

# Kratom: Identifying “a drug of concern”

*Mitragyna speciosa*

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## Today's discussion

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- What is kratom?
- Alkaloids and mitragynine
- A biphasic effect
- Kratom toxicity
- Drug monitoring

## What is kratom?

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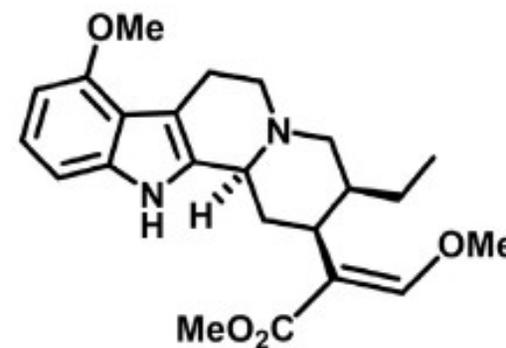
- *Mitragyna Speciosa*
  - 4- to 16-meter-high tropical tree indigenous to Southeast Asia
    - Traditionally, the leaves of the tree have been chewed or made into a tea by local manual laborers to combat fatigue and improve work productivity<sup>1</sup>
  - Widely sold as an herbal supplement for boosting mood, energy and relieving pain
- The US Food and Drug Administration is warning consumers not to use *Mitragyna speciosa*, commonly known as kratom, which has properties that expose users to the risks of **addiction, abuse, and dependence**<sup>2</sup>
- The DEA has kratom listed as a **Drug and Chemical of Concern** as of 2012<sup>3</sup>
  - DEA attempts to make it Schedule I' substance in 2016 were undermined by significant public backlash<sup>4</sup>

## Alkaloids and mitragynine

- Alkaloids are a huge group of naturally occurring organic compounds which contain nitrogen atoms in their structures (eg, opium alkaloids) In 1804, morphine was the first alkaloid ever isolated<sup>5</sup>
- Over 40 alkaloids extracted from kratom which makes pharmacological and toxicological assessment challenging. Alkaloid content can vary between trees.<sup>6,7</sup> Some common alkaloids in kratom:
  - **Mitragynine**
    - Hydroxymitragynine
    - Paynantheine
    - Speciogynine
    - Speciociliatine
  - **Mitragynine**
    - The most abundant alkaloid in kratom<sup>6,7</sup>
    - High affinity for the **Mu-opioid receptor**



*Mitragyna Speciosa*  
(kratom) Leaf



Mitragynine

## A biphasic effect

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### Stimulant at low doses, sedative/opioid like effects at high doses

- **Self medicating and/or chasing “euphoria?”**
  - Self-medicate
    - Opioid withdrawal – Kratom is easier to purchase and access than opioids and medication-assisted treatment (eg, buprenorphine)
  - Chase ‘feel good’ effect
    - Mu-receptor agonist – inherent abuse liability
    - Used at music festivals and other recreational settings
    - Do people really know what they are getting? Hard to gauge the effect of a given dose
- An opportunity for “legitimate medical use?”
  - There is currently **no strong scientific evidence** that Kratom is effective or safe for treating withdrawal and cravings caused by opioid and other addictive substances such as alcohol
  - Further research is needed

## Kratom toxicity

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- Kratom exposures reported to United States (US) Poison Control Centers (PCCs) increased **tenfold** from 2010 to 2015
- Emory researchers presented: Kratom Exposures Reported to US Poison Centers, 2010–2018<sup>8</sup> and identified:
  - 2483 kratom exposures met criteria
  - Median **age was 30 years**; 70% were **male**
  - 262 (10.6%) exposures resulted in a severe outcome, including 17 deaths, **3 of which were single-agent exposures**
  - The most common clinical effects were **tachycardia, nausea, and drowsiness**
  - The most common co-exposures were **sedative hypnotics, ethanol, and opioids**
- In addition, **heavy metal** and **salmonella contamination** have also been found in kratom products, resulting in numerous illnesses and product recalls

## Quest Drug Monitoring

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- Do Prescription Drug Monitoring Programs (PDMP) identify kratom use?
  - Drug testing provides objective information on medication compliance, empowering behavioral health clinicians and treatment teams to make more informed decisions that can improve patient care
- Quest Diagnostics uses a **2-step testing approach** with presumptive identification of possible use or non-use of the tested drugs and definitive confirmation to identify specific drugs present
  - **39241** - Potential for low positivity rates (~5%) make presumptive with reflex definitive testing the most economical choice while balancing clinical benefit
  - **39240** - Straight to definitive testing option is available for those who do in-house screening first
- Our accurate results help clinicians and treatment teams facilitate conversations and maintain therapeutic alliances with patients and clients.

**39241**  
Mitragynine, Presumptive  
w/ Confirmation

**39240**  
Mitragynine,  
Quantitative

## Summary: Quest Diagnostics

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- The abuse and misuse of prescription drugs remains epidemic in the US
- Quest serves 1 in 3 adult Americans and half the physicians and hospitals in the United States
  - Quest Diagnostics has the world's largest database of clinical lab results; our diagnostic insights help improve healthcare management
- A properly implemented drug testing program is an important step in tackling drug misuse and abuse
- By performing more than 10 million drug tests annually, Quest Diagnostics has the experience to help you implement a successful drug monitoring program—one that helps protect your practice, helps your patients, and helps keep your community safe
  - Rx Tox Line available to help clinicians with test ordering or result interpretation
    - 1.877.40.RXTOX (1.877.407.9869)
  - Visit [QuestDrugTesting.com](https://www.questdiagnostics.com/drug-testing) or subscribe through your favorite podcast venue

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