

Kratom and the new class of street drugs: Acute Care

Adam C. Hunt, DO MHS FACEP

05/15/2025

Disclosure

- No financial disclosures



Road Map

- Multispecialty Collaboration Today
- Drugs
- Pre-hospital protocols
- ER Management
- Next steps



Who are the players...

- **Kratom**
- K2/Spice
- Xylazine
- Medetomidine
- Carfentanil



And, now I'm
on a watch
list...



Kratom

- “Kratom” refers to both *Mitragyna speciosa*, a tree native to Southeast Asia, and to products derived from its leaves that are marketed as herbal supplements
- Has and “opioid and stimulant type effect”
- The vodka/red bull of drugs
- Not FDA Approved
- However, people claim that it helps with opioid withdrawal symptoms or cravings, pain relief and managing mental health problems...

Kratom

- Most common studied substance in Kratom is mitragynine. When ingested, mitragynine breaks down into another chemical called 7-hydroxymitragynine.
- Kratom's effects on the body include nausea, itching, sweating, dry mouth, constipation, increased urination, tachycardia, vomiting, drowsiness, and loss of appetite. Users of kratom have also experienced anorexia, weight loss, insomnia, hepatotoxicity, seizure, and hallucinations.
- Dose response: Low (stimulation), Higher (sedative)

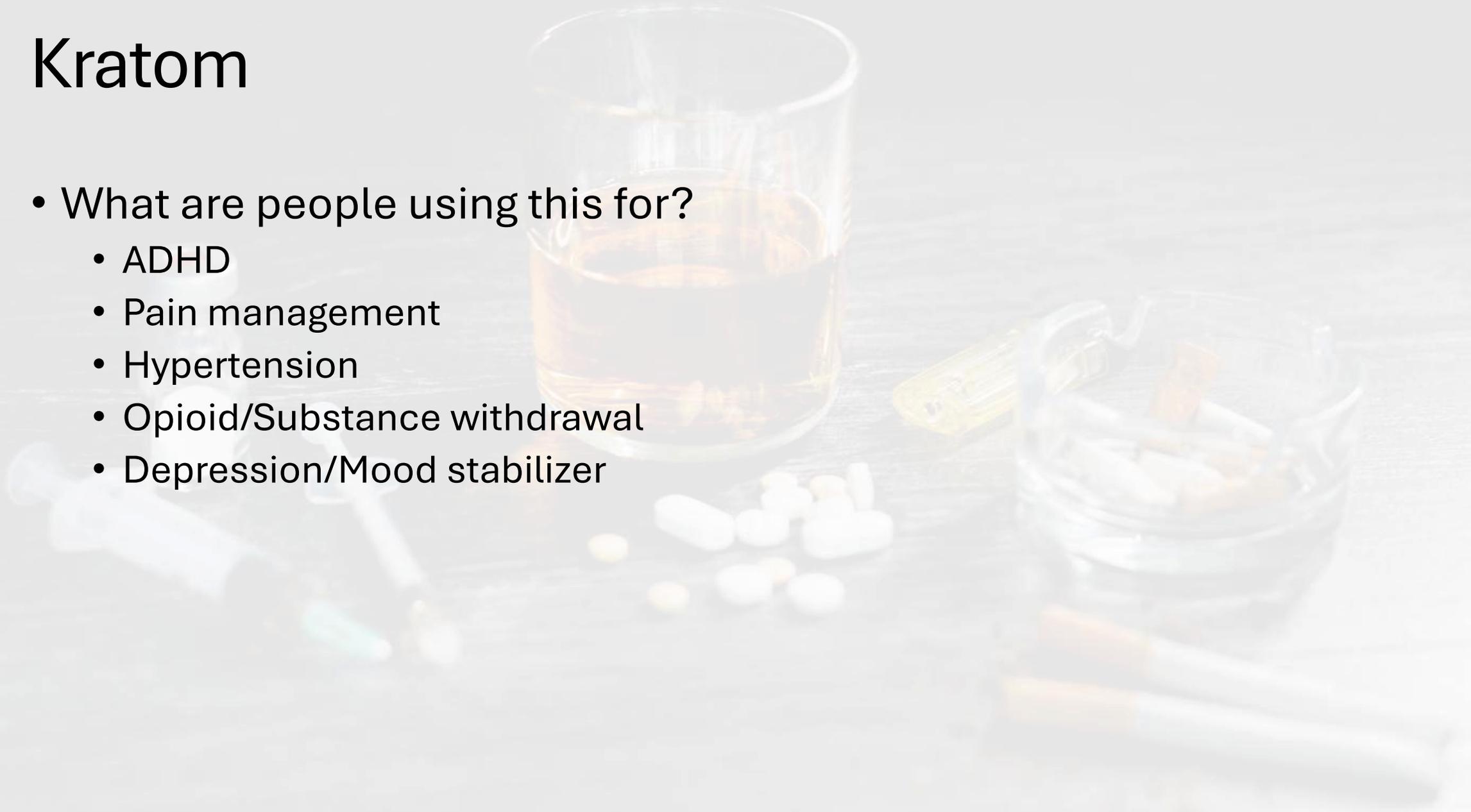
Kratom

- Indole based alkaloid
- Time to peak serum concentration 1.36 hours
- Half-Life 3.85 hours
- Processed by the liver
- Unknown toxic level
- Receptors:
 - Opioid (Mu, Delta, Kappa)
 - Dopamine D2
 - Serotonin (5-HT_{2C}, 5-HT₇)
 - Alpha-2 Adrenergic (Decrease Sympathetic tone)

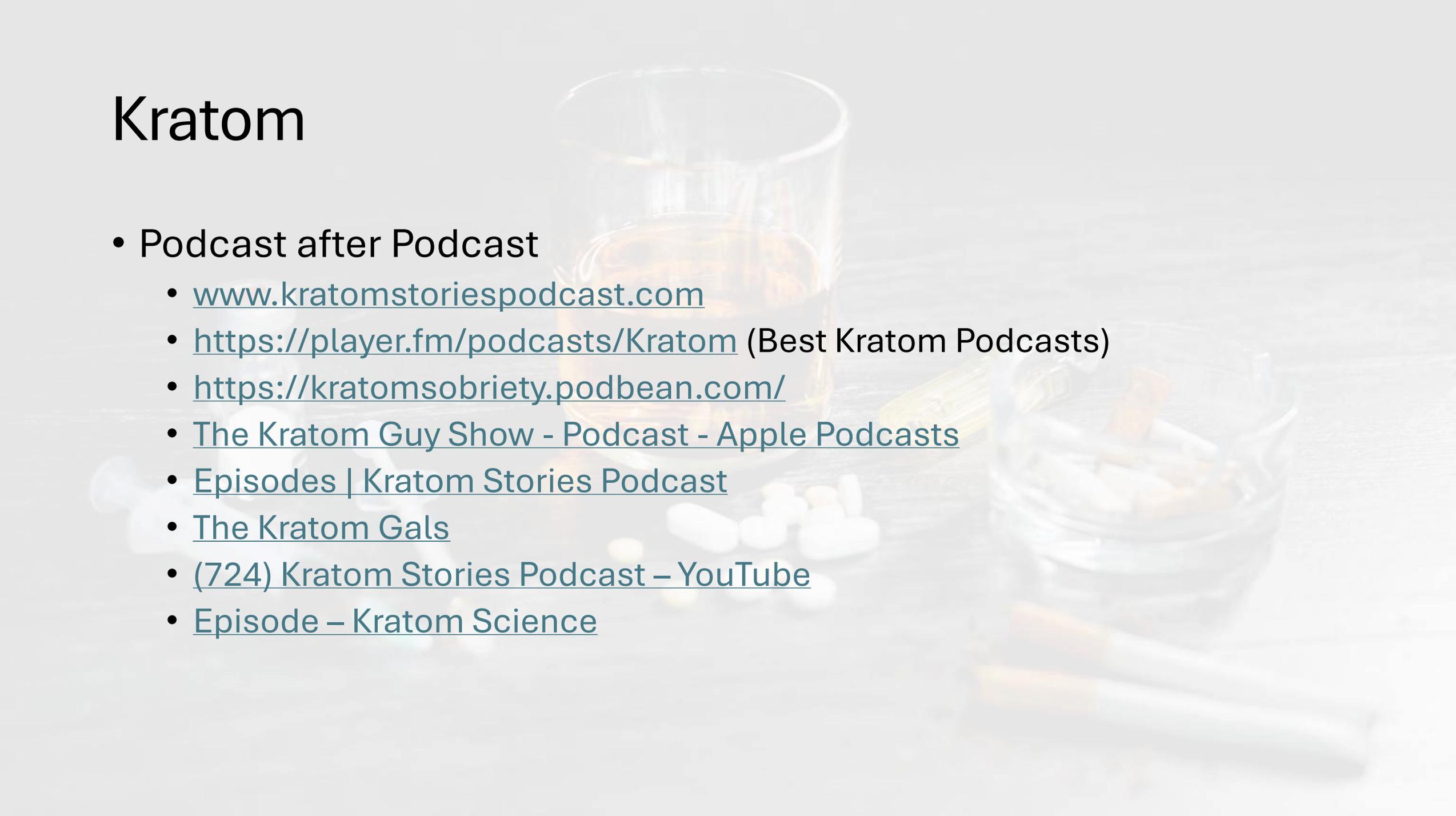


Kratom

- What are people using this for?
 - ADHD
 - Pain management
 - Hypertension
 - Opioid/Substance withdrawal
 - Depression/Mood stabilizer



Kratom

A glass of kratom tea with a straw, a small bowl of kratom powder, and several kratom capsules on a wooden surface.

- Podcast after Podcast
 - www.kratomstoriespodcast.com
 - <https://player.fm/podcasts/Kratom> (Best Kratom Podcasts)
 - <https://kratomsobriety.podbean.com/>
 - [The Kratom Guy Show - Podcast - Apple Podcasts](#)
 - [Episodes | Kratom Stories Podcast](#)
 - [The Kratom Gals](#)
 - [\(724\) Kratom Stories Podcast – YouTube](#)
 - [Episode – Kratom Science](#)

Kratom

- Long history of use
- Culturally acceptable in Southeast Asia for centuries, if not longer
- Mostly consumed by crushing the leaves to smoke or make a tea



Kratom

Kratom was originally used for the following purposes: [↻ Kraoma](#) [+4](#)

- Combat fatigue and increase productivity
- Soothe physical discomfort and alleviate stress
- Treat diarrhea
- Manage pain
- Help with opioid and alcohol withdrawal symptoms
- Improve sexual desire
- Detoxify the body from other substances
- Provide natural home remedy in Southeast Asia

Michigan Poison Control Center

<https://static1.squarespace.com/static/5f777ef4c9213f4b5800fc9a/t/616f1ce9b22cd07ca7ff363b/1634671850221/Kratom+People+in+Recovery+Final+draft.pdf>



KRATOM HAS THE POTENTIAL TO BE ADDICTIVE [Kratom Drug Facts | National Institute on Drug Abuse](#)
Kratom use has been used by individuals in recovery thinking it is an effective means of dealing with addiction, including opioid addiction. **It's not!**

Kratom is a tropical tree native to Southeast Asia, with leaves that contain compounds that can have psychotropic (mind-altering) effects.

- It is sold in pill/capsule/powder/extract form that comes from the leaves of a tree in Southeast Asia.
- Kratom leaves are sometimes brewed in tea or eaten in food.
- It has mind-altering effects and can be addictive at high doses. [Kratom Drug Facts | National Institute on Drug Abuse \(NIDA\)](#)

What are the Potential Dangers?

- Small doses = stimulant effects
- Large doses = depressant effects
- It is considered a dietary supplement by the FDA, therefore it is not regulated like medication. This increases the risk of contamination like salmonella. It also means the quantity of active ingredients may differ from what's printed on the label, or that there could be additional, potentially dangerous substances (nickel and lead) mixed in, which may be harmful with long-term exposure. [Kratom: the risky new substance you need to know about \(https://doctors-hospital.net\)](#)

Is Kratom Addictive?

- It can be.** Like other drugs with opioid-like effects, Kratom can become addictive for some people. People that have had addiction issues in the past should be very aware that this drug is not safe. [National Institute on Drug Abuse](#)
- Kratom may have the potential to induce dependence-like symptoms (withdrawal and craving). There are current studies aimed to address the prevalence of, and motivations for, kratom use among individuals receiving substance use disorder treatment. [Recovery Research Institute \(recoveryanswers.org\)](#)

Is Kratom FDA Regulated?

- Unfortunately, it is not currently regulated in Michigan. This herb is sold in some gas stations, tobacco shops, and on-line in Michigan under a variety of names. However, this product is banned in six states and 18 countries. [National Institute on Drug Abuse \(NIDA\)](#) and [Is Kratom Legal? Kratom Legality by State - Sprout Health Group](#)

Kratom

Case report

Mitragyna speciosa (Kratom) poisoning: Findings from ten cases

David Peran^{a b}  , Michael Stern^b, Petr Cernohorsky^c, Roman Sykora^{a b}, Stanislav Popela^{d e},
Frantisek Duska^b

two cases and lack of response in one patient were observed. All patients survived and the effect of intoxication wore off within two days. Kratom overdose toxidrome is variable and, in keeping with its receptor physiology, consists of signs and symptoms of opioid-like overdose, sympathetic overactivation and serotonin-like syndrome. Naloxone can help to avoid intubation in some cases.

Kratom

Kratom (Mitragynine) Ingestion Requiring Naloxone Reversal

[Daniel L Overbeek](#)^{1,✉}, [Jonathan Abraham](#)¹, [Brendan W Munzer](#)¹

- 38 F with h/o Anxiety, Depression and Polysubstance Abuse

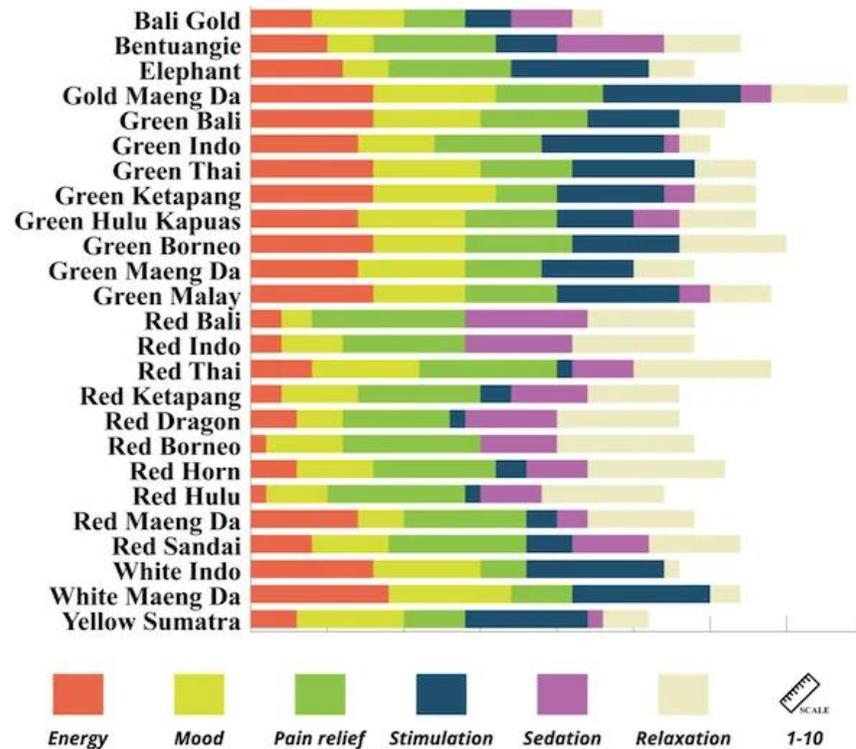
Kratom

- Pitfalls
 - Using it as an opiate replacement or for opiate withdrawal
 - Can get addicted to anything hitting these receptors
 - Does not go well with other substances
 - Not regulated and cannot get consistent dosing
 - There are 45 different alkaloids that have been isolated from Kratom
 - High likelihood of interaction and side effects

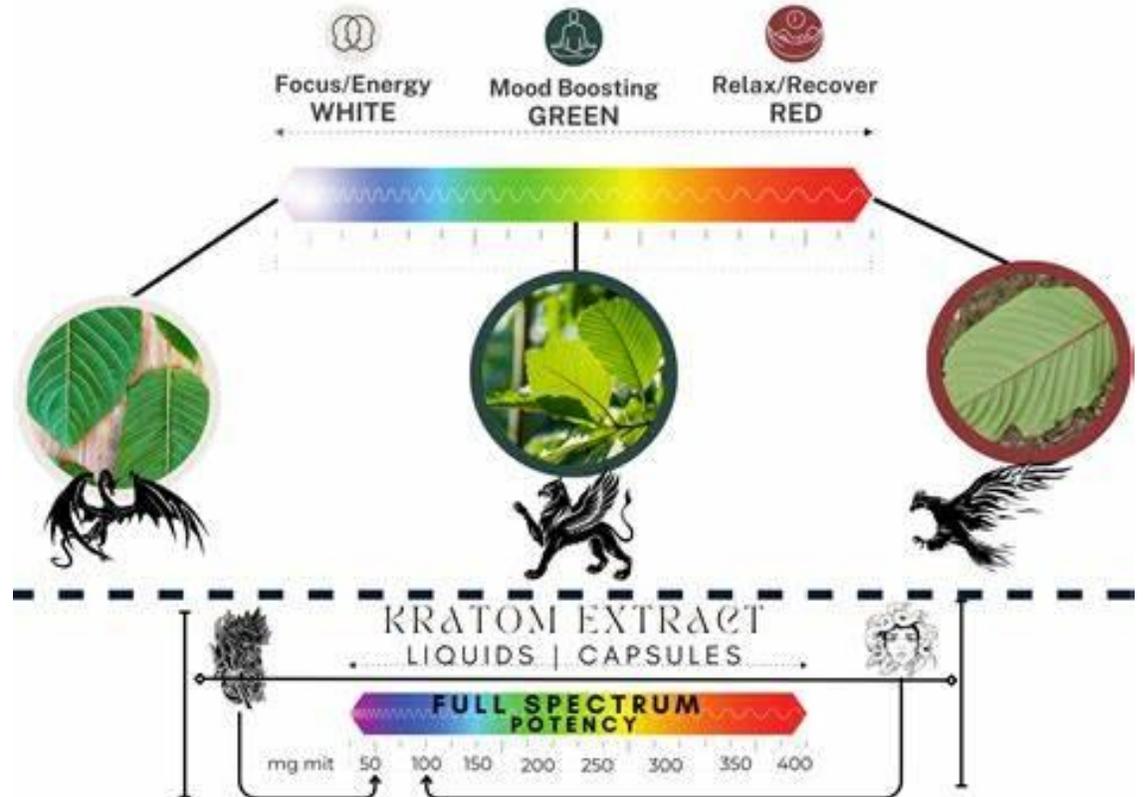
Kratom

Multitude of different strains and potencies

Kratom Strains Chart



KRATOM STRAINS



K2/Spice



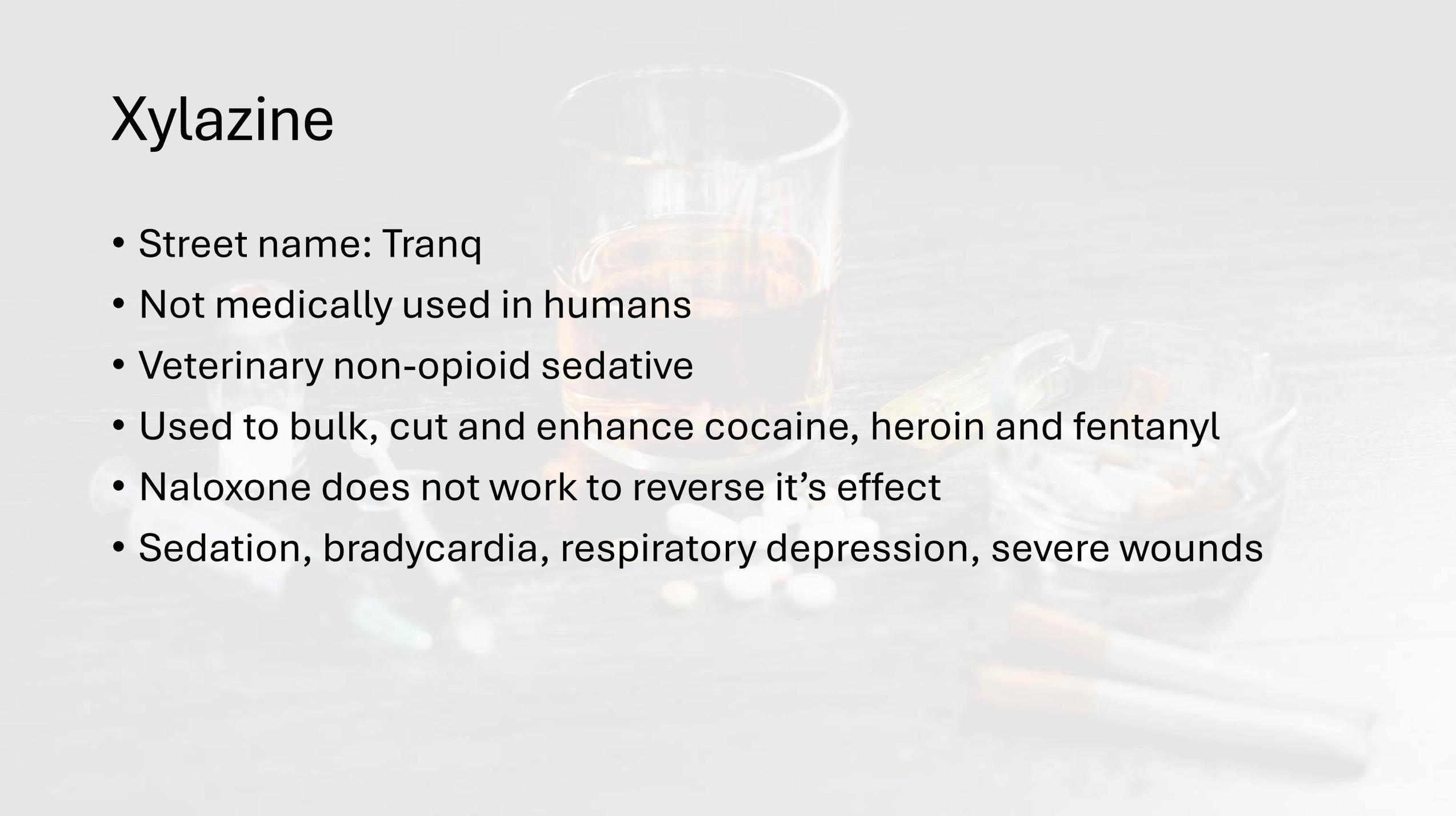
- Synthetic cannabinoid
- AKA: Spice, K2, Blaze, RedX Dawn, Paradise, Demon, Black Magic, Spike, Mr. Nice Guy, Ninja, Zohai, Dream, Genie, Sence, Smoke, Skunk, Serenity, Yucatan, Fire, and Crazy Clown
- Sold under herbal incense or potpourri and labeled “not for human consumption”
- So, please tell us how to cook this stuff up...

K2/Spice



- Common: Tachycardia and elevated blood pressure
- Severe side effects: agitation, anxiety, seizures, stroke, coma, and death by heart attack or organ failure
- With a side order of: Intense hallucinations, severe agitation, disorganized thoughts, paranoid delusions, unconsciousness and violence after smoking products laced with these substances.

Xylazine



- Street name: Tranq
- Not medically used in humans
- Veterinary non-opioid sedative
- Used to bulk, cut and enhance cocaine, heroin and fentanyl
- Naloxone does not work to reverse it's effect
- Sedation, bradycardia, respiratory depression, severe wounds

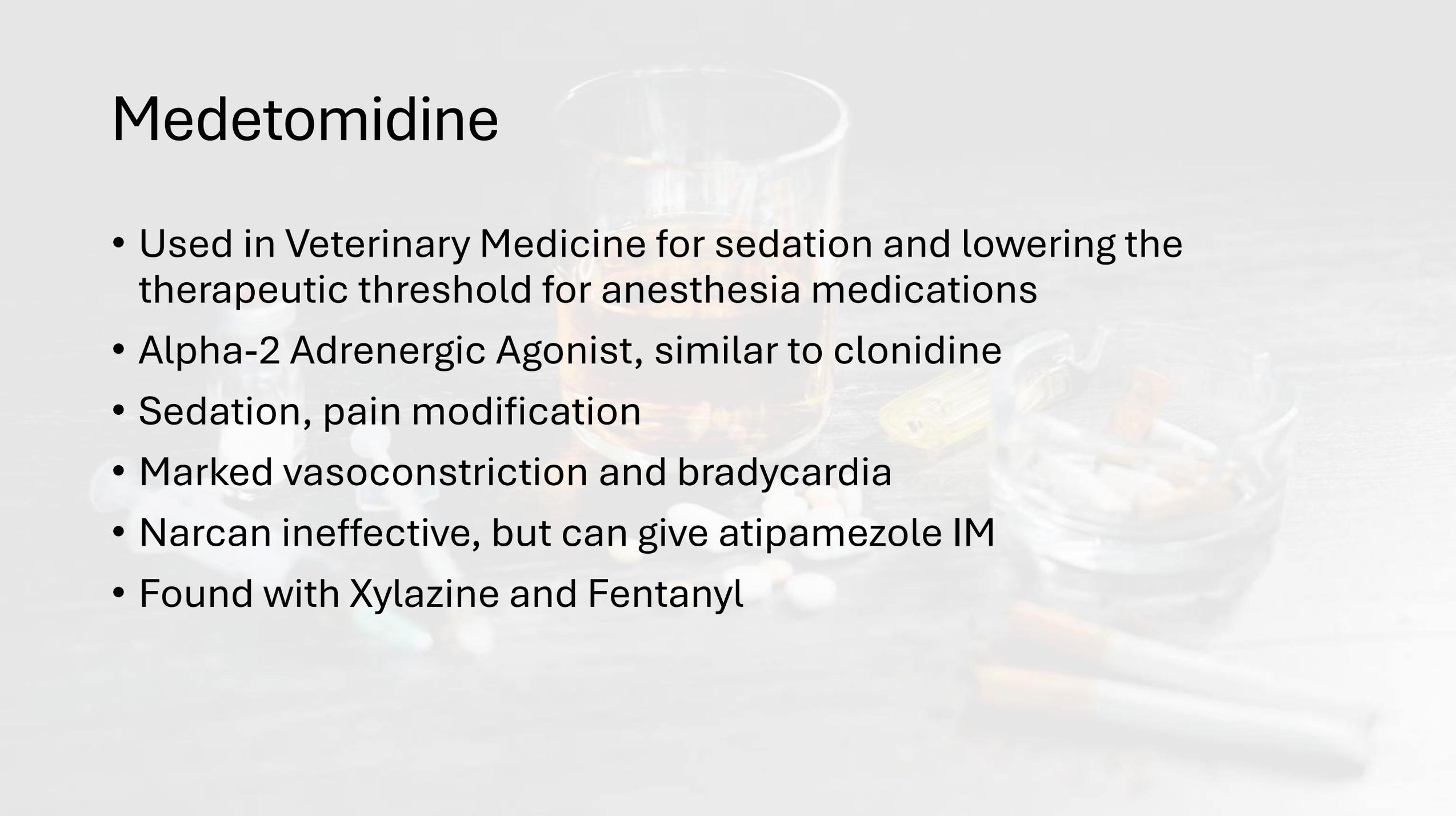
Xylazine



Image tweeted by @matTTTT187

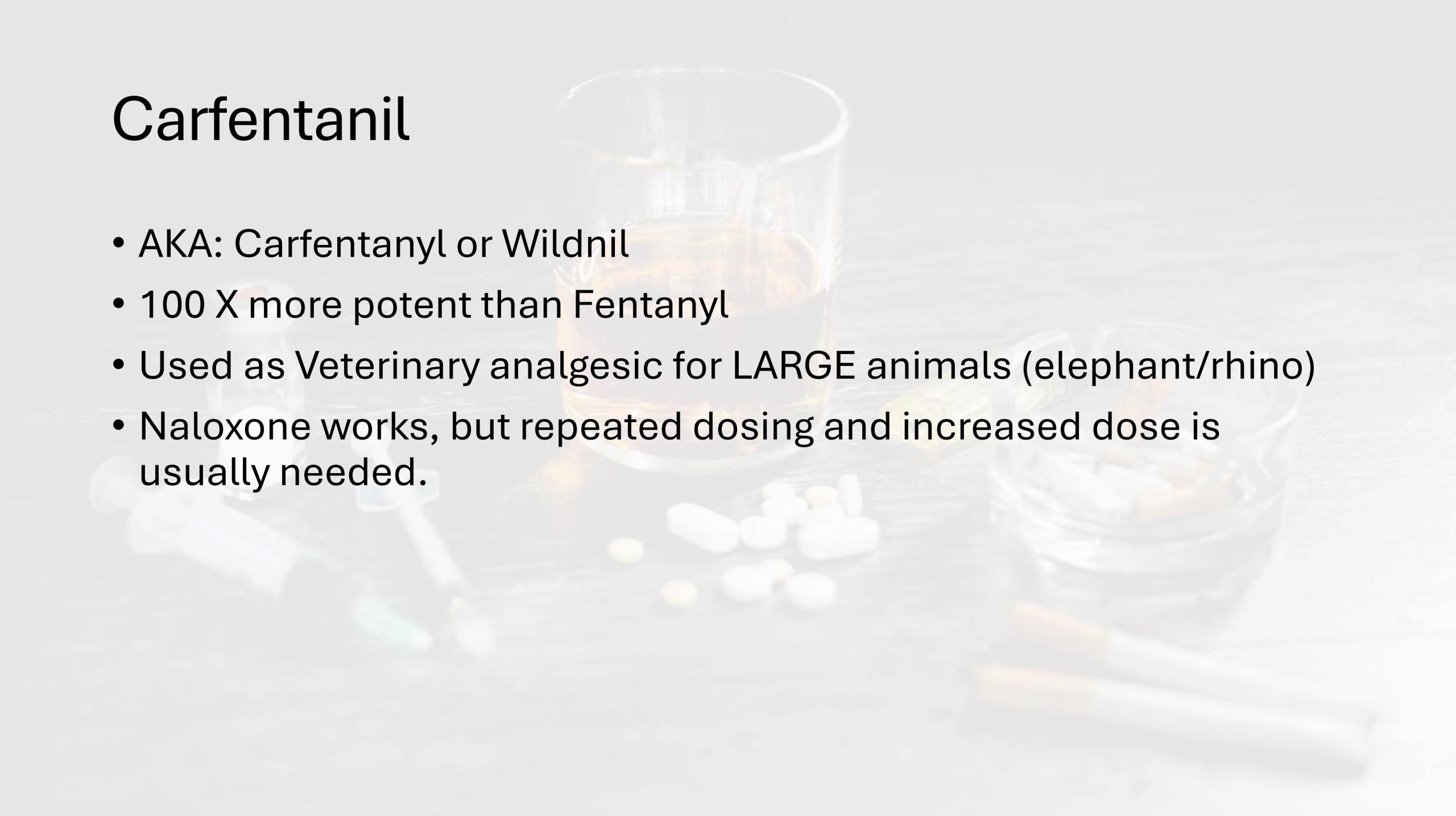


Medetomidine



- Used in Veterinary Medicine for sedation and lowering the therapeutic threshold for anesthesia medications
- Alpha-2 Adrenergic Agonist, similar to clonidine
- Sedation, pain modification
- Marked vasoconstriction and bradycardia
- Narcan ineffective, but can give atipamezole IM
- Found with Xylazine and Fentanyl

Carfentanil



- AKA: Carfentanyl or Wildnil
- 100 X more potent than Fentanyl
- Used as Veterinary analgesic for LARGE animals (elephant/rhino)
- Naloxone works, but repeated dosing and increased dose is usually needed.

Pre-Hospital

- Saginaw Tuscola Medical Control Authority
- <https://www.saginawtuscolamca.org/>



Pre-Hospital



PROTOCOLS

SECTION 1 - TREATMENT PROTOCOLS

SECTION 2 - TRAUMA AND ENVIRONMENTAL

SECTION 3 - ADULT TREATMENT

SECTION 4 - OBSTETRICS AND PEDIATRICS

SECTION 5 - ADULT CARDIAC

SECTION 6 - PEDIATRIC CARDIAC

SECTION 7 - PROCEDURE PROTOCOLS

SECTION 8 - SYSTEM PROTOCOLS

SECTION 9 - MEDICATIONS

SECTION 10 - SPECIAL OPERATIONS

EMERGENCY PROTOCOLS

PROTOCOLS FOR REVIEW/AWAITING MDHHS APPROVAL

SYSTEM MEMOS/ADVISORIES

Section 1 - Treatment Protocols

1-1 - General Pre-Hospital Care

1-2 - Abdominal Pain (Non-Traumatic)

1-3 - Nausea & Vomiting

1-4 - Syncope

1-5 - Shock

1-6 - Anaphylaxis/Allergic Reaction

1-7 - Adrenal Crisis

1-8 - Behavioral Health Emergencies

1-9 - Opioid Overdose Treatment and Prevention

1-10 - Foreign Body Airway Obstruction

Pre-Hospital

- EMS Protocols
 - Excited Delirium → Hyperactive Delirium with Severe Agitation
 - Ketamine (4mg/kg or 500mg IM)
 - Midazolam (10mg IM/IN)
 - Unresponsive
 - CPR (pulseless) → ACLS
 - Naloxone or opioid reversal agent
 - Intubated
 - Blood Glucose

Pre-Hospital

- What about Kratom or Synthetic Cannabinoids?
 - Symptom management until they hit the ER

Kratom Colors Chart

White Vein
Dried entirely indoors in a climate-controlled room with little to no light until the end of the drying process.

Green Vein
First dried in a climate-controlled room with little or no light, then dried outside in full or partial sun in the last stages.

Red Vein
Dried under direct sunlight outdoors, or indoors under a powerful UV lamp.

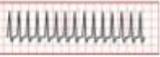
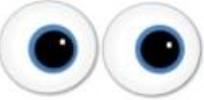
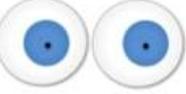
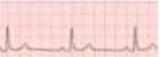
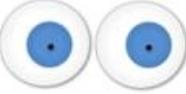
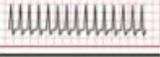
Yellow Vein
Created using a hybrid drying process that combines green and white drying methods.

Gold Vein
Created using a hybrid drying process that combines red and white drying methods.

MITRAGAIA.COM



Emergency Department

| | HR & BP | Resp. | Temperature | Pupils | Bowel Sounds | Diaphoresis |
|--|---|---|--|---|--|--|
| <p>Anticholinergic Anticholinergics – Atropine, scopolamine, glycopyrrolate, benzotropine, trihexyphenidyl Antihistamines – Chlorpheniramine, Cyproheptadine, Doxylamine, Hydroxyzine, Dimenhydrinate, Diphenhydramine, Meclizine, Promethazine</p> |    |  No change  |   |  Dilated  |   |   |
| <p>Cholinergic Organic Phosphorous Compounds: Carbamates • Arecholine, Pilocarpine, Urecholine (Betanechol), Carbachol, Choline, Metacholine, Mushrooms</p> | No change  | No change  | No change  | Pinpoint  |  |  |
| <p>Opioid Morphine • Codeine • Tramadol • Heroin • Meperidine • Diphenoxylate • Hydromorphone • Fentanyl • Methadone • Propoxyphene • Pentazocine • DXM • Oxycodone • Hydrocodone</p> |   |  |  | Pinpoint  |  |  |
| <p>Sympathomimetic Caffeine, cocaine, amphetamines, methamphetamines, Ritalin, LSD, Theophylline, MDMA</p> |   |  |  | Dilated  |  |  |
| <p>Sedative-Hypnotic anti-anxiety agents, muscle relaxants, antiepileptics and preanesthetic medications – Barbituates – Benzodiazepines</p> |   |  |  | No change  |  |  |

Emergency Department

- ABCs + Trauma Eval
- Electrolytes, EKG, Chest XR
- Symptom Management
 - Naloxone (0.4mg-2mg IV/IM/IO/IN)
 - Ondansetron 4mg ODT/IV
 - IV Fluids

PRIMARY SURVEY



Emergency Department

- Supportive Care
- Hopefully get more of a story
- Contact Poison Control (800-222-1222)



Emergency Department

- Next steps
 - Involve Crisis Team or Social Work/Case Management
 - Voluntary v Petition/Clinical Certification
 - Psychiatrist in the acute setting
 - Unlikely
 - Legal/Liability issues
 - AMA v Discharge
 - Likely to be outpatient follow up after discharge

Thank you

