

KAHF Post - Kratom: A Legal Buzz Pediatricians Should Be Screening For

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What is Kratom?

Mitragyna speciosa, or more commonly known as kratom, is a tropical evergreen tree in the coffee family native to Southeast Asia. It is indigenous to Thailand, Indonesia, Malaysia, Myanmar, and Papua New Guinea. Traditionally, it had been used to combat fatigue and improve work productivity among farm populations in Southeast Asia.¹ However, over recent years has become popular in western countries as a novel psychoactive substance to treat chronic pain, opioid withdrawal, and recreational use, and now can be commonly found for sale as a “mood enhancer” or “natural pain reliever” in gas stations and smoke shops in capsule or liquid extract form.²

What are its effects?

Kratom contains at least 54 alkaloids. However, the main alkaloids are mitragynine and 7-Hydroxymitragynine (7-HMG) are responsible for many of the complex effects of kratom. Both mitragynine and 7-HMG are both partial agonists of the μ -opioid receptor and competitive antagonists of the δ -opioid receptor with low affinity for the κ -opioid receptor.³ However, effects of kratom in humans are seem to be dose-dependent. Small doses produce stimulatory effects resembling the stimulant-like effect of drugs such as cocaine or amphetamines, i.e., euphoria, increased energy/sociability, decreased appetite. Larger dosages, on the other hand, are associated with sedative-narcotic, pain reducing effects that resemble drugs such as opiates, i.e., euphoria, constipation, drowsiness. Although there is still much to learn about this plant, current evidence is showing that like opiates/opioids, Kratom has a high addiction potential and can lead to craving, compulsive use and increased tolerance. Case reports demonstrate kratom withdrawal symptoms seem to mimic those of opioid withdrawal symptoms, i.e., nausea, diarrhea, yawning, rhinorrhea, fatigue, myalgias, insomnia.⁴ Case reports have even demonstrated symptoms of Neonatal Abstinence Syndrome in infants whose mothers had been using Kratom during pregnancy.⁵ More concerning, in cases of overdose, Kratom can cause seizure, liver toxicity, and even death. Over 18 months in 2016 and 2017, 152 overdose deaths involving kratom were reported in the United States, with kratom as the primary overdose agent in 91 of the deaths, and 7 with kratom being the only agent detected.⁶

¹ Rech, MA; Donahey, E; Capiello Dziedzic, JM; Oh, L; Greenhalgh, E (February 2015). "New drugs of abuse". *Pharmacotherapy*. 35 (2): 189–97.

² Cinosi E.; Martinotti; et al. Following “the Roots” of Kratom (*Mitragyna speciosa*): The Evolution of an Enhancer from a Traditional Use to Increase Work and Productivity in Southeast Asia to a Recreational Psychoactive Drug in Western Countries; *Biomed Res Int*. 2015; 2015: 968786.

³ Eastlack, Steven C.; Cornett, Elyse M.; Kaye, Alan D. (2020). "Kratom—Pharmacology, Clinical Implications, and Outlook: A Comprehensive Review". *Pain and Therapy*. 9 (1): 55–69

⁴ Garcia-Romeu, Albert; Cox, David J.; Smith, Kirsten E.; Dunn, Kelly E.; Griffiths, Roland R. (2020). "Kratom (*Mitragyna speciosa*): User demographics, use patterns, and implications for the opioid epidemic". *Drug and Alcohol Dependence*. 208: 107849.

⁵ Whitney B. Eldridge, Cherie Foster, Lance Wyble; Neonatal Abstinence Syndrome Due to Maternal Kratom Use. *Pediatrics* December 2018; 142 (6)

⁶ "Kratom Caused 91 Overdose Deaths During 18-Month Period: CDC – Partnership News Service from the Partnership for Drug-Free Kids". Partnership to End Addiction | Where Families Find Answers.

What is Kratom's current legal status?

As of July 2016, Alabama, Arkansas, Indiana, Vermont, and Wisconsin had made kratom illegal. Yet, remains legal in all other states. However, there are no FDA-approved uses for kratom, and the agency has received concerning reports about its safety.⁷

Why pediatricians should be screening for Kratom use?

Given its easy accessibility and is advertised as a “mood enhancer”, adolescents are a prime target for using Kratom given the little information that is known. Most recent research estimates about 0.44% of adolescents in the United States had used Kratom.⁸ Now that number may not seem particularly high, however, that is still around 1 teen who has used or is using Kratom for every 200 teenagers we may be seeing in clinic for routine visits. Furthermore, we are only beginning to see an increase in prevalence of kratom use here in the US. From 2011 to 2017, there was a 52-fold increase in kratom exposures as reported by the American Association of Poison Control Centers.⁹ A study in 2020 estimated that 15 million people in the U.S. use kratom.¹⁰ Another particular concern is that the sale and production of Kratom is unregulated, meaning some users may unknowingly consume tainted or adulterated products. For example, from Oct. 2017 to Feb. 2018 in the US, 28 people in 20 different states were infected with salmonella, an outbreak occurring from the consumption of contaminated pills, powder, tea or unidentified sources of kratom, later confirmed by whole genome sequencing.¹¹ Lastly, the risk of addiction potential associated with Kratom combined with the limited literature we have on how to properly treat Kratom dependence/withdrawal makes screening even more important.

How can pediatricians help?

Clinicians can help screen for kratom use by simply asking their patients during routine exams, i.e., HEADSS assessment. By educating ourselves regarding its effects and staying current on the ever-evolving literature that might yield more definitive treatment options and guidance regarding kratom use. Getting involved in educating our adolescent patients about the risks associated kratom use if we do have a patient that has disclosed they have used or using Kratom. Pediatricians can also advocate by discussing with legislators regarding the harm associated with Kratom and working to make the sale of Kratom illegal in the state of Kentucky.

⁷ "FDA and kratom". US Food and Drug Administration. 3 April 2019. Retrieved 8 August 2019

⁸ Palamar JJ. Past-Year Kratom Use in the U.S.: Estimates From a Nationally Representative Sample. *Am J Prev Med.* 2021 Aug;61(2):240-245. doi: 10.1016/j.amepre.2021.02.004. Epub 2021 Apr 29. PMID: 34027890; PMCID: PMC8319032.

⁹ Post, Sara; Spiller, Henry A.; Chounthirath, Thitphalak; Smith, Gary A. (20 February 2019). "Kratom exposures reported to United States poison control centers: 2011–2017". *Clinical Toxicology.* 57 (10): 847–854. PMID 30786220

¹⁰ Ramanathan, Surash; McCurdy, Christopher R. (2020). "Kratom (*Mitragyna speciosa*): worldwide issues". *Current Opinion in Psychiatry.* 33 (4): 312–318.

¹¹ "Multistate Outbreak of Salmonella | 4,[5],12:b:- Infections Linked to Kratom Products | February 2018 | Salmonella". *cdc.gov.* Centers for Disease Control. 20 February 2018.