KRATOM:
WHAT CLINICIANS NEED TO KNOW

NEW YORK STATE | Department of Health

What is Kratom:

- **Kratom (Mitragyna speciosa)** is a medicinal plant in the Rubaceae family, a tropical tree native to Southeast Asia. Its leaves contain over 40 psychoactive alkaloids, with the main ones being **mitragynine (known as MP) and 7-hydroxymitragynine (known as 7-OH).** Naturally Occurring (7-OH), is found in very small, trace amounts (typically less than 0.05%) in natural, dried kratom leaves and is an active metabolite of the main alkaloid, mitragynine.
- While (7-OH) occurs in trace amounts naturally in the kratom plant, the substance in commercial products is synthesized in labs to achieve high potency. (7-OH) is considered more potent than mitragynine and contributes to kratom's analgesic effects.
- These compounds function as partial agonists at mu-opioid receptors in the brain, which is responsible for their opioid-like effects. Mitragynine also interacts with adrenergic and serotonergic receptors, which may be responsible for the stimulant-like effects at lower doses.
- The effects of kratoms are dose dependent. In small quantities, users experience a stimulatory effect similar to that of kratom's relative, the coffee plant. In larger quantities, the user experiences an analgesic effect similar to that of an opioid.
- Although kratom use has been part of life for centuries in Southeast Asia, the availability and use of kratom in the United States (US) increased substantially since the early 2000s.
- Kratom is generally taken orally as tea, capsules or extracts.

Kratom Research:

- There is a growing body of research on kratom, with many studies published in recent years. Ongoing research is focused on understanding the active compounds in kratom, particularly mitragynine and 7-hydroxymitragynine, and their effects on the brain and body.
- The research aims to clarify the potential therapeutic uses of kratom while addressing risks associated with its consumption.
- The ongoing study of kratom's chemistry and pharmacology is essential for developing safe guidelines for its use and understanding its place in both traditional and modern healthcare. [i]

Access:

- Kratom is sold mainly in smoke shops, gas stations and on-line although there is a nationwide chain of stores that specialize in kratom and CBD. It is unregulated, so customers have no way of knowing if product labeling is accurate or if there are other potentially hazardous contaminants.

Why People Use Kratom:

People report using Kratom for a variety of reasons such as[ii] :

- Pain relief
- Opioid and other substances withdrawal symptom relief
- Recreationally
- Relief of anxiety and depression
- Boost concentration

Pharmacology and Withdrawal:

- The most prevalent psychoactive alkaloid in kratom is mitragynine, which accounts for approximately 2% of kratom preparations by mass, but up to 66% of the total alkaloid content. [iii]
- 7-hydroxymitragynine (7-OH) and mitragynine pseudoindoxyl (MP), which are semi-synthetic derivatives of mitragynine, have entered the market and are sometimes misleadingly advertised as kratom, leading to consumers obtaining products containing high-potency synthetic substances, rather than a natural botanical.
- In natural, dry kratom leaves, 7-OH is only present in trace amounts, typically less than 0.02% of the dry weight. In contrast, the concentrated products available on the market contain much higher levels of 7-OH and MP. [iv]
- 7-OH and MP are potent stimulators of the opioid receptor, relieving pain, causing sedation as well as respiratory depression, dependence and withdrawal. Naloxone is effective in reversing its effects, although, despite the availability of 7-OH and kratom products, they are not stimulating a fatal overdose problem.[v]
- Kratom stimulates several receptors and has a strong impact on the opioid receptor accounting for its role in pain management, however unlike 7-OH and MP, there is no evidence that it causes significant respiratory depression.[vi]
- Long-term, frequent use can lead to tolerance, dependence, and withdrawal symptoms similar to those experienced with opioids. While many effects of kratom are mediated by opioid receptors, kratom's pharmacology indicates additional non-opioid mechanisms of action, which underscores the complexity of the plant and our limited knowledge of its pharmacology.[i]

Kratom products:

- **Whole-leaf products:** This refers to the raw plant material, which may be chewed, or dried and crushed.
- **Kratom powder:** Dried leaves are ground into a powder, which is the most common form in the U.S. and can be mixed into drinks/food or put into capsules/tablets.
- **Kratom extracts and tinctures:** These are concentrated liquid or resin forms, which isolate the alkaloids and are often much more potent than whole-leaf or powder products.
- **Blended kratom products:** These products contain kratom mixed with other psychoactive ingredients, such as kava or caffeine, which complicates clinical assessment and diagnosis.
- **Kratom-derived synthetic products:** Some novel products contain 7-hydroxymitragynine (7OH) as the primary or an enhanced ingredient.

Best Practices in Clinical Care of People Who Use Kratom continued:

Screen for kratom use: kratom (and 7-OH) are not detected on routine drug screens though they can be ordered. Current best practices for assessing and treating people who use kratom includes:[i]

- It is important to contextualize kratom assessment for the patient in a way that feels consistent with the non-judgmental and routine nature of a competent medical or mental health evaluation.
- Embedding questions about the use of “herbal medicines, like Valerian root or kratom” in an assessment of pharmaceuticals and supplements acknowledges kratom’s place among other treatments that people choose to use. The stance is non-stigmatizing and respectful and may increase the likelihood of honest patient disclosure.
- Initiating a discussion with open-ended questions about patients’ experiences with kratom, desired outcomes, and concerns enables practitioners to assess gaps in knowledge or false beliefs, areas for patient education.
- Understanding a patient’s motivations for use also enables clinicians to provide education around other, FDA-approved treatments such as cognitive-behavioral therapy for anxiety and buprenorphine for opioid replacement in patients with an opioid use disorder.
- Providers should explicitly state that they are unable to recommend or condone the use of kratom or any substance that is not approved by the FDA, but that they can provide education and work to understand the patient’s kratom use.

- Assisting patients with kratom or 7-OH withdrawal may include tapering, use of alpha-2 agonists such as clonidine and possibly medications for opioid use disorder particularly for those with a history of opioid use disorder. [vii]

Patient Education:

- The development of kratom dependence, including tolerance and withdrawal symptoms upon cessation or reduction, is more likely at higher doses and with frequent, recurring use. For this reason, patients should be encouraged to use as little as needed for therapeutic effects.
- Patients initiating kratom use should be advised to start low and go slow.
- Patients should be advised to purchase kratom from the same manufacturer to be as consistent as possible in the product and select products that comply with Good Manufacturing Practices (GMP). The American Kratom Association has updated its GMP Standards Program to further enhance the safety of kratom-containing products offered to consumers.
- For patients looking to decrease or discontinue kratom use, a gradual taper may be helpful.
- Some people who have ceased use report substituting coffee or energy drinks to replace the stimulant like effects of kratom.
- Patients should be encouraged to carry naloxone and know how to use it, in addition to be educated on safety planning.
- Avoid mixing kratom with other drugs or medications, especially depressants including alcohol, opioids, benzodiazepines and dissociatives.
- If a patient is taking kratom and develops concerning side effects that are not life threatening, or need more information, the patient should be encouraged to call **the Poison Control Center at 1-800-222-1222.for help. Call 9-1-1.**

References

i. Henningfield, J. E., Grundmann, O., Huestis, M. A., & Smith, K. E. (2024). Kratom safety and toxicology in the public health context: research needs to better inform regulation. Frontiers in pharmacology, 15, 1403140.
ii. Katherine Hill, Jeffrey M. Rogers, Oliver Grundmann, David H. Epstein & Kirsten E. Smith (2025) At least four groups of kratom consumers in the United States: latentclass analysis of motivations for kratom use, The American Journal of Drug and Alcohol Abuse, 51:2, 191-203.
iii. Shellard E. J. (1974). The alkaloids of Mitragyna with special reference to those of Mitragyna speciosa, Korth. *Bulletin on narcotics*, 26(2), 41–55.
iv. Brown, P. N., Chan, M., Zhang, X., & Brendler, T. (2025). Elevated 7-Hydroxymitragynine Levels Found in Products Misbranded as Kratom. *Journal of AOAC International*, qsaf094. Advance online publication. https://doi.org/10.1093/jaoacint/qsaf094
v. 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 Jul 1;272.
vi. Hill, K., Grundmann, O., Smith, K. E., & Stanciu, C. N. (2024). Prevalence of Kratom Use Disorder Among Kratom Consumers. Journal of addiction medicine, 18(3), 306–312.
vii. Gowing, L., Farrell, M., Ali, R., & White, J. M. (2016). Alpha$_2$-adrenergic agonists for the management of opioid withdrawal. The *Cochrane database of systematic reviews*, 2016(5), CD002024.