

DEPARTMENT OF JUSTICE

Drug Enforcement Administration

21 CFR Part 1308

[Docket No. DEA–1570]

Schedules of Controlled Substances: Temporary Placement of 7-Hydroxymitragynine and Mitragynine Pseudoindoxyl Above a Specified Threshold in Schedule I

AGENCY: Drug Enforcement Administration, Department of Justice.

ACTION: Proposed amendment; notice of intent.

SUMMARY: The Administrator of the Drug Enforcement Administration (DEA) is issuing this notice of intent to publish a temporary order to schedule 7-hydroxymitragynine and mitragynine pseudoindoxyl (including their isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, whenever the existence of such isomers, esters, ethers, and salts is possible) when either substance alone, or their combined amount if both are present, is above a specified threshold, in schedule I of the Controlled Substances Act (CSA). Based on a different threshold provided by the Department of Health and Human Services (HHS) in July of 2025, DEA published a notice of intent to temporarily schedule 7-hydroxymitragynine above that lower threshold on July 7, 2026. Additionally, DEA published a temporary order placing mitragynine pseudoindoxyl without a threshold in schedule I of the CSA on August 26, 2026. On October 8, 2026, HHS sent a letter recommending that DEA place of the CSA 7-hydroxymitragynine and mitragynine pseudoindoxyl in schedule I when either substance alone, or their combined amount if both are present, is above a new specified threshold. Based on the October 8, 2026 letter, DEA is issuing this notice of intent. While the new threshold recommended by HHS would permit certain products to remain in the marketplace without being subject to schedule I controls, neither HHS nor DEA has made a finding that these substances are safe to use at below-threshold levels. When a temporary order is issued, it will impose the regulatory controls and administrative, civil, and criminal sanctions applicable to schedule I controlled substances on persons who handle (manufacture, distribute, reverse distribute, import, export, engage in research, conduct instructional activities or chemical analysis with, or possess) or propose to handle 7-

hydroxymitragynine and/or mitragynine pseudoindoxyl above the specified threshold. In a separate document contained in this issue of the **Federal Register**, DEA is withdrawing the July 7, 2026 notice of intent related to 7-hydroxymitragynine. The August 26, 2026 temporary order placing mitragynine pseudoindoxyl in schedule I of the CSA without a threshold remains in effect until either it expires or the new temporary order is published and the previous order is withdrawn, whichever occurs first.

DATES: October 14, 2026.

ADDRESSES: 8701 Morrisette Drive, Springfield, Virginia 22152.

FOR FURTHER INFORMATION CONTACT: Drug and Chemical Evaluation Section, Diversion Control Division, Drug Enforcement Administration; Telephone: (571) 362–3249.

SUPPLEMENTARY INFORMATION: The notice of intent contained in this document is issued pursuant to the temporary scheduling provisions of 21 U.S.C. 811(h). The Drug Enforcement Administration (DEA) intends to issue a temporary scheduling order ¹ (in the form of a temporary amendment) to add 7-hydroxymitragynine ² and mitragynine pseudoindoxyl ³ above a specified threshold described herein, including their isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, whenever the existence of such isomers, esters, ethers, and salts is possible, to schedule I under the Controlled Substances Act (CSA).⁴ The

¹ Though DEA has used the term “final order” with respect to temporary scheduling orders in the past, this notice of intent adheres to the statutory language of 21 U.S.C. 811(h), which refers to a “temporary scheduling order.” No substantive change is intended.

² Chemical name: Methyl (E)-2-((2S,3S,7aS)-3-ethyl-7a-hydroxy-8-methoxy-1,2,3,4,6,7,7a,12b-octahydroindolo[2,3-a]quinolizin-2-yl)-3-methoxyacrylate (also known as: (αE,2S,3S,7aS,12bS)-3-ethyl-1,2,3,4,6,7,7a,12b-octahydro-7a-hydroxy-8-methoxy-a-(methoxymethylene)-indolo[2,3-a]quinolizine-2-acetic acid, methyl ester).

³ Chemical name: Methyl (E)-2-((1′S,6′S,7′S)-6′-ethyl-4-methoxy-3-oxo-3′,5′,6′,7′,8′,8a′-hexahydro-2′H-spiro[indoline-2,1′-indolizine]-7′-yl)-3-methoxyacrylate (commonly known as mitragynine pseudoindoxyl).

⁴ On July 6, 2026, DEA published a notice of intent to place 7-hydroxymitragynine above a specified threshold in schedule I of the CSA. See *Schedules of Controlled Substance: Temporary Placement of 7-Hydroxymitragynine Above a Specified Threshold in Schedule I*, 91 FR 40917 (July 6, 2026). DEA is withdrawing that notice of intent elsewhere in this issue of the **Federal Register**. On August 26, 2026, DEA published a temporary order that placed mitragynine pseudoindoxyl, along with two other 7-hydroxymitragynine-related substances, in schedule I of the CSA. See *Schedules of Controlled Substances: Temporary Placement of Mitragynine Pseudoindoxyl, MGM–15, and MGM–16 in Schedule*

specified threshold for reflects the recommendation made by the Assistant Secretary for Health (Assistant Secretary) of the Department of Health and Human Services (HHS) in a letter to the Administrator of DEA dated October 8, 2026, which described the threshold as follows:

The substances [7-hydroxymitragynine] and [mitragynine pseudoindoxyl] be controlled in schedule I [pursuant to 21 U.S.C. 811(h)] when either substance alone, or their combined amount if both present, is:

(A) Above a specified threshold concentration, that is, greater than 1 mg per gram (for solid powders, encapsulated material, or other solid forms) or greater than 1 mg per milliliter (for liquid preparations), OR

(B) The mass of mitragynine present divided by the mass of [7-hydroxymitragynine], or [mitragynine pseudoindoxyl], or the combined amount of [7-hydroxymitragynine] and [mitragynine pseudoindoxyl] if both present, is less than 100.⁵

The temporary scheduling order will be published in the **Federal Register** on or after November 13, 2026.

Legal Authority

The CSA provides the Attorney General with the authority to temporarily place a substance in schedule I of the CSA for two years without regard to the requirements of 21 U.S.C. 811(b), if he finds that such action is necessary to avoid an imminent hazard to public safety.⁶ In addition, if proceedings to control a substance are initiated under 21 U.S.C. 811(a)(1) while the substance is temporarily controlled under section 811(h), the Attorney General may extend the temporary scheduling for up to one year.⁷

Where the necessary findings are made, a substance may be temporarily scheduled if it is not listed in any other schedule under 21 U.S.C. 812, or if there is no exemption or approval in effect for the substance under section 505 of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. 355.⁸ The Attorney General has delegated scheduling authority

⁵ I, 91 FR 54948 (Aug. 26, 2026). That temporary order is effective until August 26, 2028, or until a new temporary order placing mitragynine pseudoindoxyl above a specified threshold is published and the previous order withdrawn, whichever occurs first.

⁶ Letter from Assistant Secretary for Health of HHS Admiral Brian Christine, M.D., to DEA, at page 8 (Oct. 8, 2026).

⁷ 21 U.S.C. 811(h)(1).

⁸ 21 U.S.C. 811(h)(2).

⁹ 21 U.S.C. 811(h)(1); 21 CFR part 1308.

under 21 U.S.C. 811 to the Administrator of DEA (Administrator).⁹

Background

The CSA requires the Administrator to notify the Secretary of the Department of Health and Human Services (HHS) of this intent to issue a temporary scheduling order.¹⁰ By letter dated October 8, 2026, Assistant Secretary for Health sent a letter to DEA that, among other things, recommended controlling 7-hydroxymitragynine and mitragynine pseudoindoxyl when either substance alone, or their combined amount if both are present, is above a specified threshold in schedule I. By letter dated October 8, 2026, the Administrator transmitted the required notice to place 7-hydroxymitragynine and mitragynine pseudoindoxyl above the specified threshold recommended by HHS in schedule I on a temporary basis to the Assistant Secretary.¹¹ By letter dated March 6, 2026, the Assistant Secretary advised that based on a review by the Food and Drug Administration (FDA), there were currently no investigational new drug applications (IND) or approved new drug applications (NDA) for 7-hydroxymitragynine above a specified threshold. In a separate letter dated January 20, 2026, the Assistant Secretary advised that based on a review by the Food and Drug Administration (FDA), there were currently no investigational new drug applications (IND) or approved new drug applications (NDA) for mitragynine pseudoindoxyl as of that date. The Assistant Secretary provided no contrary information in its October 8, 2026, letter. Neither 7-hydroxymitragynine nor mitragynine pseudoindoxyl is currently listed in any other schedule than schedule I under the CSA.

To find that placing a substance temporarily in schedule I of the CSA is necessary to avoid an imminent hazard to public safety, the Administrator must consider three of the eight factors set forth in 21 U.S.C. 811(c): the substance's history and current pattern of abuse; the scope, duration and significance of abuse; and what, if any, risk there is to public health.¹² This consideration includes any information indicating

actual abuse, diversion from legitimate channels, and clandestine importation, manufacture, or distribution of either 7-hydroxymitragynine and mitragynine pseudoindoxyl.¹³

Substances meeting the statutory requirements for temporary scheduling may only be placed in schedule I.¹⁴ Substances in schedule I have high potential for abuse, no currently accepted medical use in treatment in the United States,¹⁵ and a lack of accepted

¹³ 21 U.S.C. 811(h)(3).

¹⁴ 21 U.S.C. 811(h)(1).

¹⁵ When finding schedule I placement on a temporary basis is necessary to avoid imminent hazard to the public, 21 U.S.C. 811(h) does not require DEA to consider whether the substance has a currently accepted medical use in treatment in the United States. Nonetheless, there is no evidence suggesting that 7-hydroxymitragynine or mitragynine pseudoindoxyl has a currently accepted medical use in treatment in the United States. First, DEA looks to whether the drug or substance has FDA approval. When no FDA approval exists, DEA has traditionally applied a five-part test to determine whether a drug or substance has a currently accepted medical use: (1) the drug's chemistry must be known and reproducible; (2) there must be adequate safety studies; (3) there must be adequate and well-controlled studies proving efficacy; (4) the drug must be accepted by qualified experts; and (5) the scientific evidence must be widely available. *Marijuana Scheduling Petition; Denial of Petition; Remand*, 57 FR 10499 (Mar. 26, 1992), pet. for rev. denied, *Alliance for Cannabis Therapeutics v. Drug Enforcement Admin.*, 15 F.3d 1131, 1135 (D.C. Cir. 1994). DEA applied the traditional five-part test and concluded the test was not satisfied. In a recent published letter in a different context, HHS applied an additional two-part test to determine currently accepted medical use for substances that do not satisfy the five-part test: (1) whether there exists widespread, current experience with medical use of the substance by licensed health care providers operating in accordance with implemented jurisdiction-authorized programs, where medical use is recognized by entities that regulate the practice of medicine, and, if so, (2) whether there exists some credible scientific support for at least one of the medical conditions for which part (1) is satisfied. On April 11, 2024, the Department of Justice's Office of Legal Counsel (OLC) issued an opinion, which, among other things, concluded that HHS's two-part test would be sufficient to establish that a drug has a currently accepted medical use. Office of Legal Counsel, Memorandum for Merrick B. Garland Attorney General Re: Questions Related to the Potential Rescheduling of Marijuana at 3 (April 11, 2024). For purposes of this notice of intent, there is no evidence that health care providers have widespread experience with medical use of 7-hydroxymitragynine or mitragynine pseudoindoxyl is recognized by entities that regulate the practice of medicine, so the two-part test also is not satisfied. In HHS's letter dated January 20, 2026, HHS advised DEA that there were currently no approved new drug applications or investigational new drug applications for mitragynine pseudoindoxyl. By letter dated March 6, 2026, the Assistant Secretary responded to this notice and advised that based on a review by the Food and Drug Administration (FDA), there were currently no investigational new drug applications (IND) or approved new drug applications (NDA) for 7-hydroxymitragynine. The Assistant Secretary provided no contrary information in its October 8, 2026 letter.

safety for use under medical supervision.¹⁶

7-Hydroxymitragynine Above a Specified Threshold

7-Hydroxymitragynine is a psychoactive alkaloid found in *Mitragyna speciosa* (*M. speciosa*) plant, a tropical evergreen tree indigenous to Southeast Asia. While the use of the plant was once geographically limited, the use of *M. speciosa* has since extended to the United States and other global markets. Among the numerous alkaloids identified in *M. speciosa*, the indole alkaloids mitragynine (major) and 7-hydroxymitragynine (minor) are primarily responsible for the plant's psychoactive effects. In its natural botanical form, 7-hydroxymitragynine makes up less than two percent of the total alkaloid content or occurs in trace amount in *M. speciosa*. However, 7-hydroxymitragynine can be synthesized from mitragynine through a one-step chemical reaction, and it also exists as an active oxidized metabolite of mitragynine *in vivo*. Despite the different origins of 7-hydroxymitragynine, the chemical structures of synthetic and naturally occurring 7-hydroxymitragynine are identical.

Recently, the United States has seen a proliferation of 7-hydroxymitragynine products. Evidence suggests that commercially available products, including extracts and synthetic formulations, contain a significantly higher concentration of 7-hydroxymitragynine than what is found in botanical *M. speciosa*. These products are commonly sold on the internet and in retail outlets, such as gas stations and smoke shops, in various forms, including powders, tablets, gummies, and sublingual films designed for rapid absorption. To date, the safety profile of these concentrated products in humans remains unknown because no controlled clinical trials have been conducted to establish safe consumption limits or standardized dosing.

7-Hydroxymitragynine has opioidergic activity, sharing a similar pharmacological profile to schedule II opioids like morphine. Preclinical data indicates that 7-hydroxymitragynine carries a high abuse potential with safety risks, including tolerance, dependence, and respiratory depression, which are comparable to those of classic opioid analgesics. The United States has recently seen an emergence of products containing 7-hydroxymitragynine, which are often characterized by

¹⁶ 21 U.S.C. 812(b)(1).

⁹ 28 CFR 0.100.

¹⁰ 21 U.S.C. 811(h)(4).

¹¹ The Secretary of HHS has delegated to the Assistant Secretary for Health of HHS the authority to make domestic drug scheduling recommendations. *Comprehensive Drug Abuse Prevention and Control Act of 1970, Public Law 91-513, As Amended; Delegation of Authority*, 58 FR 35460 (July 1, 1993).

¹² 21 U.S.C. 811(c)(4)–(6), (h)(3).

ambiguous dosages and misleading marketing, frequently being labeled as “natural *M. speciosa* extracts.” While sellers promote these products for their euphoric and opioidergic effects, evidence demonstrates they may also contain other opioid alkaloids, such as mitragynine pseudoindoxyl. These combinations, coupled with a lack of regulatory oversight, pose significant safety risk to unsuspecting consumers by exposing them to high doses of opioids. The absence of clinical evidence to support vendor health claims is deeply concerning. Consequently, 7-hydroxymitragynine products sold as unregulated dietary supplements pose significant health risks, as essential information regarding their purity, identity, quantity and long-term safety remain unknown.

7-Hydroxymitragynine does not meet the United States Food and Drug Administration (FDA) definitions for drugs, dietary supplements, or dietary ingredients. FDA has issued warning letters to companies clarifying that 7-hydroxymitragynine is not an FDA-approved drug product and no food additive regulation has authorized the use of 7-hydroxymitragynine in food supply. Furthermore, FDA has warned consumers against using products labeled as 7-hydroxymitragynine, as they have not been proven safe or effective for any use.¹⁷ Fatal overdoses involving 7-hydroxymitragynine have been reported, making its wide availability and unknown safety profile a significant threat to public health, which is particularly concerning in the midst of an opioid crisis. The availability of 7 hydroxymitragynine-containing substances in the United States’ *M. speciosa* consumer market poses an imminent hazard to the public safety.

Mitragynine Pseudoindoxyl

The prevalence and misuse of *Mitragyna speciosa* (commonly known as kratom) and its psychoactive alkaloids, including mitragynine and 7-hydroxymitragynine, have led to the proliferation of commercial products containing opioids chemically synthesized from mitragynine or 7-hydroxymitragynine. In recent years,

mitragynine pseudoindoxyl, which is a chemical rearrangement product of 7-hydroxymitragynine has recently emerged on the *Mitragyna speciosa* consumer markets. The chemical scaffolds of mitragynine or 7-hydroxymitragynine were used in scientific research to develop mitragynine pseudoindoxyl via chemical modifications of purified isolates. Evidence from the *Mitragyna speciosa* retail markets demonstrates that mitragynine pseudoindoxyl transitioned from experimental substances studied in research to widely available commercial products. These products are commonly sold in different forms such as powders, tablets, and liquid shots. This is a significant evolution from the traditional administration of *Mitragyna speciosa*, which was once restricted to either chewing raw leaves or steeping the leaves into water decoctions and teas.

These products are sold under numerous brand names like Kama, Hydroxie, Fruity Perks, and Happie Tabs,¹⁸ and they are easily purchased on the internet, as well as in gas stations, corner shops, and vape shops. These products are available in consumer-friendly forms to include flavored chewable tablets, which increases their appeal to a broader demographic. Also, the aggressive marketing of mitragynine pseudoindoxyl, which is a semi-synthetic opioid, as “precision-formulated products,” “botanical extracts,” or as “mood boosters” for the treatment of health conditions is deeply concerning. The branding creates a false sense of safety for unknowing consumers who may equate the term “botanical” with lower risk. Furthermore, there is paucity of data on quality control or standardized dosage available for these products, making their use especially dangerous.

Mitragynine pseudoindoxyl is a potent opioid that shares a similar pharmacological profile with 7-hydroxymitragynine. Available pharmacology data demonstrate that mitragynine pseudoindoxyl exhibit strong affinity for the mu-opioid receptor (MOR) and function as MOR agonists.^{19 20} Data from preclinical

studies show that this substance produce analgesic effect that is more potent than morphine.²¹ Because mitragynine pseudoindoxyl is a potent MOR agonist, it poses similar health risks as other mu-opioid agonists (*i.e.*, morphine and fentanyl), including physical and psychological dependence, and respiratory depression.

A scan of retail data on the internet shows that vendors explicitly market mitragynine pseudoindoxyl products for their “clean and powerful” opioid-receptor activation, utilizing deceptive terminology to target individuals seeking alternatives to pharmaceutical opioids. These combinations and marketing strategies pose significant safety risks to unsuspecting consumers who use these products by exposing them to high doses of opioids. Recently, reports have confirmed the positive identification of mitragynine pseudoindoxyl in toxicology cases in the United States, and evidence demonstrates that these substances are being misused. The lack of clinical data regarding its safety and efficacy, coupled with the risk of life-threatening respiratory depression and addiction, underscores the danger of marketing this unapproved, highly potent opioid under the guise of therapeutic or wellness products.

Available data and information for 7-hydroxymitragynine and mitragynine pseudoindoxyl summarized below, indicate that these substances have a high potential for abuse, no currently accepted medical use in treatment in the United States, and a lack of accepted safety for use under medical supervision. DEA’s three-factor analysis and HHS’s October 8, 2026 letter are available in their entirety under “Supporting and Related Material” of the public docket for this action at www.regulations.gov under Docket Number DEA–1570.

Factor 4. History and Current Pattern of Abuse

7-Hydroxymitragynine

7-Hydroxymitragynine is most commonly used in isolated form or as

¹⁷ FDA Issues Warning Letters to Firms Marketing Products Containing 7-Hydroxymitragynine | FDA, available at <https://www.fda.gov/news-events/press-announcements/fda-issues-warning-letters-firms-marketing-products-containing-7hydroxymitragynine#:~:text=FDA%20Issues%20Warning%20Letters%20to%20Firms%20Marketing%20Products%20Containing%207%2DHydroxymitragynine,-Alkaloid%20known%20as&text=The%20U.S.%20Food%20and%20Drug,also%20known%20as%207%2DOH>, Accessed July 31, 2025.

¹⁸ The list of brand names is illustrative, non-exhaustive, and provided solely as market context.

¹⁹ Matsumoto, K., Narita, M., Muramatsu, N., Nakayama, T., Misawa, K., Kitajima, M., Tashima, K., Devi, L. A., Suzuki, T., Takayama, H., & Horie, S. (2014). Orally active opioid μ/δ dual agonist MGM-16, a derivative of the indole alkaloid mitragynine, exhibits potent antiallodynic effect on neuropathic pain in mice. *The Journal of Pharmacology and Experimental Therapeutics*, 348(3):383–392.

²⁰ Yamamoto, L. T., Horie, S., Takayama, H., Aimi, N., Sakai, S., Yano, S., Shan, J., Pang, P. K.,

Ponglux, D., & Watanabe, K. (1999). Opioid receptor agonistic characteristics of mitragynine pseudoindoxyl in comparison with mitragynine derived from Thai medicinal plant *Mitragyna speciosa*. *General Pharmacology*, 33(1):73–81.

²¹ Váradi, A., Marrone, G. F., Palmer, T. C., Narayan, A., Szabó, M. R., Le Rouzic, V., Grinnell, S. G., Subrath, J. J., Warner, E., Kalra, S., Hunkele, A., Pagirsky, J., Eans, S. O., Medina, J. M., Xu, J., Pan, Y. X., Borics, A., Pasternak, G. W., McLaughlin, J. P., & Majumdar, S. (2016). Mitragynine/Corynantheidine Pseudoindoxyls As Opioid Analgesics with Mu Agonism and Delta Antagonism, Which Do Not Recruit β -Arrestin-2. *Journal of Medicinal Chemistry*, 59(18):8381–8397.

component of *M. speciosa*. Historically, *M. speciosa* has been used for a variety of purposes, including as an opium substitute and a treatment of various opioid withdrawal symptoms, such as pain, cough, anxiety, diarrhea, and intestinal difficulty.²² While its use was once geographically limited, the marketing in the United States of 7-hydroxymitragynine products has been aggressive and often indistinguishable from the sale of *M. speciosa*.²³ In recent years, 7-hydroxymitragynine has been falsely marketed as a dietary supplement²⁴ or natural extract despite failing to meet FDA's definitions for drugs, dietary supplements, or dietary ingredients. Anecdotal information from users who post on social media indicates that many users are self-treating chronic pain with unregulated 7-hydroxymitragynine products.²⁵

Product Formulation and Marketing Claims of 7-Hydroxymitragynine

7-Hydroxymitragynine products are readily obtained from smoke shops, gas stations, and online vendors in various forms, including tablets, shots, capsules, powder, syrup, vapes, sublingual pouch/strips, nasal spray, chewable, and liquid extracts. These products are commonly sold with names such as "7 Ohmz," "7-hydroxy," and "7-OH," and they are presented in colorful packages. One investigation identified 250 products sold between September 2024 through February 2025, noting that chewable/sublingual tablets were the most common formulation.²⁶ These

products were sold for general wellbeing and claims of increased focus. The investigation further highlighted the concerns regarding standardized dosing and cost. The concentration of 7-hydroxymitragynine products varied significantly, ranging from 1 mg to 700 mg in a single dose or serving. The average cost per dose across most products containing 7-hydroxymitragynine was about \$3.97.

Anecdotal information synthesized from user-contributed reports and subsequently analyzed by clinical educators²⁷ between 2024 and early 2025 provide additional information on abuse patterns. Users consistently report transition from traditional kratom leaf to 7-hydroxymitragynine tablets (e.g., 7OHMZ, Press'd, Hydroxie). 7-Hydroxymitragynine was described as "the cleanest and most euphoric high" that lacks "ceiling effect of nausea" of the plain leaf. A dominant theme is the short-lived nature of the 7-hydroxymitragynine high. Users report the urge to redose frequently.

The National Drug Early Warning System (NDEWS) conducted web monitoring on reddit mentions of kratom and its derivatives. In the report, information provided by reddit discussants surrounding kratom and 7-hydroxymitragynine shows that users often compare 7-hydroxymitragynine effects to prescription opioids, like oxycodone and hydrocodone, with users expressing worry on how such potent products are legally available at smoke shops. Commenters mentioned the ease and convenience of buying products at gas stations and noted how this can be a concern for impulse use due to ease of accessibility. Further, discussions on prices ranged from \$15–40 for a single dose product.²⁸

In summary, 7-hydroxymitragynine products are available in different forms and can be purchased easily via several avenues, predominantly via the internet. This is a shift from traditional botanical use to aggressive marketing of highly concentrated opioid products in the United States.

Mitragynine Pseudoindoxyl

Mitragynine pseudoindoxyl is a synthetic derivatives of the indole alkaloids, mitragynine or 7-

pseudoindoxyl product marketing. *Drug and Alcohol Dependence*, 272, 112701.

²⁷ University of Connecticut School of Pharmacy and Pharmaceutical Sciences. (2025). Kratom and Knock Offs, Should You Leaf Them Alone: You Asked for It!. available at <https://pharmacy.uconn.edu/course/kratom/>.

²⁸ Alert from the NDEWS Web Monitoring Team: Online mentions of Kratom and Derivatives (May 30, 2025). Retrieved from *ndews.org*.

hydroxymitragynine, of the *Mitragyna speciosa* plant. Unlike the indole alkaloids mitragynine and 7-hydroxymitragynine, which are naturally occurring in the plant, mitragynine pseudoindoxyl is produced through synthetic modifications of purified mitragynine isolates or 7-hydroxymitragynine.²⁹ The chemical scaffolds of mitragynine or 7-hydroxymitragynine were used in scientific research to develop novel mitragynine pseudoindoxyl. The first mention of mitragynine pseudoindoxyl in scientific literature dates to 1974 when mitragynine pseudoindoxyl was isolated as a metabolite from bio transformed mitragynine.

Market Emergence and Designer-Drug Patterns of Mitragynine Pseudoindoxyl

The first confirmed appearance of mitragynine pseudoindoxyl in consumer products was reported in 2024.³⁰ The introduction of mitragynine pseudoindoxyl into the *Mitragyna speciosa* consumer market follows a classic pattern of new designer drugs, where packaging appears like those of designer novel psychoactive substances and are often advertised as "sold strictly for laboratory, botanical, and research purposes only" and "not intended for human consumption."³¹ A study on products sold online containing mitragynine pseudoindoxyl showed that of the 51 total products sold online, 35 had an appealing flavor (e.g., various berry, mint, watermelon, pink lemonade, candy apple, grape, citrus, mango, pistachio, and vanilla bean), and 32 of the products had packaging that was formulated using bright colors. Seventy-six percent (39 of 51) of these products were chewable tablets, 18 percent were liquids (9 of 51), and the remaining three were either dried ice cream cones with ice cream (two

²⁹ *Id.*, 13;14; Takayama, H., Ishikawa, H., Kurihara, M., Kitajima, M., Aimi, N., Ponglux, D., Koyama, F., Matsumoto, K., Moriyama, T., Yamamoto, L.T., Watanabe, K., Murayama, T., & Horie, S. (2002). Studies on the synthesis and opioid agonistic activities of mitragynine-related indole alkaloids: discovery of opioid agonists structurally different from other opioid ligands. *Journal of Medicinal Chemistry*, 45(9):1949–1956.

³⁰ Hill, K., Boyer, E.W., Grundmann, O., & Smith, K.E. (2025). De facto opioids: Characterization of novel 7-hydroxymitragynine and mitragynine pseudoindoxyl product marketing. *Drug and Alcohol Dependence*, 272: 112701; Krotulski, A.J.; Denn, M.T., Brower, J.O., Papsun, D.M., & Logan, B.K. (2025). Evaluation of Commercially Available Smoke Shop Products Marketed as "7-Hydroxy Mitragynine" & Related Alkaloids, Center for Forensic Science Research and Education, United States; Vadiel, N., Evoy, K.E., & Grundmann, O. (2025). The Impact of Diverse Kratom Products on Use Patterns, Dependence, and Toxicity. *Current Psychiatry Reports*, 27(10):584–592.

³¹ *Id.*, 24.

²² Grundmann, O., Green, M., Berthold, E., Yoon, S.L., & Ray, D. (2025). Prevalence and Use Patterns of Kratom (*Mitragyna speciosa* Korth.) in a US Nationally Representative Sample. *Journal of psychoactive drugs*, 1–9.

²³ Smith, K.E., Boyer, E.W., Grundmann, O., McCurdy, C.R., & Sharma, A. (2025). The rise of novel, semi-synthetic 7-hydroxymitragynine products. *Addiction (Abingdon, England)*, 120(2), 387–388.

²⁴ FDA issued warning letters to firms marketing products containing 7-hydroxymitragynine stating it is not a lawful dietary supplement, food additive, or ingredient in any approved drug". FDA Issues Warning Letters to Firms Marketing Products Containing 7-Hydroxymitragynine | FDA, available at <https://www.fda.gov/news-events/press-announcements/fda-issues-warning-letters-firms-marketing-products-containing-7-hydroxy-mitragynine#:~:text=FDA%20Issues%20Warning%20Letters%20to%20Firms%20Marketing%20Products%20Containing%207%20Hydroxymitragynine,-Alkaloid%20known%20as&text=The%20U.S.%20Food%20and%20Drug,also%20known%20as%207%20DOH>, accessed on July 15, 2025.

²⁵ National Drug Early Warning System (NDEWS). (2025). Alert from the NDEWS Web Monitoring Team: Online mentions of Kratom and Derivatives (May 30, 2025). Retrieved from *ndews.org*.

²⁶ Hill, K., Boyer, E.W., Grundmann, O., & Smith, K.E. (2025). De facto opioids: Characterization of novel 7-hydroxymitragynine and mitragynine

products) or a chocolate bar (one product).³² Many of the products typically feature serving sizes that require consumers to split tablets or doses.

Current Patterns of Use Mitragynine Pseudoindoxyl

Users seek mitragynine pseudoindoxyl for its psychoactive effects and products are often advertised

as mood enhancers or alternative to prescription opioid analgesics (see Factor 5). These products are commonly sold in different product forms, such as powders, tablets, or liquid shots, which is a sharp contrast from the traditional mode of administration of *Mitragyna speciosa*, which was confined to either water decoctions or brewed into tea or chewing of fresh leaves. A review of vendor websites ³³ show that these

products are explicitly marketed as “potent” and “fast-acting” substances and sold at low prices. For example, mitragynine pseudoindoxyl tablets are sold in varying fruit flavors and in bright colors, and prices vary from about \$2–4 per tablet or \$34.99 per pack (single pack and 10-pack bulk). Of great concern to DEA is that the price of these products may facilitate high-frequency and rapid escalation of use (see Table 1).

TABLE 1—RETAIL DISTRIBUTION OF MITRAGYNINE PSEUDOINDOXYL PRODUCTS

Brand	Product form	Stated concentration	Marketing narrative
Kama Pseudoindoxyl.	Extract tablet	500 mg Kama 7-Hydroxy + Pseudo extracts.	“Stop settling for weak kratom products.... Enjoy great flavor and precise dosing without the guesswork.”
Kream	Liquid Shot	90 mg 7-Hydroxy + Pseudo.	“Tired of slow supplements that give you a crash? delivering fast-acting effects and calm mental clarity in a discreet little bottle. This clean, lab-tested liquid shot features 7-hydroxy and pseudo in a citrus formula for consistent potency, making it easy to find focus and wellness without waiting long.”

The shift from natural leaf decoctions of *Mitragyna speciosa* to flavored, standardized, and high-potency semi-synthetic substances suggests an intentional market strategy to maximize consumer appeal and sale of products with rapid onset of effects. The use of “research chemical” labeling, a common tactic to bypass regulatory oversight, for flavored chewable products further demonstrates a pattern to reach a broader consumer demographics.

Factor 5. Scope, Duration, and Significance of Abuse

7-Hydroxymitragynine

The abuse of 7-hydroxymitragynine is increasing and widespread. Given its pharmacological profile as an opioid agonist and high abuse potential,³⁴ the marketing of 7-hydroxymitragynine products to consumers as botanical supplements constitute a significant public health risk. 7-Hydroxymitragynine, a potent opioid, presents overdose risk and toxicity to users because its chemical manufacturing process is inconsistent and does not adhere to good manufacturing practices. This lack of

oversight may lead to variation in doses and composition in final products. Further, 7-hydroxymitragynine is sold as sublingual pouch/tablet, a formulation known to deliver drugs rapidly into the systemic circulation. This rapid delivery, coupled with 7-hydroxymitragynine’s known pharmacokinetic profile, presents a significance of abuse.³⁵

7-Hydroxymitragynine sellers make claims of its opioidergic effects. Evidence demonstrates that 7-hydroxymitragynine products have been identified to contain other opioid alkaloids, such as mitragynine pseudoindoxyl.³⁶ These combinations and practice pose significant safety risks to unsuspecting consumers by exposing them to high doses of opioids. The lack of evidence to support health claims made by vendors selling 7-hydroxymitragynine products is worrisome. Hence, 7-hydroxymitragynine products sold as unregulated dietary supplements pose significant health risks to users because information on their purity, identity, quantity and safety is unknown.

Law Enforcement Encounters

The number of seizures for 7-hydroxymitragynine as reported in law enforcement systems is currently limited, primarily because forensic chemists often prioritize the identification of mitragynine, the major alkaloid in *M. speciosa*, rather than extending analysis to the identification minor alkaloids, such as 7-hydroxymitragynine. Furthermore, because 7-hydroxymitragynine is not federally controlled under the CSA, specific forensic identification may be limited. Consequently, some forensic laboratories may not place emphasis on analyzing or tracking the encounters of non-controlled substances, making it unlikely to be fully reported to forensic laboratories databases. Nonetheless, available data from the National Forensic Laboratory Information System (NFLIS) database ³⁷ shows that, in 2025, there were 42 reports of 7-hydroxymitragynine from 12 states. This law enforcement data illustrates the widespread and increasing availability of products containing 7-

³² White, C.M., Belcourt, J., & Sedensky, A. (2025). A Descriptive Assessment of Products Containing the Opioid Receptor Stimulator Mitragynine Pseudoindoxyl. *Substance Use & Misuse*, 60(12):1950–1954.
³³ Market Audit of Online Retailers, Jan. 2026.
³⁴ Hemby, S.E., McIntosh, S., Leon, F., Cutler, S.J., & McCurdy, C.R. (2019). Abuse liability and therapeutic potential of the *Mitragyna speciosa* (kratom) alkaloids mitragynine and 7-hydroxymitragynine. *Addiction Biology*, 24(5), 874–885.
³⁵ Hill, K., Boyer, E.W., Grundmann, O., & Smith, K.E. (2025). De facto opioids: Characterization of novel 7-hydroxymitragynine and mitragynine

pseudoindoxyl product marketing. *Drug and Alcohol Dependence*, 272, 112701; Sharma, A., Smith, K.E., Kuntz, M.A., Berthold, E.C., Elashkar, O.I., Guadagnoli, N., Kanumuri, S.R.R., Mukhopadhyay, S., Panlilio, L.V., Epstein, D.H., & McCurdy, C.R. (2025). Chemical Analysis and Alkaloid Intake for Kratom Products Available in the United States. *Drug Testing and Analysis*, 17(10), 1974–1984.
³⁶ 7-Hydroxy Mitragynine NPS Discovery, available at https://www.cfsre.org/images/content/reports/public_alerts/7-Hydroxy_Mitragynine_NPS_Discovery_033125.pdf, accessed March 10, 2026.
³⁷ NFLIS represents an important resource in monitoring illicit drug trafficking, including the

diversion of legally manufactured pharmaceuticals into illegal markets. NFLIS is a comprehensive information system that includes data from forensic laboratories that handle more than 96 percent of an estimated 1.0 million distinct annual State and local drug analysis cases. NFLIS includes drug chemistry results from completed analyses only. While NFLIS data is not direct evidence of abuse, it can lead to an inference that a drug has been diverted and abused. See *Schedules of Controlled Substances: Placement of Carisoprodol Into Schedule IV*, 76 FR 77330, 77332 (Dec. 12, 2011). NFLIS data were queried on February 26, 2026.

hydroxymitragynine within the domestic kratom drug market.

FDA Warning Letters

Between June and July 2025, FDA issued seven warning letters³⁸ to marketers and distributors in response to the unauthorized claim of 7-hydroxymitragynine as a drug, dietary supplement, or dietary ingredient. The warning letters explicitly stated that 7-hydroxymitragynine is not an FDA-approved drug product and that no food additive regulation has authorized the use of 7-hydroxymitragynine in food. FDA further classified 7-hydroxymitragynine as a “new dietary ingredient” under section 413(d) of the FD&C Act, 21 U.S.C. 350b(d), because there is no evidence demonstrating it was marketed as a dietary ingredient in the United States before October 15, 1994. Additionally, some letters noted that, as a dietary supplement, 7-hydroxymitragynine is considered adulterated under section 402(f)(1)(B) of the FD&C Act, 21 U.S.C. 342(f)(1)(B). This is because there is inadequate information providing reasonable assurance that the ingredient does not present a significant or unreasonable risk of illness or injury. Of note was FDA’s warning letter issued on June 25, 2025, to a company selling “7OHMZ 7-Hydroxymitragynine Gummies,”³⁹ in which FDA cautioned that such products may be appealing to children due to their packaging. Other warning letters targeted the illegal sale of

unapproved 7-hydroxymitragynine products marketed for the treatment of pain, relaxation, mood enhancement, and other medical conditions.⁴⁰ Vendors utilized websites and social media pages to make unproven medical claims for 7-hydroxymitragynine, such as describing tablets as “expertly formulated to provide a potent dose” or promising “intense relaxation and a feeling of pure bliss.”

State Regulations and Controls

Due to concerns over its abuse, several states have regulated or banned the consumption of 7-hydroxymitragynine or *M. speciosa*.⁴¹ Currently, ten states (Alabama, Arkansas, Connecticut, Indiana, Kansas, Louisiana, Massachusetts, Tennessee, Vermont, and Wisconsin) have prohibited 7-hydroxymitragynine consumption. Additionally, some states, such as Arizona, Colorado, South Carolina, and Texas, have set restrictions on the limits of 7-hydroxymitragynine (not to exceed a specified percent of total alkaloid content).

Furthermore, 19 states have enacted model legislation known as the “kratom consumer protection Act (KCPA),” which requires that *M. speciosa*, mitragynine, or 7-hydroxymitragynine be manufactured safely, labeled accurately, and distributed appropriately to protect consumer under a certain age. These states are Arizona, Colorado, Florida, Georgia, Kentucky, Oklahoma, Maryland, Mississippi, Nebraska, Nevada, New York, Oregon, Rhode Island, South Carolina, South Dakota, Texas, Utah, Virginia, and West Virginia. Other states, like Illinois, New Hampshire, North Carolina, and Tennessee, have bans in some localities.⁴² Of note, the state of Mississippi has set the limit per weight basis to one percent of total alkaloid content of 7-hydroxymitragynine or 0.5 mg per container. DEA’s intent to temporarily control 7-

hydroxymitragynine above the specified threshold does not preempt more restrictive state law regarding the consumption of 7-hydroxymitragynine and 7-hydroxymitragynine related products.

Poison Control Center Data (National Poison Data System)

The significance of 7-hydroxymitragynine abuse is demonstrated by an increasing volume of calls to poison control centers. Reporting for 7-hydroxymitragynine was historically limited within the national poison data system (NPDS); however, specific data codes for this substance were recently implemented between February and May 2025. During the initial tracking period from February 2025 to April 2025, NPDS recorded a total of 53 case reports involving 7-hydroxymitragynine. Of these exposure calls, 37 cases involved single-substance exposure of 7-hydroxymitragynine alone, and 24 cases were classified as abuse involving other substances in combination with 7-hydroxymitragynine. Among the single-substance exposure calls, 16 cases were categorized as intentional abuse, while 13 calls involved moderate medical outcomes where the patients exhibited pronounced and prolonged systemic symptoms.

Expanded data from U.S. poison centers indicates a rapid escalation in reported incidents.⁴³ From January 1 through July 31, 2025, there were 165 exposure cases involving 7-hydroxymitragynine. Of those reporting exposures to 7-hydroxymitragynine alone, 35 percent of these cases resulted in serious health problems, and 67 percent of individuals were treated at a healthcare facility. Patients exposed to 7-hydroxymitragynine frequently exhibit a range of severe physiological and neurological symptoms, including: gastrointestinal (nausea and vomiting), neurological (agitation, confusion, loss of consciousness, and seizure), cardiovascular (sweating, tachycardia, and hypertension), and respiratory (difficulty breathing). According to HHS’ review, users report several reasons regarding the use of 7-hydroxymitragynine, including the following:

- **Desired Effects:** Euphoria and an opioid-like “buzz”/high as motivation for using 7-hydroxymitragynine.
- **Product Appeal:** The availability of “candy-like” formulations of some 7-

³⁸ FDA Issues Warning Letters to Firms Marketing Products Containing 7-Hydroxymitragynine | FDA, available at <https://www.fda.gov/news-events/press-announcements/fda-issues-warning-letters-firms-marketing-products-containing-7-hydroxymitragynine>; 7Tabz Retail, LLC—709546—06/25/2025 | FDA, available at <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/7tabz-retail-llc-709546-06252025>; <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/hydroxie-llc-709661-06252025>; <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/shaman-botanicals-llc-709622-06252025>; <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/royal-diamond-imports-inc-709540-06252025>; <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/thang-botanicals-inc-dba-7ohmz-7-ohmz-or-7ohmz-710190-06252025>; <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/relax-relief-rejuvenate-trading-llc-dba-rrr-trading-or-edp-kratom-709475-06252025>.

³⁹ Thang Botanicals, Inc. d/b/a 7OHMZ, 7-OHMZ, or 7OHMZ—710190—06/25/2025 | FDA, available at <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/thang-botanicals-inc-dba-7ohmz-7-ohmz-or-7ohmz-710190-06252025>.

⁴⁰ FDA Warning Letter, Royal Diamond Imports, Inc. (June 25, 2025), available at <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/royal-diamond-imports-inc-709540-06252025>; FDA Warning Letter, Hydroxie, LLC (June 25, 2025), available at <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/hydroxie-llc-709661-06252025>.

⁴¹ Legislative Analysis and Public Policy Association, Kratom: Summary of State Laws (April 2025), available at <https://legislativeanalysis.org/wp-content/uploads/2025/07/Kratom-Summary-of-State-Laws.pdf>. Accessed August 8, 2025.

⁴² American Kratom Association, Kratom State Legality and Legislation, available at <https://www.amerikankratom.org/aka-in-your-state>. Accessed on February 26, 2026.

⁴³ America’s Poison Centers, Health Advisory: Serious Illnesses Associated with 7-OH Use, available at <https://poisoncenters.org/news-alerts/13531044>. Accessed on August 26, 2025.

hydroxymitragynine tablets, which some users acknowledge as carrying health risk due to possibility of overconsumption.

- **Self-Treatment:** Claim of 7-hydroxymitragynine therapeutic value in self-treating pain and anxiety.

- **Risk Awareness:** There is an acknowledgement among users of products containing 7-hydroxymitragynine that these products can lead to addiction, withdrawal symptoms, overdose, and other serious health outcomes, including death.

In summary, the abuse of 7-hydroxymitragynine in the United States is fueled by its pharmacological similarities to opioid analgesics, a lack of regulatory controls, and the relative ease of obtaining 7-hydroxymitragynine products via smoke shops and the internet.⁴⁴ Furthermore, the consumption of 7-hydroxymitragynine alongside other mind-altering substances may exacerbate the potential acute and long-term hazards and risks to the user, especially drug dependence. FDA responded to the increase in sales of 7-hydroxymitragynine products and unsubstantiated medical claims by issuing warning letters to companies to protect public safety. Available information from published literatures and poison control centers suggests that 7-hydroxymitragynine is used by a diverse population for the self-treatment of various health conditions. The ingestion of 7-hydroxymitragynine, a potent opioid, alone or co-ingestion with other substances, commonly a CNS depressant, is of serious concern. The poison control center data and popularity of 7-hydroxymitragynine-products collectively underscores the severity and significance of abuse of 7-hydroxymitragynine in the United States.

Mitragynine Pseudoindoxyl

The abuse of mitragynine pseudoindoxyl is concerning due to its high opioid potency and commercial availability. Mitragynine pseudoindoxyl products are sold in formulations that facilitate ease of use, bypass the traditional, lower-alkaloid preparation (chewing leaves or drinking tea) and provide a highly potent effect that mimics classical opioids such as morphine.

Deceptive Branding and Market Infiltration of Mitragynine Pseudoindoxyl

Analysis of marketed mitragynine pseudoindoxyl products revealed

misleading marketing strategies with claims that the products are “kratom.” Available information on vendor website indicates that the concentrated alkaloid products often contain more than one alkaloid with opioid activity (e.g., 7-hydroxymitragynine and mitragynine pseudoindoxyl). These substances combinations and marketing practices pose significant safety risk to unsuspecting consumers by exposing them to high doses of opioids (see Table 1). It is known that repeated use of opioids can lead to psychological and physical dependence. In fact, data show that chronic use of 7-hydroxymitragynine has sent users to opioid detox clinic and the need for opioid use disorder medication.⁴⁵ Furthermore, these products are labeled for “strong mood enhancement” and “analgesic properties.” Finally, the presence of these products containing mitragynine pseudoindoxyl is deeply concerning because the identity, purity, and quality of these products’ formulation are uncertain, thus presenting additional safety concerns for unsuspecting users.

A study of products sold as mitragynine pseudoindoxyl over the internet found that the 51 unique products sold online as mitragynine pseudoindoxyl were marketed in child-appealing forms and contained other opioid alkaloids, with limited consumer safety information. The serving size varied and alkaloid concentrations for these marketed products were often higher than those in naturally occurring *Mitragyna speciosa* leaves. The analysis revealed that among the products sampled, 71 percent featured a combination of mitragynine pseudoindoxyl and 7-hydroxymitragynine, while 24 percent contained mitragynine pseudoindoxyl only. The remaining 6 percent contained combination of mitragynine pseudoindoxyl and other hydroxymitragynine forms (8-hydroxymitragynine or 11-hydroxymitragynine).⁴⁶

⁴⁵ Wightman, R. S., & Hu, D. (2025). A Case of 7-OH Mitragynine Use Requiring Inpatient Medically Managed Withdrawal. *Journal of Addiction Medicine*, 10.1097/ADM.0000000000001558. Advance online publication.

⁴⁶ Wilson, L. L., Chakraborty, S., Eans, S. O., Cirino, T. J., Stacy, H. M., Simons, C. A., Uprety, R., Majumdar, S., & McLaughlin, J. P. (2021). Kratom Alkaloids, Natural and Semi-Synthetic, Show Less Physical Dependence and Ameliorate Opioid Withdrawal. *Cell Mol Neurobiol.*, 41(5):1131–1143. doi: 10.1007/s10571-020-01034-7.

National E-Commerce of Mitragynine Pseudoindoxyl

Data from online sources show that the availability of mitragynine pseudoindoxyl products are not isolated to a single region but have rapidly spread across the United States. Products containing mitragynine pseudoindoxyl are sold on the internet and are delivered to most states where there is currently no kratom use restrictions, suggesting national distribution network facilitated by online sales and mass-market retail channels. The significance of the abuse of mitragynine pseudoindoxyl is underscored by the potent opioid pharmacological profile of these substances and the specific health warnings acknowledged even by those who are marketing the substances. Vendor descriptions listed below provide insight into the duration and pattern of use that characterizes the abuse of these compounds:

Sustained Effect: The duration of effects is reported to last “several hours.”⁴⁷ This prolonged duration increases the likelihood of cumulative effects and potential for toxicity if doses are repeated.

Deceptive Marketing for Medical Conditions: Despite having no FDA-approved medical use, these products are explicitly marketed for “easing stress and tension,” “internal calm and reduced restlessness,” and as a “mental clarity.”⁴⁸ This marketing encourages individuals with legitimate medical needs to utilize potent, unlawful opioids as self-treatment.

Deceptive “Natural” Branding: Vendors frequently frame these substances as “clean and powerful” alternatives to traditional kratom. This branding is used to minimize the perceived risk of what are highly potent semi-synthetic opioid agonists.

Deceptive Safety Profiles: While products are marketed as a “midday stress relief” or “mental reset,” the inclusion of warnings for lethal respiratory depression on retail sites confirms that the products possess a toxicity profile identical to scheduled opioids.

Low Barrier to Entry: The use of “fruity” flavors and “chewable” formats (e.g., Fruity Perks) suggests an effort to

⁴⁷ See Pseudoindoxyl Chewable Tablets—Red Vein—Advanced Alkaloids Descriptions, <https://cbdamericanshaman.com/pseudoindoxyl-chewable-tablets-red-vein-advanced-alkaloids>. Accessed January 2026.

⁴⁸ See Dozo Perks Extremely Potent Pseudoindoxyl Chewable Tablet Grape 100mg Per Tablet, <https://pureleafkratom.com/products/dozo-perks-100mg-pseudoindoxyl-grape-chewable-tablets-4ct.html>. Accessed January 2026.

⁴⁴ Internet sellers advertise, market, and provide false medical claims.

appeal to a broader, potentially younger demographic, significantly increasing the scope of potential abuse.

Forensic Surveillance and Identification of Mitragynine Pseudoindoxyl

According to the National Forensic Laboratory Information System (NFLIS)⁴⁹ database, which collects drug identification results from drug cases submitted to and analyzed by Federal State and local forensic laboratories, there has been one report of mitragynine pseudoindoxyl in New York (queried February 26, 2026). Further, monographs⁵⁰ by Center for Forensic Science Research and Education (CFSRE), report that mitragynine pseudoindoxyl (n > 10) have been detected in at least 10 drug materials.

The paucity or lack of seizure data for this substance as reported in forensic laboratories casework may be due to lack of readily available analytical reference standards and other analytic challenges. Specifically, mitragynine pseudoindoxyl is an oxidative metabolite of 7-hydroxymitragynine, and such closely related compounds require specific method and instrumentation for accurate identification. Also, since mitragynine pseudoindoxyl is not federally controlled under the CSA, some forensic laboratories may not analyze and track encounters of non-controlled substances and thus reporting could be limited.

The population likely to abuse mitragynine pseudoindoxyl appears to be the same as those abusing *Mitragyna speciosa* and prescription opioid analgesics. According to data from the National Survey on Drug Use and Health (NSDUH),⁵¹ as of 2021, an estimated 1.7 million people aged 12

years or older used kratom in the past year. The highest users were among adults aged 26 or older (1.4 million people). The analysis of 2019 NSDUH survey data showed that kratom users base predominately non-Hispanic White and male. The survey finding also revealed a link between kratom use and substance use disorder, particularly nonmedical prescription opioid use disorder, indicative of a strong trend of use for self-managing opioid dependence.⁵²

Factor 6. What, If Any, Risk There Is to Public Health

7-Hydroxymitragynine

7-Hydroxymitragynine has opioidergic and addictive properties. Available preclinical data demonstrates that 7-hydroxymitragynine has an abuse potential similar to that of schedule I and II opioids, such as heroin, morphine, and fentanyl.⁵³ The abuse of 7-hydroxymitragynine presents a severe of risks to public health, including tolerance, dependence and addiction, respiratory depression, and death. Public health assessment is further complicated because 7-hydroxymitragynine is a known metabolite of mitragynine, making it difficult to distinguish between the ingestion of *M. speciosa* and other isolated 7-hydroxymitragynine products.

FDA-Adverse Event Reporting System (FAERS) for 7-Hydroxymitragynine

On August 11, 2025, DEA queried the FAERS public dashboard for 7-hydroxymitragynine and noted that there were 1 case count in 2023, 2 cases in 2024, and 11 cases as of June 30, 2025. Most of the cases involved drug

dependence (n = 6) and withdrawal syndrome (n = 4). A recent query of the database on February 27, 2026, revealed an increase in cases involving 7-hydroxymitragynine. The total count for 2025 increased to 66 with 17 new cases already reported for 2026. Of the total 86 cases currently within the database, 79 cases were reported as serious, including death. To date, 9 cases within the FAERS database have resulted in death.

DEA Toxicology Testing Program (DEA TOX) Results for 7-Hydroxymitragynine

DEA TOX program, which investigates the presence of new psychoactive substances in biological samples from drug overdoses, has identified 7-hydroxymitragynine in 85 cases since 2019.⁵⁴ Of these, 55 were fatal and 30 were non-fatal cases. These cases involved both males and females with a median age of 36. The average concentration of 7-hydroxymitragynine detected in biological samples was 463.23 ng/mL. Samples often contained other related alkaloids (mitragynine and mitragynine pseudoindoxyl) or other drug classes, such as opioids (e.g., fentanyl), benzodiazepines (e.g., bromazepam), and ketamine. Between 2020 and 2025, there has been a significant increase in the positive identification of 7-hydroxymitragynine in fatal overdose cases.

Case Reports Involving 7-Hydroxymitragynine

In 2025, California,⁵⁵ Pennsylvania,⁵⁶ and Texas health authorities linked 7-hydroxymitragynine and concentrated extracts to several illness and overdose cases.⁵⁷ Other notable cases are summarized in the table below:

⁴⁹ NFLIS represents an important resource in monitoring illicit drug trafficking, including the diversion of legally manufactured pharmaceuticals into illegal markets. NFLIS-Drug is a comprehensive information system that includes data from forensic laboratories that handle the nation's drug analysis cases. NFLIS-Drug participation rate, defined as the percentage of the national drug caseload represented by laboratories that have joined NFLIS, is currently 98.5 percent. NFLIS includes drug chemistry results from completed analyses only. While NFLIS data is not direct evidence of abuse, it can lead to an inference that a drug has been diverted and abused. See *Schedules of Controlled Substances: Placement of Carisoprodol Into Schedule IV*, 76 FR 77330, 77332 (Dec. 12, 2011). NFLIS data was queried on December 5, 2025.

⁵⁰ <https://www.cfsre.org/nps-discovery/monographs/mitragynine-pseudoindoxyl>. Report Date-November 7, 2025. Accessed January 9, 2026; <https://www.cfsre.org/nps-discovery/monographs/dihydro-7-hydroxy-mitragynine>. Report Date-November 11, 2025. Accessed January 9, 2026.

⁵¹ The NSDUH, formerly known as the National Household Survey on Drug Abuse (NHSDA), is conducted annually by the Department of Health and Human Services Substance Abuse and Mental

Health Services Administration (SAMHSA). It is the primary source of estimates of the prevalence and incidence of nonmedical use of pharmaceutical drugs, illicit drugs, alcohol, and tobacco use in the United States. The survey is based on a nationally representative sample of the civilian, non-institutionalized population 12 years of age and older. The survey excludes homeless people who do not use shelters, active military personnel, and residents of institutional group quarters such as jails and hospitals. The NSDUH provides yearly national and state level estimates of drug abuse, and includes prevalence estimates by lifetime (i.e., ever used), past year, and past month abuse or dependence.

⁵² Palamar, J. J. (2021). Past-Year Kratom Use in the U.S.: Estimates From a Nationally Representative Sample. *Am J Prev Med.*, 61(2):240–245; Rogers, J. M., Smith, K. E., Strickland, J. C., & Epstein, D. H. (2021). Kratom Use in the US: Both a Regional Phenomenon and a White Middle-Class Phenomenon? Evidence From NSDUH 2019 and an Online Convenience Sample. *Frontiers in Pharmacology*, 12:789075.

⁵³ Alsbrook, S., Pro, G., & Koturbash, I. (2025). From kratom to 7-hydroxymitragynine: evolution of

a natural remedy into a public-health threat. *Pharmaceutical Biology*, 63(1), 896–911.

⁵⁴ DEA TOX is a surveillance program that aims to detect novel psychoactive substances in fatal and nonfatal overdose cases within the United States. From these cases, biological samples, as well as drug paraphernalia (on limited occasions), are submitted for analysis by hospitals, medical examiners, poison centers, and law enforcement nationwide. Queried on March 05, 2026.

⁵⁵ LISTING OF DEPARTMENT OF PUBLIC HEALTH PRESS RELEASES, available at <http://publichealth.lacounty.gov/phcommon/public/media/mediapubhpdetail.cfm?prid=5156>. October 10, 2025.

⁵⁶ Increased Volume of Calls Related to Kratom/Mitragynine and 7-hydroxymitragynine (7-OH) to Pennsylvania's Poison Centers, available at <https://www.pa.gov/content/dam/copapwp-pagov/en/health/documents/topics/documents/2025%20HAN/2025-802-%208-4-%20Kratom.pdf>. August 4, 2025.

⁵⁷ Serious Illnesses Associated with 7-OH Use | Texas DSHS, available at <https://www.dshs.texas.gov/news-alerts/serious-illnesses-associated-7-oh-use>. September 2, 2025.

7-HYDROXYMITRAGYNINE CASE REPORTS
[2014–2026]

Case report author	Patient profile (y/o male)	Primary complication	Clinical finding
Broul et al. (2025) ⁵⁸	31	Acute Psychosis	<i>Severe Self-Harm:</i> Documented 7-hydroxymitragynine induced psychosis leading to self-amputation (ears/genitalia).
Karinen et al. (2014) ⁵⁹ ..	24	Fatal Overdose	<i>Fatality:</i> Identified a 7-hydroxymitragynine blood concentration of 0.15 mg/L.
Pullman et al. (2026) ⁶⁰	29	Cardiopulmonary arrest	<i>Naloxone Reversal:</i> Confirmed 7-hydroxymitragynine causes opioid respiratory depression reversible with standard antagonist drug.
Wightman and Hu (2025) ⁶¹ .	38	Severe Dependence	<i>Clinical Detoxification:</i> Patient required inpatient buprenorphine stabilization for high dose 7-hydroxymitragynine withdrawal.

These 7-hydroxymitragynine products are obtained through unknown sources, where the identity, purity, and concentration of active ingredients are often unknown, uncertain, and inconsistent; thus, posing significant adverse health risks to users. The abuse of 7-hydroxymitragynine poses a substantial hazard to public safety. 7-Hydroxymitragynine is being abused for its opioid-like effects and shares health risks similar to other mu-opioid receptor agonists, such as morphine (schedule II). With no approved medical use, the positive identification of 7-hydroxymitragynine in non-fatal and fatal overdose cases poses threat to public safety. 7-Hydroxymitragynine products are obtained through unknown sources (commonly through the internet); the identity, purity, and quantity of these substances are uncertain and inconsistent, thus posing significant adverse health risks to users.

Mitragynine Pseudoindoxyl

Mitragynine pseudoindoxyl functions as potent MOR agonist. This mechanism of action is inherently associated with high potential of abuse, physical dependence, and psychological dependence, consistent with the effects of controlled schedule I and II opioid substances. As of early 2026, mitragynine pseudoindoxyl products are sold in smoke shops, gas stations, and through numerous online marketplaces, often marketed alongside

traditional supplements, which mask their potent opioid nature. Data from preclinical studies demonstrate that mitragynine pseudoindoxyl is about 100 times more potent than mitragynine at the MOR.⁶² Because of the potency of this compound, it can be abused in smaller, concentrated doses. It has been demonstrated that mitragynine pseudoindoxyl may cause development of signs of opioid physical dependence after chronic use in rodents. Pre-clinical studies demonstrated that chronic twice-daily administration of mitragynine pseudoindoxyl in rodents induces signs of opioid physical dependence and withdrawal symptoms in morphine addiction rodent models as evidenced by increased diarrhea, jumping, and rearing frequency occurring when naloxone was administered or when treatment with this alkaloid was tapered.⁶³

These products are easily accessible in unregulated retail environments often with no age restrictions, amplifying public health concerns, particularly to vulnerable populations. Vendor descriptions provide insight into the public health threat posed by the abuse of these compounds:

Rapid Onset: Marketing materials for mitragynine pseudoindoxyl products emphasize a “quick onset,” typically occurring within 10 to 60 minutes, often described as a “wave of calm clarity,” “dual-action formula featuring 100mg per piece for maximum potency and a fast-acting hit.”⁶⁴

Sustained Effect: The duration of effects is reported to last “several hours.”⁶⁵ This prolonged duration

increases the likelihood of cumulative effects and potential for toxicity if doses are repeated.

Opioid Receptor Activation: Marketing materials explicitly state that these compounds directly activate opioid receptors and are “full agonist at mu receptors,” providing effects that mirror analgesic and stimulant effects (“pain relief and mood enhancement”).⁶⁶

As with any MOR agonist, the potential health and safety risks for users of mitragynine pseudoindoxyl are high. Mitragynine pseudoindoxyl abuse carries a high risk of cardiotoxicity, hepatic and renal toxicity, respiratory depression, neurological effects, and physical dependence and withdrawal. According to data from poison control centers, from January to July 2025, there have been 1,690 exposure calls involving kratom, a significant increase from 2024 exposure calls. According to data from DEA Toxicology Testing Program (DEA TOX),⁶⁷ between February 2025–February 2026, mitragynine pseudoindoxyl has been identified in at least 31 overdose cases, of which 25 were fatal events. Recent monographs by CFSRE report that mitragynine pseudoindoxyl (n > 10) have been detected in at least 10 toxicology cases. Mitragynine pseudoindoxyl was co-identified with other kratom alkaloids. The sale of products with combination of high-potency opioids, explicit marketing for medical ailments, and the acknowledged potential for life-threatening respiratory depression and addiction highlights the danger posed by mitragynine pseudoindoxyl and 7-hydroxymitragynine.

⁵⁸ Broul, M., Rudenko, X., Bajus, A., Král, J., Kyenge, D. M., Staňková, Z., & Albrecht, J. (2025). Case Report: Cannabis and kratom-induced self-amputation of ears and penis. *Frontiers in psychiatry*, 16, 1479863.

⁵⁹ Karinen R., Posen J.T., Rogde S., & Vindenes V. (2014). An accidental poisoning with mitragynine. *Forensic Science International*, 245, 29–32.

⁶⁰ Pullman M.K., Raju Kanumuri S.R., Leon J.F., Cutler S.F., McCurdy C.R., & Sharma. A. (2026). Cardio-pulmonary arrest in a patient revived with naloxone following reported use of 7-hydroxymitragynine. *Clinical Toxicology*, 64(1), 65–66.

⁶¹ Wightman, R. S., & Hu, D. (2025). A Case of 7-OH Mitragynine Use Requiring Inpatient Medically Managed Withdrawal. *Journal of Addiction Medicine*, 10.1097. Advance online publication.

⁶² *Id.* 13–14.

⁶³ Wilson, L.L., Chakraborty, S., Eans, S.O, Cirino, T.J., Stacy, H.M., & Simons, C.A., Uprety, R., Majumdar, S., & McLaughlin, J.P. (2021). Kratom Alkaloids, Natural and Semi-Synthetic, Show Less Physical Dependence and Ameliorate Opioid Withdrawal. *Cell Mol Neurobiol.*, 41(5):1131–1143.

⁶⁴ See Kama Kratom <https://greatcbdshop.com/product-category/brands/kama-kratom/> and Pure Leaf Kratom <https://pureleafkratom.com/kama-kratom/>. Accessed March 2026.

⁶⁵ *Id.* 26.

⁶⁶ *Id.*

⁶⁷ DEA TOX is a surveillance program that aims to detect novel psychoactive substances in fatal and nonfatal overdose cases within the United States. From these cases, biological samples, as well as drug paraphernalia (on limited occasions), are submitted for analysis by hospitals, medical examiners, poison centers, and law enforcement nationwide. Query date 2/27/2026.

Finding of Necessity of Schedule I Placement To Avoid Imminent Hazard to Public Safety

In accordance with 21 U.S.C. 811(h)(3), based on the available data and information summarized above, the uncontrolled manufacture, distribution, reverse distribution, importation, exportation, conduct of research and chemical analysis, possession, and abuse of 7-hydroxymitragynine and mitragynine pseudoindoxyl poses an imminent hazard to public safety. DEA is not aware of any currently accepted medical uses for either 7-hydroxymitragynine or mitragynine pseudoindoxyl in the United States. A substance meeting the statutory requirements for temporary scheduling, found in 21 U.S.C. 811(h)(1), may only be placed in schedule I. Substances in schedule I are those that have a high potential for abuse, no currently accepted medical use in treatment in the United States, and a lack of accepted safety for use under medical supervision. Available data and information for 7-hydroxymitragynine and mitragynine pseudoindoxyl indicate that these substances have a high potential for abuse, no currently accepted medical use in treatment in the United States, and a lack of accepted safety for use under medical supervision. However, because both 7-hydroxymitragynine and mitragynine pseudoindoxyl have supposedly been found in trace amounts in some botanical kratom products, this temporary scheduling order is only temporarily placing 7-hydroxymitragynine and mitragynine pseudoindoxyl when either substance alone, or their combined amount if both are present, is above a specified threshold in schedule I. Individuals should not infer from this notice of intent that DEA views 7-hydroxymitragynine or mitragynine pseudoindoxyl below this threshold as safe for consumption. DEA still views kratom and its two major psychoactive ingredients, mitragynine and 7-hydroxymitragynine, as drugs of concern.⁶⁸

As required by 21 U.S.C. 811(h)(4), the Administrator notified the Assistant Secretary, via letter dated October 8, 2026 of DEA's intention to temporarily place 7-hydroxymitragynine and mitragynine pseudoindoxyl when either substance alone, or their combined amount if both are present, is above a specified threshold in schedule I.

Conclusion

Although DEA published a notice of intent to temporarily schedule 7-hydroxymitragynine above a specified threshold in the **Federal Register** on July 7, 2026, and a temporary order in the **Federal Register** that placed mitragynine pseudoindoxyl in schedule I on August 26, 2026, HHS has since sent a letter dated October 8, 2026, to DEA, in which HHS now recommends a new threshold for 7-hydroxymitragynine and mitragynine pseudoindoxyl. Based on this letter, DEA is withdrawing the notice of intent to control 7-hydroxymitragynine above a specified threshold elsewhere in this issue of the **Federal Register**, and it intends to withdraw the temporary order placing mitragynine pseudoindoxyl and replace it with a new temporary order.

This notice of intent provides the 30-day notice pursuant to 21 U.S.C. 811(h)(1) of DEA intent to issue the new temporary scheduling order placing 7-hydroxymitragynine and mitragynine pseudoindoxyl when either substance alone, or their combined amount if both are present, is above a specified threshold in schedule I. In accordance with 21 U.S.C. 811(h)(1) and (3), the Administrator considered available data and information, herein set forth the grounds for his determination that it is necessary to temporarily schedule 7-hydroxymitragynine and mitragynine pseudoindoxyl when either substance alone, or their combined amount if both are present, is above a specified threshold and finds this placement in schedule I of the CSA is necessary in order to avoid an imminent hazard to the public's safety. Again, this action should not be used to infer that DEA views 7-hydroxymitragynine or mitragynine pseudoindoxyl below this threshold as safe for consumption. DEA still views kratom and its two major psychoactive ingredients, mitragynine and 7-hydroxymitragynine, as drugs of concern.⁶⁹

The temporary placement of 7-hydroxymitragynine and mitragynine pseudoindoxyl when either substance alone, or their combined amount if both are present, is above a specified threshold in schedule I of the CSA will take effect pursuant to a temporary scheduling order, which will not be issued before [INSERT DATE 30 DAYS AFTER PUBLICATION IN THE **FEDERAL REGISTER**]. Additionally, to avoid an enforcement gap, the current temporary order that placed mitragynine pseudoindoxyl in schedule I remains in

effect until either it expires or the new temporary order is published and the previous order is withdrawn, whichever occurs first. Because the Administrator hereby finds that this temporary scheduling order is necessary to avoid an imminent hazard to public safety, it will take effect on the date the order is published in the **Federal Register** and remain in effect for two years, with a possible extension of an additional year, pending completion of the regular (permanent) scheduling process.⁷⁰ The Administrator intends to issue a temporary scheduling order as soon as possible after the expiration of 30 days from the date of publication of this document. Upon publication of the temporary order, 7-hydroxymitragynine and mitragynine pseudoindoxyl when either substance alone, or their combined amount if both are present, is above a specified threshold will then be subject to the CSA's schedule I regulatory controls and administrative, civil, and criminal sanctions applicable to the manufacture, distribution, reverse distribution, importation, exportation, research, conduct of instructional activities and chemical analysis, and possession.

The CSA sets forth specific criteria for scheduling drugs or other substances. Regular scheduling actions in accordance with 21 U.S.C. 811(a) are subject to formal rulemaking procedures "on the record after opportunity for a hearing" conducted pursuant to the provisions of 5 U.S.C. 556 and 557.⁷¹ The regular scheduling process of formal rulemaking affords interested parties appropriate process and the government any additional relevant information needed to make a determination. It is DEA's intention to pursue formal rulemaking proceedings under 21 U.S.C. 811(a) in this instance by gathering the necessary data and requesting that HHS provide a scientific and medical evaluation and scheduling recommendation for 7-hydroxymitragynine and mitragynine pseudoindoxyl pursuant to 21 U.S.C. 811(b). Final decisions that conclude the regular scheduling process of formal rulemaking are subject to judicial review.⁷² Temporary scheduling orders are not subject to judicial review.⁷³

Regulatory Analyses

The CSA provides for expedited temporary scheduling actions where necessary to avoid an imminent hazard to public safety. Under 21 U.S.C.

⁷⁰ 21 U.S.C. 811(h)(1) and (2).

⁷¹ 21 U.S.C. 811.

⁷² 21 U.S.C. 877.

⁷³ 21 U.S.C. 811(h)(6).

⁶⁸ See <https://www.dea.gov/factsheets/kratom>. See also Drug Fact Sheet: Kratom.

⁶⁹ See <https://www.dea.gov/factsheets/kratom>. See also Drug Fact Sheet: Kratom.

811(h)(1), the Administrator (as delegated by the Attorney General) may, by order, temporarily schedule substances in schedule I. Such orders may not be issued before the expiration of 30 days from: (1) the publication of a notice in the **Federal Register** of the intent to issue such order and the grounds upon which such order is to be issued, and (2) the date that notice of the proposed temporary scheduling order is transmitted to the Assistant Secretary of HHS, as delegated by the Secretary of HHS.⁷⁴

Inasmuch as section 811(h) directs that temporary scheduling actions be issued by order and sets forth the procedures by which such orders are to be issued, including the requirement of a publication in the **Federal Register** of a notice of intent, the notice-and-comment requirements of the Administrative Procedure Act (APA), 5 U.S.C. 553, do not apply to this notice of intent. The APA expressly differentiates between an order and a rule, as it defines an “order” to mean a “final disposition, whether affirmative, negative, injunctive, or declaratory in form, of an agency *in a matter other than rule making*.”⁷⁵ This contrasts with permanent scheduling actions, which are subject to formal rulemaking procedures done “on the record after opportunity for a hearing,” and final decisions that conclude the scheduling process and are subject to judicial review.⁷⁶ The specific language chosen by Congress indicates its intent that DEA issue *orders* instead of proceeding by rulemaking when temporarily scheduling substances. Given that Congress specifically requires the Administrator (as delegated by the Attorney General) to follow rulemaking procedures for *other* kinds of scheduling actions,⁷⁷ it is noteworthy that, in section 811(h)(1), Congress authorized the issuance of temporary scheduling actions by order rather than by rule.

Even assuming that this notice of intent is subject to the notice-and-

comment requirements of the APA, the AG finds that there is good cause to forgo those requirements pursuant to 5 U.S.C. 553(b)(B), as any further delays in the process for issuing temporary scheduling orders would be impracticable and contrary to the public interest given the manifest urgency to avoid an imminent hazard to public safety.

Although DEA believes this notice of intent to issue a temporary scheduling order is not subject to the notice-and-comment requirements of the APA, DEA notes that in accordance with 21 U.S.C. 811(h)(4), the Administrator took into consideration comments submitted by the Assistant Secretary in response to the notice that DEA transmitted to the Assistant Secretary pursuant to such subsection.

Further, DEA believes that this temporary scheduling action is not a “rule” as defined by 5 U.S.C. 601(2), and, accordingly, is not subject to the requirements of the Regulatory Flexibility Act (RFA). The requirements for the preparation of an initial regulatory flexibility analysis in 5 U.S.C. 603(a) are not applicable where, as here, DEA is not required by the APA or any other law to publish a general notice of proposed rulemaking. As discussed above, DEA is issuing this notice of intent pursuant to DEA’s authority to issue a temporary scheduling order.⁷⁸ Therefore, in this instance, since DEA believes this temporary scheduling action is not a “rule,” it is not subject to the requirements of the RFA when issuing this temporary action.

In accordance with the principles of Executive Orders (E.O.) 12866 and 13563, this action is not a significant regulatory action. E.O. 12866 directs agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health, and safety effects; distributive impacts;

and equity). E.O. 13563 is supplemental to and reaffirms the principles, structures, and definitions governing regulatory review as established in E.O. 12866. Because this is not a rulemaking action, this is not a significant regulatory action as defined in Section 3(f) of E.O. 12866. In addition, scheduling actions are not subject to either E.O. 14192, Unleashing Prosperity Through Deregulation, or E.O. 14294, Fighting Overcriminalization in Federal Regulations.

This action will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with E.O. 13132, it is determined that this action does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

List of Subjects in 21 CFR Part 1308

Administrative practice and procedure, Drug traffic control, Reporting and recordkeeping requirements.

For the reasons set out above, DEA proposes to amend 21 CFR part 1308 as follows:

PART 1308—SCHEDULES OF CONTROLLED SUBSTANCES

■ 1. The authority citation for part 1308 continues to read as follows:

Authority: 21 U.S.C. 811, 812, 871(b), 956(b), unless otherwise noted.

- 2. In § 1308.11:
 - a. Add paragraphs (h)(96) and (97));
 - b. Remove and reserve paragraph (h)(89).

The addition to read as follows:

§ 1308.11 Schedule I
* * * * *
(h) * * *

(96) 7-hydroxymitragynine (Methyl (E)2-((2S,3S,7aS)-3-ethyl-7a-hydroxy-8-methoxy-1,2,3,4,6,7,7a,12b-octahydroindolo[2,3-a]quinolizin-2-yl)-3-methoxyacrylate), including its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, whenever the existence of such isomers, esters, ethers, and salts is possible, when that substance alone, or the combined amount with mitragynine pseudoindoxyl, if both are present, is:

(A) Above a specified threshold concentration, that is, greater than 1 milligram per gram (for solid powders, encapsulated material, or other solid forms) or greater than 1 milligram per milliliter (for liquid preparations), or

(B) The mass of mitragynine present divided by 7-hydroxymitragynine or the combined mass of 7-hydroxymitragynine and mitragynine pseudoindoxyl, if both are present, is less than 100.

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⁷⁴ 21 U.S.C. 811(h)(1).

⁷⁵ 5 U.S.C. 551(6) (emphasis added).

⁷⁶ 21 U.S.C. 811(a) and 877.

⁷⁷ See 21 U.S.C. 811(a).

⁷⁸ 21 U.S.C. 811(h)(1).

(97) Mitragynine Pseudoindoxyl (Methyl (E)-2-((1'S,6'S,7'S)-6'-ethyl-4-methoxy-3-oxo-3',5',6',7',8',8a'-hexahydro-2'H-spiro[indoline-2,1'-indolizine]-7-yl)-3-methoxyacrylate), including its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, whenever the existence of such isomers, esters, ethers, and salts is possible, when that substance alone, or the combined amount with 7-hydroxymitragynine, if both are present, is:

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- (A) Above a specified threshold concentration, that is, greater than 1 milligram per gram (for solid powders, encapsulated material, or other solid forms) or greater than 1 milligram per milliliter (for liquid preparations), or
- (B) The mass of mitragynine present divided by the mass of mitragynine pseudoindoxyl, or the combined amount of mitragynine pseudoindoxyl and 7-hydroxymitragynine, if both are present, is less than 100.

* * * * *

Signing Authority

This document of the Drug Enforcement Administration was signed on October 8, 2026, by DEA Administrator Terrance C. Cole. That document with the original signature and date is maintained by DEA. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DEA Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of DEA. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Heather Achbach,

Federal Register Liaison Officer, Drug Enforcement Administration.

[FR Doc. 2026-20943 Filed 10-9-26; 12:00 pm]

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DEPARTMENT OF JUSTICE

Drug Enforcement Administration

21 CFR Part 1308

[Docket No. DEA-1644]

Schedules of Controlled Substances: Temporary Placement of MGM-15 and MGM-16 in Schedule I

AGENCY: Drug Enforcement Administration, Department of Justice.

ACTION: Proposed amendment; notice of intent.

SUMMARY: The Drug Enforcement Administration (DEA) is issuing this notice of intent to publish a temporary order to schedule two 7-hydroxymitragynine-related substances (MGM-15 and MGM-16), including their isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, whenever the existence of such isomers, esters, ethers, and salts is possible, in schedule I of the Controlled Substances Act (CSA). On August 26, 2026, DEA published a temporary order placing mitragynine pseudoindoxyl, MGM-15,

and MGM-16 in schedule I of the CSA. Today, DEA is providing notice of its intent to publish a new temporary order for MGM-15 and MGM-16 that will maintain the temporary placement of these substances in schedule I of the CSA without change. Separately in this **Federal Register**, DEA is publishing a notice of intent relating to mitragynine pseudoindoxyl, in response to a letter sent by the Department of Health and Human Services (HHS) dated October 6, 2026. HHS's letter related only to mitragynine pseudoindoxyl. Therefore, DEA is publishing this notice of intent only for the technical and procedural purpose of distinguishing MGM-15 and MGM-16 from mitragynine pseudoindoxyl. When issued, the temporary scheduling order addressing MGM-15 and MGM-16 will continue to impose the regulatory controls and administrative, civil, and criminal sanctions applicable to schedule I controlled substances on persons who handle (manufacture, distribute, reverse distribute, import, export, engage in research, conduct instructional activities or chemical analysis with, or possess) or propose to handle these two 7-hydroxymitragynine-related substances. The August 26, 2026 temporary order placing these substances in schedule I of the CSA remains in effect until either it expires or the new temporary order is published and the previous order is withdrawn, whichever occurs first.

DATES: October 14, 2026.

ADDRESSES: 8701 Morrisette Drive, Springfield, Virginia 22152.

FOR FURTHER INFORMATION CONTACT:

Terrence L. Boos, Drug and Chemical Evaluation Section, Diversion Control Division, Drug Enforcement Administration; Mailing Address: 8701 Morrisette Drive, Springfield, Virginia 22152; Telephone: (571) 362-3249.

SUPPLEMENTARY INFORMATION: The notice of intent contained in this document is issued pursuant to the temporary scheduling provisions of 21 U.S.C. 811(h). The Drug Enforcement Administration (DEA) intends to issue a

temporary scheduling order ¹ (in the form of a temporary amendment) to add the following two 7-hydroxymitragynine-related substances, including their isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, whenever the existence of such isomers, esters, ethers, and salts is possible, to schedule I under the Controlled Substances Act (CSA):

- Methyl (E)-2-((2S,3S,7aS,12aR,12bS)-3-ethyl-7a-hydroxy-8-methoxy-1,2,3,4,6,7,7a,12,12a,12b-decahydroindolo[2,3-a]quinolizin-2-yl)-3-methoxyacrylate (commonly known as dihydro-7-hydroxymitragynine, or MGM-15). Since nomenclature of this substance is not internationally standardized, compounds of this structure, regardless of numerical designation of atomic positions are covered.
- Methyl (E)-2-((2S,3S,7aS,12aR,12bS)-3-ethyl-9-fluoro-7a-hydroxy-8-methoxy-1,2,3,4,6,7,7a,12,12a,12b-decahydroindolo[2,3-a]quinolizin-2-yl)-3-methoxyacrylate (commonly known as 9-fluoro-dihydro-7-hydroxymitragynine, or MGM-16). Since nomenclature of this substance is not internationally standardized, compounds of this structure, regardless of numerical designation of atomic positions are covered.

The temporary scheduling order will be published in the **Federal Register** on or after November 13, 2026.²

Legal Authority

The CSA provides the Attorney General with the authority to temporarily place a substance in schedule I of the CSA for two years

¹ Though DEA has used the term "final order" with respect to temporary scheduling orders in the past, this notice of intent adheres to the statutory language of 21 U.S.C. 811(h), which refers to a "temporary scheduling order." No substantive change is intended.

² On August 26, 2026, DEA published a temporary order that placed mitragynine pseudoindoxyl, MGM-15, and MGM-16, in schedule I of the CSA. *See Schedules of Controlled Substances: Temporary Placement of Mitragynine Pseudoindoxyl, MGM-15, and MGM-16 in Schedule I*, 91 FR 54948 (Aug. 26, 2026). That temporary order is effective until August 26, 2028, or until this new temporary order placing MGM-15 and MGM-16 in schedule I is published and the previous order withdrawn, whichever occurs first.