Kratom

Informational Bulletin on the Risks of Mitragynine, 7-OH and MGM-15

On April 27, 2026, news sources reported the first drug-related death in the State of Hawai'i due to 7-hydroxymitragynine (7-OH).[1] According to the Honolulu Medical Examiner, this death was not attributed to 7-OH alone. Toxicology testing identified multiple kratom-related compounds, with dihydro-7-hydroxymitragynine (MGM-15) present at the highest concentration. 7-OH and MGM-15 are psychoactive alkaloids derived from the kratom plant. They are increasingly sold commercially in highly concentrated forms, marketed with colorful packaging of products like drinks, gummies and tablets.[2,3] These products are often marketed as "all-natural," "plant-based" alternatives to opioids or alcohol, obscuring adverse effects and health risks.[4,5,6] Research shows that 7-OH and MGM-15 act on the brain's opioid receptors, with risks of ongoing use including respiratory depression, physical dependence and withdrawal symptoms.[7] This document intends to inform the public about kratom and its derivatives, including mitragynine, 7-OH and MGM-15.

What is Kratom?

Kratom (*Mitragyna speciosa*) is a tree native to Southeast Asia that has been used in traditional medicine for centuries, most commonly by chewing the leaves or boiling them in a tea.[8] It produces stimulant effects in low doses and sedative effects in higher doses.[9] Despite these traditional uses, it is important to note that no kratom products have received regulatory approval from the U.S. Food and Drug Administration (FDA) as safe and effective medicine for any therapeutic use.[8] Further, the U.S. Drug Enforcement Administration (DEA) has listed kratom as a Drug or Chemical of Concern.[9]

Kratom Leaf [9]

Kratom was introduced to U.S. markets by the late 1990s and has seen wider commercial expansion since the mid-2000s.[10] As an indication of the rapid growth in prevalence, annual kratom-related calls to Poison Control Centers in the U.S. grew from 13 in 2011 to 258 in 2015, ballooning 1200% over the next decade to reach 3,434 calls in 2025.[11,12,13] Kratom and derivative products are widely available through online vendors, convenience stores and smoke shops, with marketed products including capsules, powders, gummies and drinks.[11] These commercial formulations, which are growing in popularity across the U.S., contrast sharply with traditional Southeast Asian uses, enabling elevated and more frequent doses with more highly concentrated alkaloids.[11]

Kratom Powder and Capsules [14]

If you or a loved one is seeking help for substance use treatment and recovery, call the Hawai'i CARES Line at 988

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What is Mitragynine?

Mitragynine is the most prominent alkaloid present in both kratom leaves and commercially available kratom products. Mitragynine makes up 2% of the weight of dried kratom leaves and is 12-66% of the total weight of alkaloids in the plant. Though it is not a classic opioid, mitragynine demonstrates direct activity on opioid receptors in the brain. It also interacts with adrenaline, serotonin and dopamine receptors. Mitragynine is metabolized by the liver into 7-Hydroxymitragynine (7-OH); however, commercially available 7-OH products are semi-synthetic derivatives with a much greater potency than what the body would obtain from whole-leaf kratom formulations.[15]

What is 7-OH?

7-Hydroxymitragynine (7-OH) is a potent μ-opioid receptor (MOR) agonist. It shows 10-20 times the binding affinity to MORs compared to mitragynine, and some studies suggest that it has a greater functional potency on these receptors than morphine.[10] It has much weaker interactions with kappa and delta opioid receptors and, in contrast to mitragynine, does not appear to interact with adrenaline or serotonin receptors.[10] Laboratory studies have demonstrated that 7-OH may cause respiratory depression symptoms similar to morphine, and that these effects were reversed by naloxone, an opioid antagonist commonly used to reverse fentanyl- and heroin-related overdoses.[16] Data from U.S. Poison Centers show a trend of rising calls related to 7-OH, with 165 reports of exposure to this alkaloid by August 2025.

[1]
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What is MGM-15?

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Dihydro-7-hydroxymitragynine (MGM-15), a synthetic derivative of 7-OH, has more recently emerged on the market. Following a trend in the development of Novel Psychoactive Substances (NPS), manufacturers develop newer chemical formulas to stay ahead of FDA, DEA and state-level regulation.[17] Early scientific studies indicate that MGM-15 has a potency approximately 15-50 times greater than morphine. An even newer derivative, MGM-16, is believed to be approximately 71-240 times more potent than morphine.[17] MGM-15 has been notoriously difficult to identify through chemical analysis because Gas Chromatography – Mass Spectrometry (GC-MS) converts MGM-15 into 7-OH during the analysis process.[18] It has been identified in drug materials from a New England community drug checking program and in toxicology samples from New Jersey.[18] MGM-15 was identified among multiple kratom-related compounds in the Hawai'i case, demonstrating the importance of analytical methods capable of distinguishing these compounds.[18]

Impact in Hawai‘i

The State Unintentional Drug Overdose Reporting System (SUDORS) team from the University of Hawai‘i have reported a total of 16 drug-related deaths between January 2022–June 2025 in which mitragynine was identified by post-mortem toxicology. This data set analyzes accidental drug-related deaths, excluding those that have been determined as suicides or homicides. The age of decedents ranged from 28–77, with a median age of 40. This median age is lower than that for all drug related deaths in Hawai‘i, which in our state are still dominated by methamphetamine. It is, however, closer to the median for opioid- and fentanyl-related deaths. Almost all decedents were male, White, Non-Hispanic, and housed individuals.[20] The commercial availability, lack of regulation, and demographic details of existing decedents indicate that kratom-related injuries and deaths may impact populations that differ from those typically seen in drug overdose mortality data.

Almost all of these fatalities were polysubstance deaths involving between two to 11 different drugs. This polysubstance pattern is consistent with shifts in the overall overdose epidemic affecting the United States.[21] Due to the number of substances involved and underlying health issues, it can be difficult to isolate how kratom derivatives contribute to fatality in these cases. However, the research and cases cited throughout this document show that there is clear evidence that kratom products, and especially concentrated formulations like 7-OH and MGM-15, have potent effects similar to opioids.

Legal Status

Currently, kratom products are not federally regulated. Kratom, mitragynine, 7-OH and MGM-15 are not considered controlled substances. However, the FDA does not consider kratom as an appropriate dietary supplement or food product, therefore supplements or food products containing kratom-derived ingredients are considered adulterated under the Food, Drug, and Cosmetics Act.[22]
The FDA has recently begun focusing on 7-OH products. In July 2025, the FDA issued a release recommending that the federal government take steps to schedule 7-OH products under the Controlled Substances Act.[3, 22] According to policy analysts, “the FDA is particularly concerned about synthetic, concentrated 7-OH products that are readily available in a variety of retail locations, many of which may be appealing to children and/or not be clearly or accurately labeled”.[22]

At the state level, 30 states have regulated kratom or its derivative products in some form as of January 2026. Further, six states (Alabama, Arkansas, Indiana, Louisiana, Vermont and Wisconsin) consider mitragynine and 7-OH to be controlled substances, resulting in blanket bans on all kratom products in those states. Florida, Ohio and the District of Columbia have scheduled 7-OH as a Schedule I controlled substance, but not mitragynine. 14 states have limited the allowable concentration of 7-OH and/or prohibited synthetic 7-OH products from being sold. 19 states have implemented product labeling requirements, and 22 states have placed an age restriction on the purchase of kratom products. Seven states have passed laws which establish license, permit or registration requirements for manufacturers and/or retailers. While bills attempting to regulate kratom products have been introduced at the Hawai‘i State Legislature, none have passed to date.[23, 24]

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