Asia. It's stimulating in lower doses & sedative in higher doses.

Kratom Vendors

**The 10 Best Kratom Vendors Online – Verified Reviews [2022]**



Kratom Guides

**Kratom Dosage Guide — How Much Kratom Should I Take?**



Kratom Guides

**Best Kratom For Anxiety & Depression: Strains, Dosage, Side Effects**



Kratom Guides

**Best Kratom For Pain Relief: Strains, Dosage & Effects**



Kratom Guides

**Best Kratom for Energy & Focus: Most Stimulating Strains**



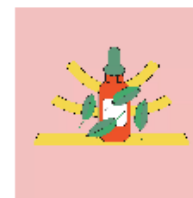
Kratom Guides

**Kratom Near Me: Buying Kratom Online vs. In-Store**



Kratom Guides

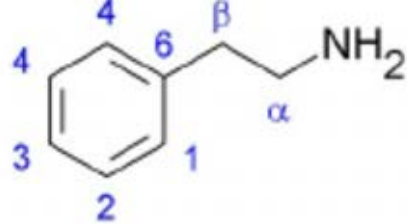
**How to Make Kratom Tinctures: Preparation, Benefits, Tips & Tricks**



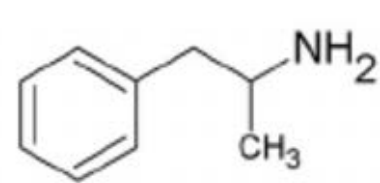
Kratom Guides

**Best Kratom for Weight Loss: Can It Really Help?**

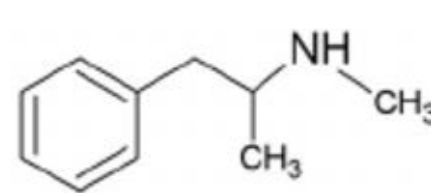




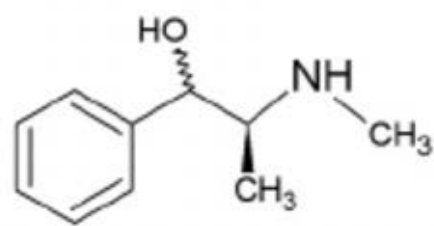
Phenylethylamine



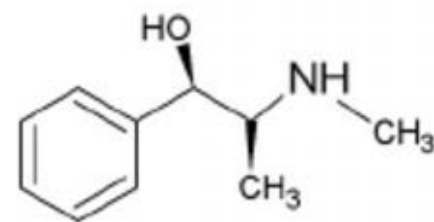
Amphetamine



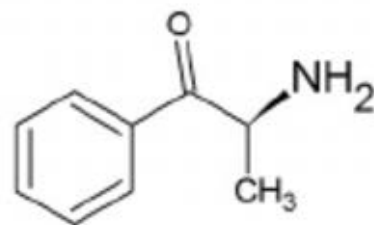
Methamphetamine



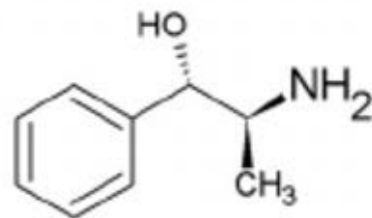
Pseudoephedrine



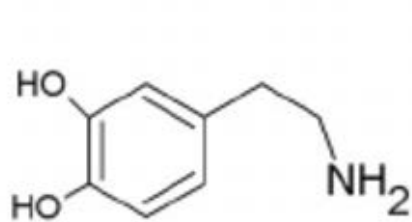
Ephedrine



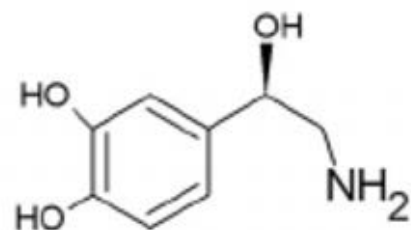
Cathinone



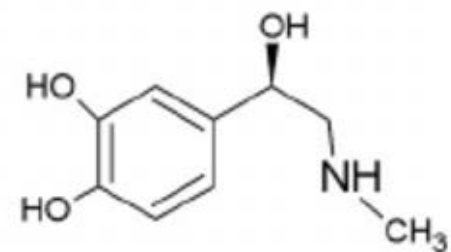
Cathine (norpseudoephedrine)



Dopamine



Norepinephrine



Epinephrine (adrenaline)

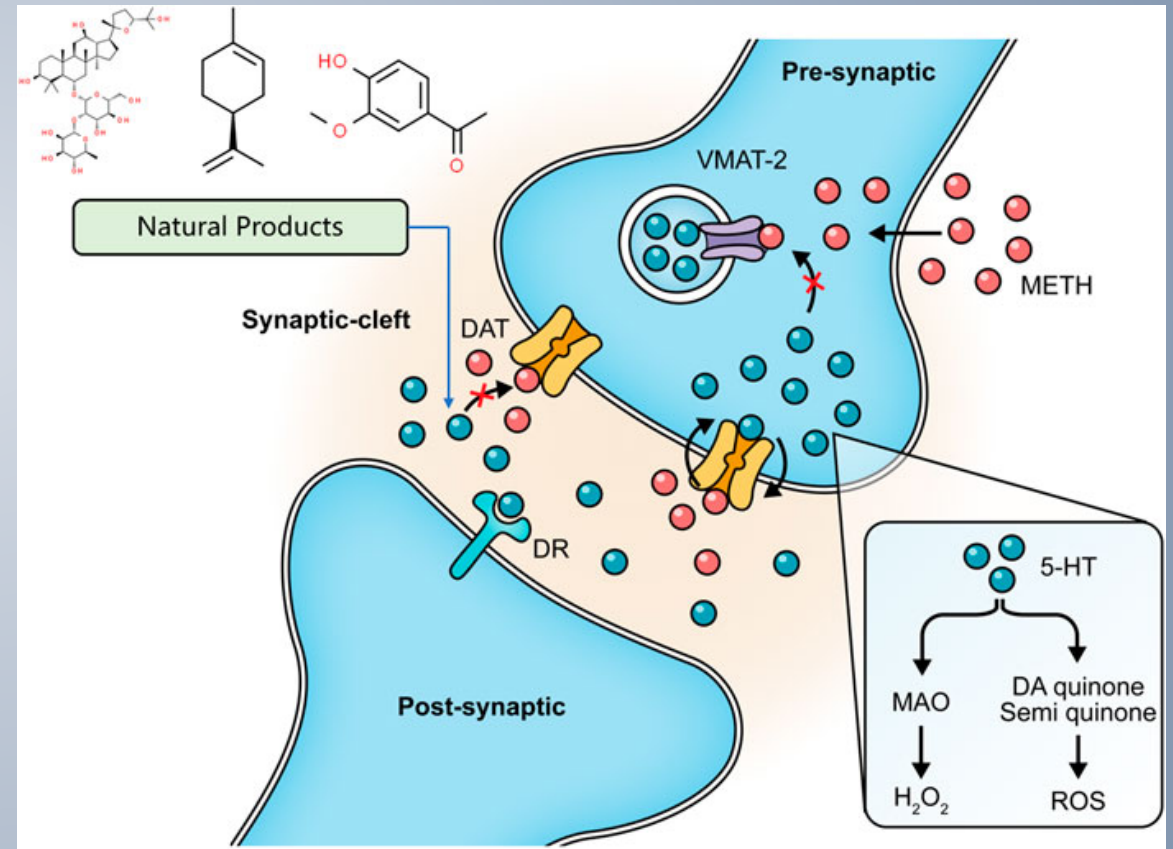


## Phenylethylamines we know and love

- › Trends from 2017 demonstrate nationally meth use increased to nearly 1 million people
- › In Colorado, nearly 1% of young adults have tried meth at least once
- › Much more common on the West Coast
- › Meth related offenses have rising linearly over the last decade, while other stimulants (e.g. cocaine) have remained flat
- › High risk of secondary disease (e.g. cardiomyopathy, infection, trauma etc.)
- › Can be contaminated (e.g. lead poisoning outbreak in Oregon)

# Acute treatment of the complicated meth pt

- › Meth demonstrates dose related response
  - NorEpi predominates at low doses
  - Dopamine at larger doses
- › This likely partially explains “meth psychosis”
- › Consider antipsychotic use
  - Largely hemodynamically neutral
  - Directly treats high dopamine load
- › Benzodiazepines mainstay of treatment
  - Benzo’s can decrease release of NT’s
  - Likely see improvement in HTN, tachycardia, and hyperthermia



# What is being called marijuana and is there a difference?

- › Delta-8 THC, delta-9 THC, synthetic cannabinoids
- › Delta-9 is the predominant active ingredient in what is colloquially called MJ
  - Newer strengths and level of concentration now possible
- › Due to the Farm-Bill, hemp growth was expanded
  - Delta-8 THC is present in small quantities in hemp
  - Can be extracted and concentrated, not necessarily illegal
  - 2/3's as potent as CBD





# Synthetic Cannabinoids

- › Common names: Spice, K2, synthetic MJ, herbal smoking blends etc.
- › Named so for binding to CB1/2, but NOT very similar to MJ
- › Often full agonists vs partial agonism of THC
- › More frequently binds alternative receptors, such as NMDA, serotonin etc.
  - Can also affect enzymes like MAO
- › More severe side effects and several deaths linked to these products
- › Contaminates also a problem (brodifacoum)





## Summary

- › Opioids continue to be a difficult problem
  - Novel synthetics will NOT be detectable in most pt's
- › Kratom use is much higher than we likely know
  - Many pt's use for withdrawal
  - Should be the focus of further study
- › Meth use is, unfortunately, still on the rise
  - Consider anti-psychotic use
- › Increasing MJ legalization will likely lead to novel products
  - Effects of these are yet to be determined



# Thank you for your time

- › Questions?
- › References available upon request
- › Please email with any other questions or concerns
  - [Nikolaus.Matsler@RMPDS.org](mailto:Nikolaus.Matsler@RMPDS.org)