

7-Hydroxymitragynine

A comparison of synthetic and natural
kratom leaf products

Law and Justice Interim Committee, July 14, 2026



DEPARTMENT OF
**PUBLIC HEALTH &
HUMAN SERVICES**

What are Kratom and 7-OH?

Botanical kratom

- A plant from Southeast Asia. Its leaves contain dozens of natural chemicals (alkaloids), the most abundant being mitragynine.
- One alkaloid — 7-hydroxymitragynine (7-OH) — is naturally present in very small amounts.

Concentrated 7-OH

- Products containing high levels of concentrated 7-OH are sold in similar settings as kratom.
- Other high-potency kratom extracts (MGM-15, for example) are more potent than 7-OH and also entering the market.

Botanical kratom and concentrated 7-OH are **present with different risks** but are often marketed together.

Of note: 7-OH and other high-potency kratom extracts are due to be classified as a Schedule I drug by the DEA (more information on a later slide)



How Kratom and 7-OH Work in the Body

Kratom

- Acts on several different systems in the brain, including the opioid system.
- It has a weaker effect on opioid receptors and works more like a "partial" switch — it turns on the receptor only partway.
- Stimulant-like effects at low doses, opioid-like effects at high doses.

Concentrated 7-OH

- Acts almost entirely on opioid receptors and is much more potent.
- Some lab tests suggest 7-OH is up to 13x stronger than morphine.
- Behaves much more like a traditional opioid painkiller.

An analogy: kratom leaf is like drinking a cup of coffee (a complex mix of many chemicals), while concentrated 7-OH is more like taking a caffeine pill at a much higher dose — a single, powerful ingredient with a stronger and more focused effect.



Safety Differences

Kratom

Natural “safety brake:” When consuming botanical kratom, the body converts mitragynine into 7-OH, but this process has a natural limit — the liver can only convert so much. This helps prevent the most dangerous effects from building up too quickly.

Concentrated 7-OH

Bypasses the “safety brake:” You are getting the powerful chemical directly, without the body's natural speed limit.



Image of the kratom plant.

Source: ThorPorre, CC BY 3.0 via [Wikimedia Commons](https://commons.wikimedia.org/wiki/File:Kratom_plant.jpg)

Safety Differences (cont.)

Kratom

- **Breathing:** Kratom leaf has a limited ability to slow your breathing.
- **Addiction risk:** Dependence and tolerance possible, but lower risk than 7-OH.
- **Withdrawal:** Withdrawal can occur but generally described as milder than from traditional opioids.
- **Overdose deaths:** Deaths linked to kratom leaf alone have not been clearly established and are often complicated by polysubstance use.
- **Approved medical uses:** None

Concentrated 7-OH

- **Breathing:** Can slow breathing in a dose-dependent way, similar to prescription opioids – this is the main way opioid overdoses become fatal.
- **Addiction risk:** In animal studies, 7-OH was readily self-administered by animals and increased their desire for other opioids afterward.
- **Withdrawal:** Withdrawal from concentrated 7-OH can be more severe and may require medical management.
- **Overdose deaths:** Deaths have been documented with concentrated 7-OH products.
- **Approved medical uses:** None



Benefits of Kratom and 7-OH

- Both kratom and concentrated 7-OH can reduce pain, but through somewhat different mechanisms.
- Many people use kratom leaf to manage opioid withdrawal symptoms on their own, and surveys suggest many find it helpful.
- Using concentrated 7-OH for opioid withdrawal may simply replace one opioid dependence with another.

No product — leaf or concentrated 7-OH — has been tested in formal human clinical trials for any medical condition. This means there is no established safe dose, and the quality and purity of products vary widely.



How are Kratom and 7-OH Sold?

- Natural leaf products available as dried leaf, powder, and capsules.
- Both botanical kratom and 7-OH are available as liquid shots, tablets, gummies, tinctures, etc.
- Both products are sold through online vendors, specialty shops, gas stations, smoke shops, and convenience stores.



Image of kratom products.

Source: [Wikimedia Commons](#)

*Note: botanical kratom includes products derived from the plant *mitragyna speciosa* that contain 2% or less 7-OH by alkaloid content

Product Safety Concerns

- Hundreds of concentrated 7-OH products are sold in the U.S., often labeled as "kratom."
- The amount of 7-OH in these products varies enormously
- What is on the label often does not match what is actually inside.



Image of a 7-OH product.
Source: [Wikimedia Commons](#)

DEA Scheduling

- On July 1, 2026, the Drug Enforcement Administration (DEA) announced its [intent to schedule](#) 7-OH above a specified threshold and other high-potency kratom extracts as Schedule I.
- The manufacture, distribution, sale, and possession of covered 7-OH substances will become subject to criminal, civil, and administrative provisions of the Controlled Substances Act.
- Excludes botanical kratom products containing a low amount of naturally-occurring 7-OH.
- Temporary scheduling lasts for two years, during which a full review may take place to receive permanent scheduling.



Understanding Advocates and Lobbyists

- Advocates and lobbyists may often use the term “kratom” when discussing either botanical kratom or 7-OH. **It is important to determine what product the person is discussing.**
- When discussing **kratom**, a person may use terms like “natural leaf kratom” or “traditional use.” They may also emphasize benefits, advocate for regulation, or mention the American Kratom Association's "Kratom Consumer Protection Act.”
- When discussing **concentrated 7-OH**, a person may use terms like “enhanced” or “high potency.” Advocates supporting regulation may cite stats such as overdose deaths and FDA warnings. Advocates against regulation may try to obscure the risks of 7-OH products.
- **When in doubt, ask directly:** asking people whether they are discussing natural kratom or concentrated extracts, or asking their stance on a proposed policy, is likely to clarify the product being discussed.



Summary

Kratom

- **Common names:** Leaf, powder, tea, botanical kratom
- **7-OH content:** Trace (~2% of alkaloids)
- **Pharmacological behavior:** Partial opioid agonist + multi-receptor
- **Overdose risk:** Lower

Concentrated 7-OH

- **Common names:** Extract, shot, enhanced kratom, brand-name products. Street names include "7-Hydroxy, 7-OHMG, 7, and other variations.
- **7-OH content:** High (variable, often mislabeled)
- **Pharmacological behavior:** Potent opioid agonist
- **Overdose risk:** Significantly higher

Bottom Line: Kratom tea is relatively "safer" than concentrated 7-OH products due to lower potency and natural balance of compounds, but both carry substantial risks of harm, addiction, and serious adverse events. Health authorities strongly advise against use.



Summary (cont.)

The most important takeaway for a legislator is that the word "kratom" is being used to describe two pharmacologically distinct categories of products.

Any policy discussion should specify which product is being addressed. Treating them as a single entity in legislation risks either over-restricting a relatively lower-risk botanical product or under-restricting a higher-risk opioid-like substance.

