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Psychiatry and Addictions Case Conference

UW Medicine | Psychiatry and Behavioral Sciences

WHAT IS 7OH AND WHAT DO I NEED TO KNOW ABOUT IT?

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SPEAKER DISCLOSURES

✓ No conflicts of interest

PLANNER DISCLOSURES

The following series planners have no relevant conflicts of interest to disclose; other disclosures have been mitigated.

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OBJECTIVES

1. Distinguish Kratom and 7-hydroxymitragynine (7OH)
2. Describe the pharmacology of 7OH
3. Identify treatment approaches
4. Discuss regulation and public health considerations

KRATOM (*MITRAGYNA SPECIOSA*)

กระต่อม

- ketum, biak (Malaysia); keton, kadamba (Indonesia); benisa (Myanmar), mambog, lugub (Philippines); ithan, thom, kratom (Thailand); giam (Vietnam)
- Red/green/white/yellow vein
- Commonly stated <5g = stimulant, >5g = opioid

Endorsed reasons for use:

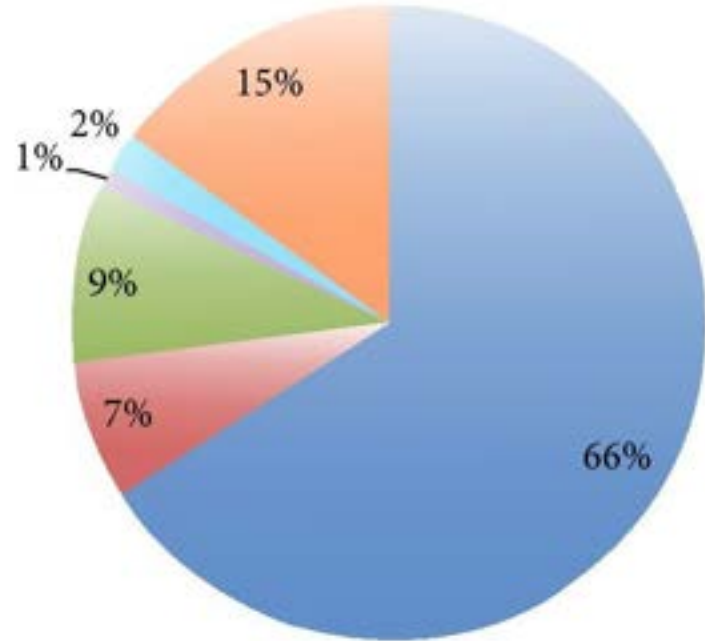
- Pain
- Substance Use Disorder, withdrawal
- Fatigue, concentration
- Anxiety, depression
- Cough, diarrhea
- Recreation



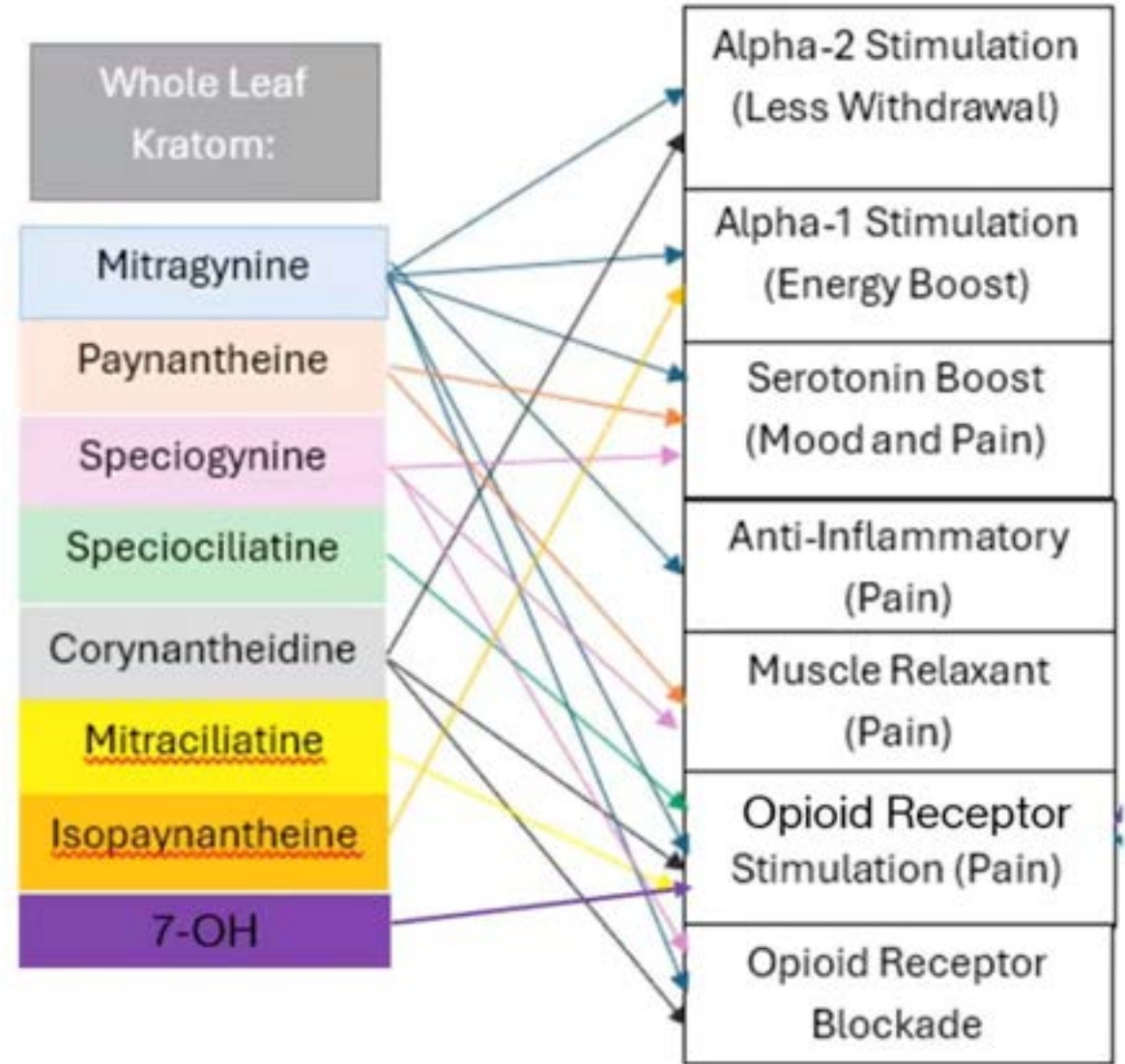
National Institute on Drug Abuse. *Kratom*. National Institutes of Health; March 2026. <https://nida.nih.gov/research-topics/kratom>

J. Heywood, S. Smallets, D. Paustenbach, Beneficial and adverse health effects of kratom (*Mitragyna speciosa*): A critical review of the literature, *Food and Chemical Toxicology*, Volume 192, 2024, 114913, ISSN 0278-6915, <https://doi.org/10.1016/j.fct.2024.114913>

KRATOM ALKALOIDS



- Mitragynine ($C_{23}H_{30}N_2O_4$)
- Paynantheine ($C_{23}H_{28}N_2O_4$)
- Hydroxymitragynine ($C_{23}H_{30}N_2O_5$)
- Speciogynine ($C_{23}H_{30}N_2O_4$)
- Speciociliatine ($C_{23}H_{30}N_2O_4$)
- Other



White CM. 2025, Dec 17. Understanding 7-OH – Science, Risks, and Real-World Impact [Webinar] Addiction Policy Forum

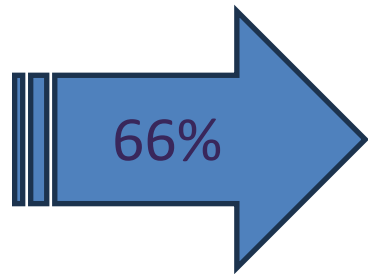
- Fiber
- Sugar
- B-Vitamins, Vitamin C
- Potassium and minerals
- Quercetin and catechin (antioxidant, anti-inflammatory)
- Amygdalin (converts to cyanide in the body)

What is an Apple?



If you extracted only the amygdalin, converted it into high doses of cyanide in the lab, and sold it in popping crystal candies, would it be an apple?

White CM. Overview if Kratom vs. Kratom Derived Products.



Mitragynine



oxidative degradation
0-2%



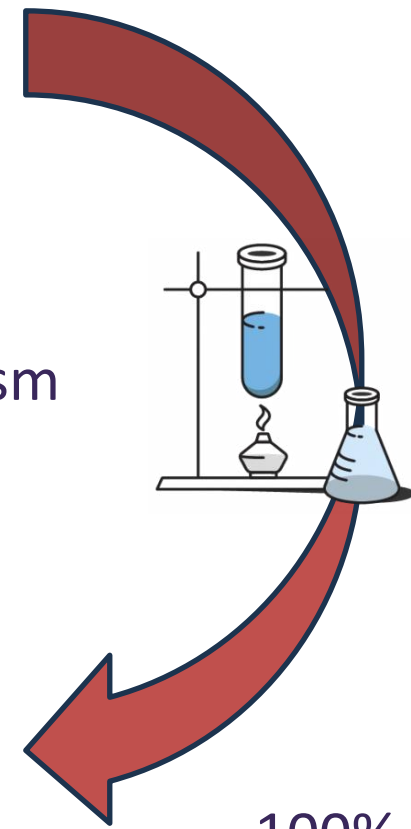
CYP3A4
Metabolism
20%



7-Hydroxymitragynine



8OH, 11OH, MGM-15 & MGM-16, Mitragynine Pseudoindoxyl (Red OH/MP)



100%

MU-OPIOID RECEPTOR BINDING AFFINITY

Table 1. Affinities (K_i) of kratom alkaloids at CNS receptors. Each value shown was taken from one reference as provided.

	μOR	κOR	δOR	α_{1A}R	α_{2A}R	5-HT_{1A}R
Mitragynine	161±10nM (Obeng et al., 2020)	198±30nM (Obeng et al., 2020)	N/D	1.3±0.1 μM (Obeng et al., 2020)	4.7±0.1 μM (Obeng et al., 2020)	5.88±0.8 μM (León et al., 2021)
7-OH mitragynine	7.2±0.9nM (Obeng et al., 2020)	74.1±8nM (Obeng et al., 2020)	236±6nM (Obeng et al., 2020)	N/D	N/D	N/D
Mitragynine Pseudoindoxyl	0.8±0.2nM (Chakraborty et al., 2021b)	24.2±0.9nM (Chakraborty et al., 2021b)	3.0±1.3nM (Chakraborty et al., 2021b)	N/C	N/C	N/C

PRE-CLINICAL DATA (IN VITRO & ANIMAL STUDIES)

- 7OH displayed approximately 13-fold greater potency than morphine and 46-fold greater potency than mitragynine at the mOR
- Mitragynine = partial agonist mOR, 7OH = partial vs full agonist mOR
- G-protein bias?

	Mitragynine	7-OH	Prescription Opioids
Rapid Tolerance	+	++++	++++
Reinforcing Effects	0	++++	++++
Addiction Potential	++	+++++	+++++
Withdrawal Symptoms	++	++++	+++++
Respiratory Depression	+	++++	++++
Neurotoxicity	+	+++	+++

COMPARED DOSING

- Average Kratom user consumes 1-7g of Kratom per consumption
- 1g Kratom = ~10-20mg of mitragynine and ~0.1-0.3mg of 7hydroxymitragynine

PHARMACOKINETICS (HUMAN) – GIVEN KRATOM LEAF CAPSULES

- 500-4000mg of kratom capsules
- ~6-50mg mitragynine
- N=11
- Peak plasma level = stable across dose and duration
- Higher dose = longer half life
- Chronic dosing = longer half life
- Short half life can occur at higher dose and chronic dosing

	Peak Plasma Level	Half Life, 1 dose	Half Life, 15 doses	Steady State
Mitragynine	0.8-5 hours	1.5-85.5 hours	2.4-83.8 hours	8-9 days
7OH	1-2 hours	1-11.4 hours	2.2-71.6 hours	7 days

Huestis MA, Brett MA, Bothmer J, Atallah R. Human Mitragynine and 7-Hydroxymitragynine Pharmacokinetics after Single and Multiple Daily Doses of Oral Encapsulated Dried Kratom Leaf Powder. *Molecules*. 2024 Feb 23;29(5):984. doi: 10.3390/molecules29050984. PMID: 38474495; PMCID: PMC10934259.

U.S. Food and Drug Administration. *7-Hydroxymitragynine (7-OH): An assessment of the scientific data and toxicological concerns around an emerging opioid threat*.

Published 2025. <https://www.fda.gov/media/187899/download>

AN OPIOID BY ANY OTHER REGULATION...

- 7OH is a short acting, highly potent, semisynthetic opioid
- In preclinical data it acts as a full agonist with no respiratory ceiling effect
- Doses escalate due to tolerance and use becomes necessary to prevent withdrawal
- 7, 7-HMG, 7-OHMG, 7-Hydroxy

Opioid Intoxication:

CNS depression, euphoria, analgesia, miosis, constipation, itching, respiratory depression

Withdrawal Symptoms:

Anxiety/depression, restlessness, chills, diarrhea, abdominal cramping, nausea, vomiting
muscle aches/pains, dilated pupils, tachycardia, HTN, sweating, insomnia, cravings

SINCE WHEN?

- In the USA first Kratom extract was around 2013
- Kratom products have added extracts and isolates before 2016 without consumer knowledge
 - 7 out of 8 products tested found 7OH levels to be 100-509% higher than expected
- 7OH and Mitragynine Pseudoindoxyl products are being falsely marketed as Kratom
- Significant marketing appearance for 7OH around 2023-2024
 - Free samples!
- No human safety data

Lydecker AG, Sharma A, McCurdy CR, Avery BA, Babu KM, Boyer EW. Suspected Adulteration of Commercial Kratom Products with 7-Hydroxymitragynine. *J Med Toxicol.* 2016 Dec;12(4):341-349. doi: 10.1007/s13181-016-0588-y. Epub 2016 Oct 17. PMID: 27752985; PMCID: PMC5135684.

Hill K, Boyer EW, Grundmann O, Smith KE. De facto opioids: Characterization of novel 7-hydroxymitragynine and mitragynine pseudoindoxyl product marketing. *Drug Alcohol Depend.* 2025;272:112701. doi:10.1016/j.drugalcdep.2025.112701



eatohmz (eet-emz)
superior kratom alkaloids

SUGGESTED USE: CONSULT WITH A PROFESSIONAL HEALTH CARE PROVIDER TO DETERMINE IF THIS PRODUCT IS RIGHT FOR YOU. IF SO, ASK HOW TO USE IT SAFELY. MAY CAUSE DISCOMFORT. ALWAYS START WITH A LOWER DOSE AND INCREASE IF NEEDED.

WARNING: EFFECTS MAY BE DELAYED UP TO TWO HOURS. MAY BE HARMFUL TO USE WHILE PREGNANT OR BREASTFEEDING. CONSUMPTION IMPAIRS YOUR ABILITY TO OPERATE MACHINERY. PLEASE USE EXTREME CAUTION


THIS STATEMENT HAS NOT BEEN EVALUATED BY THE FOOD AND DRUG ADMINISTRATION. THIS PRODUCT IS NOT INTENDED TO DIAGNOSE, TREAT, CURE OR PREVENT ANY DISEASE


OTHER INGREDIENTS: (NATURAL BINDERS & FILLERS), NIACIN, GABA, MICROCRYSTALLINE CELLULOSE, MAGNESIUM STEARATE, SILICA OXIDE, DI-CALCIUM PHOSPHATE, FOOD GRADE COLORANT.

NOT FOR SALE TO MINORS
DO NOT MIX WITH OTHER MEDICATIONS
PRODUCT CONTAINS NATURALLY OCCURRING PLANT COMPOUNDS FROM MITRAGYNA SPECIOSA

DISCLAIMER: BY USING THIS PRODUCT YOU ASSUME FULL RESPONSIBILITY FOR ANY ADVERSE HEALTH EVENTS AND/OR COMPLICATIONS THAT MAY RESULT FROM THIS PRODUCT. MANUFACTURER/RESELLER ASSUMES NO LIABILITY FOR THE MISUSE OF THIS PRODUCT. THIS PRODUCT HAS NOT BEEN EVALUATED BY THE FDA. FOR FULL DISCLAIMER VISIT EXOCLUB.COM

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FROST BERRY ARTIFICIALLY FLAVORED

WHITE VEIN ENERGY

PLANT BASED ALKALOIDS CHEWABLE TABLETS

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

HEALTH AND SAFETY WARNING: This product contains psychoactive alkaloids, which may include mitragynine, 7-hydroxymitragynine, and mitragynine pseudoindoxyl, which interact with the human opioid system. These alkaloids are active at all known opioid receptors – mu, kappa and delta – each affecting them in various ways and with various potencies.

WARNING: This product may be habit forming. Regular use can lead to physical and/or psychological dependence, addiction, and withdrawal symptoms may occur upon discontinuation. If you suspect addiction, seek medical help immediately. DO NOT use if pregnant or nursing. Do not operate vehicles or machinery while using. Not for sale to persons under 21. DO NOT use this product if you are taking medications, especially opioid medications, other medications (e.g. pain relievers, opioids, antidepressants, blood pressure drugs, MAO inhibitors, stimulants, antihistamines) or if you consume alcohol, as these interactions may increase health risks. This product should not be used daily or for prolonged periods. Consult your doctor before using if you have a medical condition or are on prescription medications.

AVERAGE REPORTED USE: For adults, chew one half (1/2) tablet in a 6 hour period. Do not take more than one (1) tablet in 24 hours. Do not exceed the average reported use.

Supplement Facts
Serving Size 1/2 Tablet
Servings Per Container 12

Amount per 1/2 Tablet Serving	% Daily Value
7-Hydroxymitragynine <small>(from Mitragyna Speciosa Aerial Parts)</small>	9 mg *

* Daily Value not established.

OTHER INGREDIENTS: Dextrose, Magnesium Glycerate, Magnesium Stearate, Artificial Flavor.

DISTRIBUTED BY:
Triple 7, IT IMPORTS LLC,
PO Box 7492,
Shawnee Mission, KS 66207

WARNING: Not child proof packaging. UNDERAGE SALE PROHIBITED.

Feel Lighter

7-Hydroxymitragynine is a potent alkaloid found in the kratom plant. At OPIA, we've harnessed its remarkable capabilities to create a product that offers unparalleled euphoria and relief, surpassing any regular kratom supplement. Experience the pinnacle of natural wellness with every tablet.

Serving Size: 1/2 Tablet - 15mg

For adult use only. Keep out of reach of children. Underage sale prohibited. Must be 21+ to purchase.

Perforate Here

Tablet Ingredients: 7-Hydroxymitragynine, Microcrystalline Cellulose, Dicalcium Phosphate, Silicon Dioxide, Magnesium Stearate, Food Grade Colorant.

PERFECTLY SAFE: THESE PRODUCTS AND STATEMENTS HAVE NOT BEEN EVALUATED BY THE FDA AND ARE NOT INTENDED TO DIAGNOSE, TREAT, OR CURE ANY DISEASE. DO NOT CONSUME THIS PRODUCT IF PREGNANT OR BREASTFEEDING. CONSULT A DOCTOR BEFORE CONSUMING THIS PRODUCT. DO NOT REPLACE HEAVY MACHINERY AFTER CONSUMING THIS PRODUCT.

MITRAGYNA SPECIOSA DISCLAIMER: THIS PRODUCT CONTAINS NATURALLY OCCURRING PLANT COMPOUNDS FROM MITRAGYNA SPECIOSA (KRATOM). THE INTENSIFYING EFFECTS OF KRATOM MAY BE DELAYED UP TO TWO HOURS. DO NOT CONSUME MORE THAN THE RECOMMENDED AMOUNT.

LEGAL DISCLAIMER: BY USING THE PRODUCT, YOU ASSUME FULL RESPONSIBILITY FOR ANY ADVERSE EVENTS AND/OR HEALTH COMPLICATIONS THAT MAY RESULT FROM ITS USE. MANUFACTURER/RESELLER ASSUMES NO LIABILITY FOR THE MISUSE OF THIS PRODUCT. THIS PRODUCT CONTAINS KRATOM. KRATOM MAY BE ADDICTIVE. PRODUCT NOT INTENDED FOR ONLY USE.


www.opiainc.com

eatohmz SUPER HYDROXY BLEND

7oh + 8oh + 11oh + (eet-emz)
red-oh + pseudoindoxyl

8 servings | 50mg per tablet

INGREDIENTS: MITRAGYNA SPECIOSA (KRATOM) LEAF EXTRACT



ADVANCED KRATOM ALKALOIDS **CHERRY**

KAMA

7-HYDROXY+ PSEUDOINDOXYL

500 MG

CHERRY

This product contains Mitragyna Speciosa Leaf Extract.

20 SERVINGS | 100MG EACH TABLET

TE TOP EXTRACTS

Product Facts:
Serving Size: One Gummy
Servings Per Container: 15

Amount Per Serving	
Kratom Extract (Mitragyna Speciosa)	15 MG †

† Daily value not established.

Ingredients: Purified Water, Glucose, Sucrose, Pectin, Mitragyna Speciosa, Citric Acid (Vitamin C), Natural & Organic Flavoring, FDIC Approved Coloring.

Suggested Use: Consume one gummy per serving. Do not exceed five gummies within a 24-hour period. Each gummy contains kratom extract equivalent to approximately 3 grams of powder.

Storage: Store product at room temperature.

Caution: Caution: For adults 21+. May impair operation of vehicles or heavy machinery. Consult your doctor before using, if pregnant, nursing, on medication, or have a medical condition. Stop immediately if adverse reactions occur. Regular use may lead to habit formation. Use responsibly.

Prop 65 Warning for California Residents: This product contains chemicals known to the State of California to cause cancer/birth defects/other reproductive harm.

Manufactured For: Top Extracts - 4736 Main St, Suite 6, Lake IL 60532 (630) 332-0471 - Topixtrax.com

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

7 16715 35012 4

FOLLOW US **LAB RESULTS**




KRATOM FLAVORED GUMMIES

PEACH TREAT

15 COUNT

100% PURE KRATOM EXTRACT PER BAG



ADVERSE EFFECTS – POISON CONTROL CENTERS

- January 1-July 31, 2025 Poison Centers received 1,690 reports of exposure cases involving Kratom; **this total has already passed the total from all of 2024. 2011-2017 there were 1807 reports of Kratom exposure.**
 - This trend includes a rising number of cases involving 7-OH
- In 2025, there were 165 reports of exposures to 7-OH. Of patients reporting exposure to 7-OH alone, 35% had serious health problems and 67% were treated at a healthcare facility

Symptoms reported after 7-OH use include:

- Nausea and vomiting
- Agitation
- Confusion
- Sweating
- Rapid heart rate
- High blood pressure
- Trouble breathing
- Sleepiness or loss of consciousness
- Seizures

ADVERSE EFFECTS – OVERDOSES?

- Fatal overdose cases for 2023 to 2025 are 3x higher than 2019-2022 from DEA TOX
- Los Angeles County reports 6 fatal OD from 7OH spanning late 2025-2026, all involve other medications, drugs/alcohol in otherwise healthy individuals
- SUDORs July 2016-December 2017
 - <1% all overdose fatalities attributed to Kratom
 - 152 cases with Kratom identified, 91 with Kratom determined to be a cause of death, 7 Kratom only identified substance
- Data is limited
 - Historical non-testing
 - Are deaths related to mitragynine, 7-OH, mitragynine pseudoindoxyl, or a combination?
 - 7OH unstable in biological solutions, after 14 days show substantially less 7OH (average time to test 30-60 days)

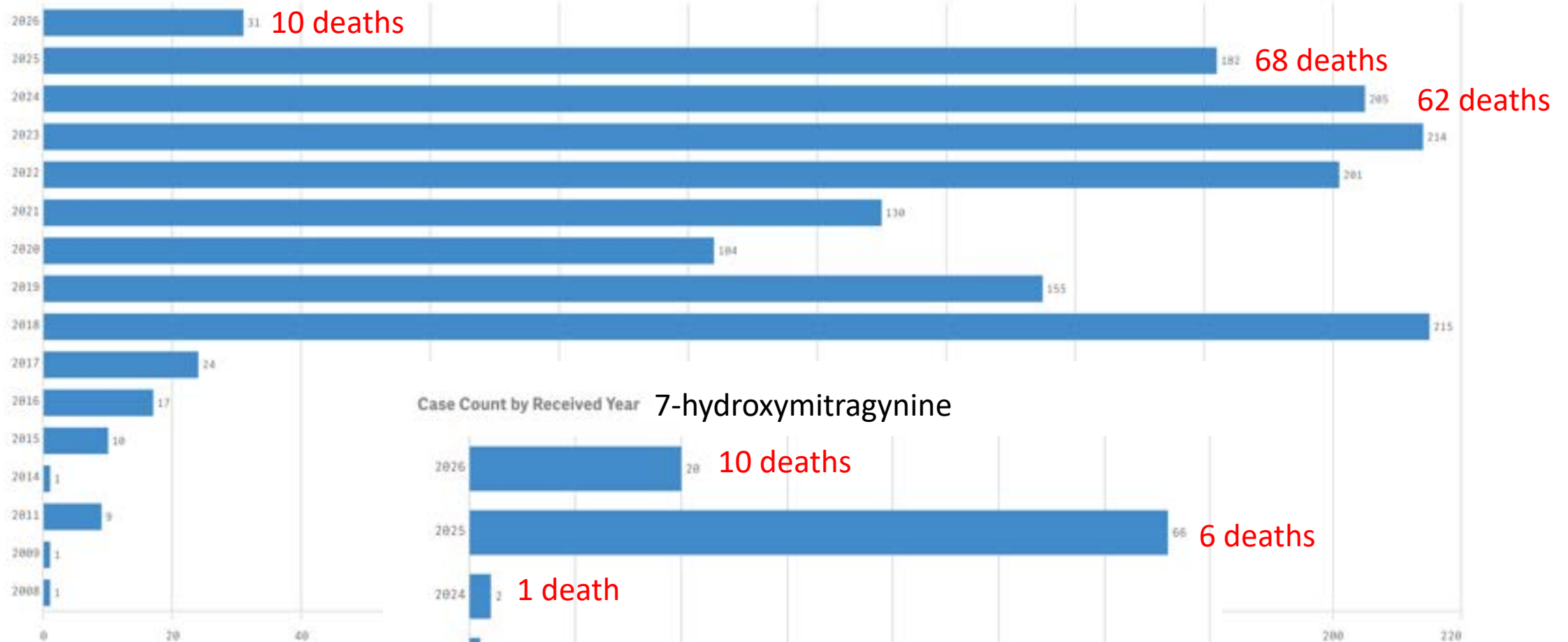
Olsen EO, O'Donnell J, Mattson CL, Schier JG, Wilson N. Notes from the Field: Unintentional Drug Overdose Deaths with Kratom Detected — 27 States, July 2016–December 2017. *MMWR Morb Mortal Wkly Rep.* 2019;68(14):326-327. doi:10.15585/mmwr.mm6814a2

Los Angeles County Department of Public Health. *Multiple fatal overdoses tied to synthetic kratom compound in Los Angeles County.* Published September 12, 2025. <http://publichealth.lacounty.gov/phcommon/public/media/mediapubhpdetail.cfm?prid=5156>

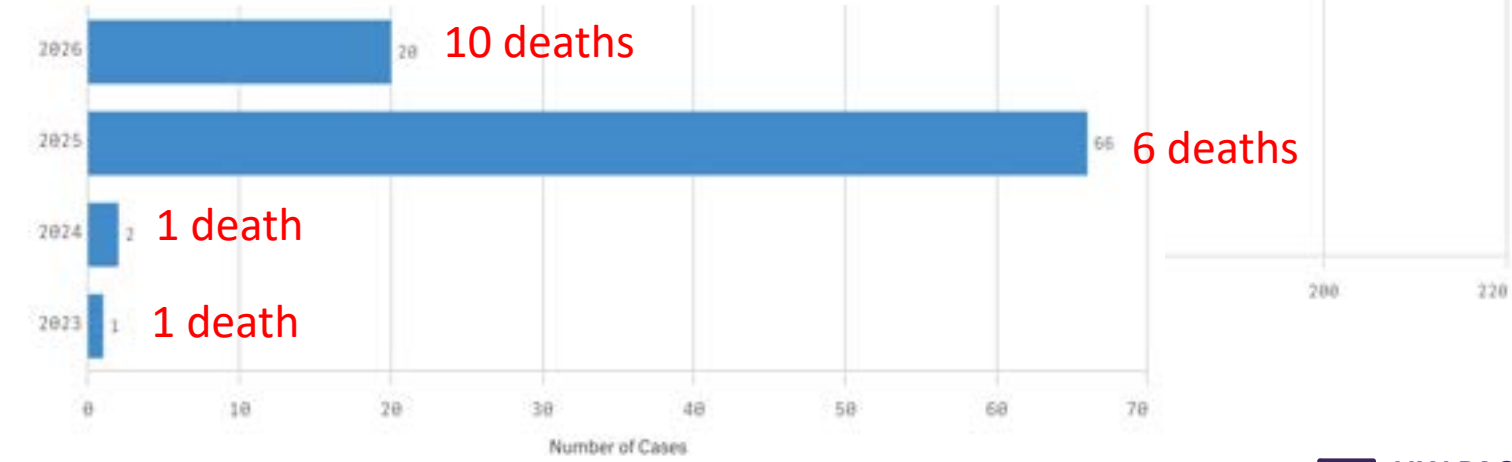
FDA Adverse Event Monitoring System (AEMS) Public Dashboard for Drugs and Biologics

Case Count by Received Year **mitragynine 731 deaths total 2011-2026**

... X



Case Count by Received Year **7-hydroxymitragynine**



NALOXONE WILL REVERSE OVERDOSE SYMPTOMS

- May require repeat doses due to naloxone's short half life
- Case Report
 - 29 year old male with a history of **opioid use disorder** and **alcohol use disorder** on **gabapentin** who was using **7-hydroxymitragynine** product for **alternative treatment** due to endorsed financial constraints
 - Was found unresponsive and received 10 minutes of cardio-pulmonary resuscitation and successfully revived with **two doses of naloxone 4mg intravenously**
 - Endorsed ingesting **190mg** 7-hydroxymitragynine to get "high" while intoxicated
 - Typically consumes 90mg 7-hydroxymitragynine



<https://wafriendsforlife.com/>

TREATMENT

CASE REPORT

A Case of 7-Hydroxymitragynine Use Disorder Treated With Buprenorphine

Hendler, Reuben MD; Karavolis, Zoe PharmD, MPH; Kim, Jungjin MD; Gonzalez, Gerardo MD

[Author Information](#) 😊

Journal of Addiction Medicine ();10.1097/ADM.0000000000001685, March 24, 2026. | DOI: 10.1097/ADM.0000000000001685

Case Summary:

This case concerns a man in his 30s hospitalized for intensive treatment of 7-HMG use disorder. Opioid withdrawal symptoms emerged within 8 hours and were stabilized with methadone 50 mg over 36 hours. Methadone was then tapered, and buprenorphine 16 mg per day was initiated via low-dose induction, with resolution of craving and improvement in co-occurring depression by discharge from residential aftercare.

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TREATMENT - METHADONE

ORIGINAL RESEARCH

Treatment of Kratom Use Disorder With Methadone in an Opioid Treatment Program

 Sherrick, Robert C. MD, DFASAM

[Author Information](#) 

Journal of Addiction Medicine ();10.1097/ADM.0000000000001666, February 12, 2026. | DOI: 10.1097/ADM.0000000000001666

Methods:

We identified 14 patients across multiple Opioid Treatment Programs (OTPs) with KUD who were treated with methadone between January 2024 and October 2025. Demographic, dosing, and urine toxicology data were reviewed.

Results:

The mean age was 36.8 years; 71% were male. Sixty-four percent reported using both kratom and 7-OH. The mean first-day methadone dose was 27.5 mg (range 15–30), and the mean maximum dose was 98.6 mg (range 35–190). Thirteen patients (93%) remained in treatment at the last follow-up. No adverse events were reported.

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Y'all weren't lying about docs over-prescribing Subs!!

TREATMENT

- **Buprenorphine**
 - Higher binding affinity than 7OH
 - Standard induction, low dose/microinduction
 - Consider LAIs
 - Typical dose ranges for Kratom Use Disorder:
 - Without history of other OUD:
2-16mg
 - With history of other OUD:
16-24mg
- **Methadone**
 - No risk of precipitated withdrawal
 - Starting dose ranged 15-30mg
 - Maximum dose ranged 35-190mg
- **Naltrexone**
 - Wait 7-10 days since last use, naloxone challenge
 - Injectable lower risk of return to use/non-compliance
- **Supportive Meds**
 - Clonidine/lofexidine, ibuprofen/acetaminophen, anti-nausea, loperamide, methocarbamol...

Stanciu CN, Ahmed S, Hybki B, Penders T, Galbis-Reig D. Pharmacotherapy for management of “kratom use disorder”: a systematic literature review with survey of experts. *WMJ*. 2021;120(1):54-61.

Sherrick RC. Treatment of Kratom Use Disorder With Methadone in an Opioid Treatment Program. *J Addict Med*. 2026 Feb 12. doi: 10.1097/ADM.0000000000001666. Epub ahead of print. PMID: 41673921.

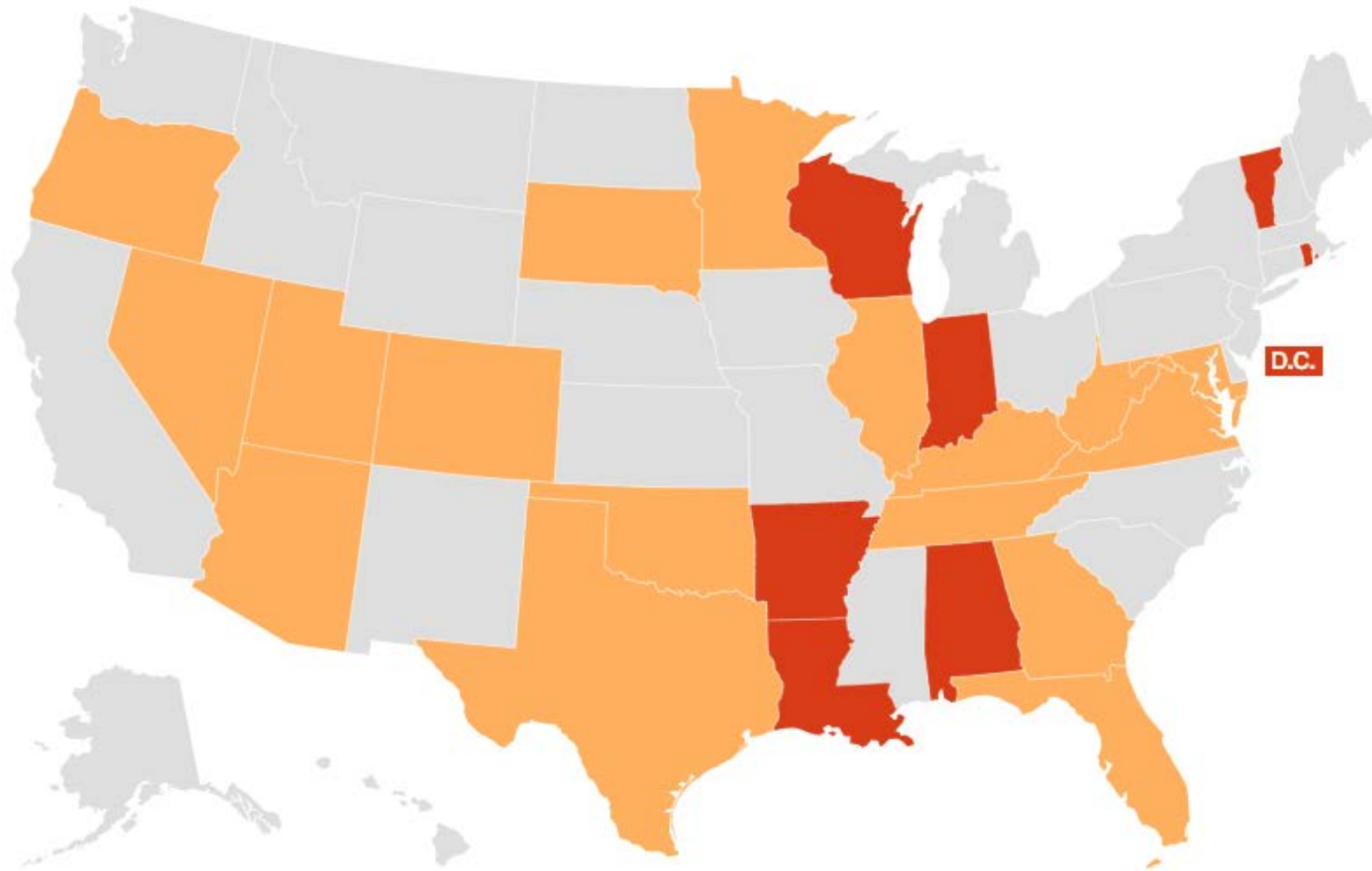
TREATMENT CONSIDERATIONS

- Withdrawal onset may be 4-6 hours, peak symptoms 10-12 hours
- Dose/frequency of use
- Polysubstance use is the norm, consider withdrawal from other substances (and vice-versa, Kratom not on standard drug screens):
 - Stimulants
 - Benzodiazepines
 - Alcohol
 - Cannabis
 - Nicotine

Regulatory status of kratom

As of March 2025

■ Illegal ■ Age restricted ■ Not controlled or regulated



Data: [Legislative Analysis and Public Policy Association](#); Map: Axios Visuals

TAKEAWAYS

- 7OH is not natural
- 7OH is not Kratom
- If someone is using Kratom, they might unknowingly be using 7OH
- 7OH is a short acting semisynthetic opioid
 - OD risk, high risk with polysubstance use
- Prescribe Narcan, treatment like opioid use disorder
- Data is limited
- Children can legally buy Kratom and 7OH in Washington State, bills proposed, mindful policies can prevent further harm