

RESEARCH MONOGRAPH . COMPOUND PROFILE

7- Hydroxymitragynine

The active metabolite of mitragynine with higher mu-opioid receptor affinity, present in low concentrations in kratom leaf and concentrated in some kratom extracts.

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COMPOUND CLASS	Indole alkaloid / mu-opioid agonist

ABSTRACT

7-Hydroxymitragynine (7-OH; CAS 174418-82-7) is the principal active metabolite of mitragynine, formed by hepatic CYP3A4 hydroxylation. The compound has higher mu-opioid receptor affinity and analgesic potency than mitragynine itself, and accounts for a substantial fraction of kratom's clinical effect at doses where the metabolic conversion is significant. 7-OH is present in low concentrations in fresh kratom leaf but can accumulate in stored or processed kratom products and is concentrated in some "enhanced" or "extract" kratom products sold commercially. Concentrated 7-OH products carry substantially higher abuse and dependence liability than whole-leaf kratom. The compound is sold as a research chemical/concentrated kratom product.

1. Compound Identification

7-Hydroxymitragynine is described as indole alkaloid / mu-opioid agonist. The active metabolite of mitragynine with higher mu-opioid receptor affinity, present in low concentrations in kratom leaf and concentrated in some kratom extracts.

1.1 Class summary

Indole alkaloid / mu-opioid agonist

1.2 Subtitle

The active metabolite of mitragynine with higher mu-opioid receptor affinity, present in low concentrations in kratom leaf and concentrated in some kratom extracts.

2. Abstract

7-Hydroxymitragynine (7-OH; CAS 174418-82-7) is the principal active metabolite of mitragynine, formed by hepatic CYP3A4 hydroxylation. The compound has higher mu-opioid receptor affinity and analgesic potency than mitragynine itself, and accounts for a substantial fraction of kratom's clinical effect at doses where the metabolic conversion is significant. 7-OH is present in low concentrations in fresh kratom leaf but can accumulate in stored or processed kratom products and is concentrated in some "enhanced" or "extract" kratom products sold commercially. Concentrated 7-OH products carry substantially higher abuse and dependence liability than whole-leaf kratom. The compound is sold as a research chemical/concentrated kratom product.

3. Mechanism of Action

Mu-opioid receptor agonist with higher potency than mitragynine. Active metabolite of mitragynine via hepatic CYP3A4.

The mechanistic profile described above represents the consensus position from peer-reviewed literature where available; for compounds with sparse formal characterization, this section reflects vendor-grade reports and structurally-related class pharmacology and should be interpreted with appropriate caution.

4. Pharmacokinetics and Routes of Administration

Pharmacokinetic data are summarized within the abstract for compounds with formal Phase 1 records. Compounds without published human pharmacokinetic studies are noted as such; investigators should treat the absence of data as a research limitation.

5. Reported Research Dose Ranges

Doses very low (sub-milligram) per administration; concentrated products are hazardous.

Doses are scaled from clinical use where the compound is approved as a medicine, from Phase 2/3 trials where development advanced, or from rodent dose-response data scaled by allometric assumptions where the compound has no human clinical record. Investigators should treat dose ranges from research-chemical-grade vendors as starting points for their own pharmacokinetic and tolerability characterization rather than validated dosing recommendations.

6. Sourcing and Quality Verification

Investigators should obtain analytical confirmation of identity (mass spectrometry; for peptides, additionally amino acid analysis or N-terminal sequencing) and purity (HPLC area-percent, ideally greater than 95 percent) on every lot. Vendor certificates of analysis vary in quality; third-party analytical confirmation through independent laboratories (e.g., Janoshik Analytical, Anabolic Lab) is the gold standard for research-grade peptides and small molecules.

For compounds with established pharmaceutical-grade marketing in any jurisdiction, sourcing from the marketed product (where legal and accessible) provides the highest quality assurance.

7. Reconstitution and Handling

Peptides should be reconstituted in bacteriostatic water or sterile water for injection in the volume appropriate to the desired concentration; lyophilized peptides should be allowed to come to room temperature before reconstitution to minimize precipitation. Reconstituted peptides should be stored refrigerated and used within the timeframe specified by the manufacturer (typically 14 to 30 days for bacteriostatic water reconstitutions, shorter for sterile water).

Small molecules: storage conditions vary by compound; consult the certificate of analysis for the specific product. Most are stable at room temperature in dry, dark conditions; oxidation-sensitive compounds (e.g., catecholamine precursors) require cool storage and protection from light.

8. Stack Interaction Considerations

Investigators combining this compound with other research substances should consider receptor-level interactions (additive effects at shared targets), enzyme-level interactions (CYP-mediated drug-drug interactions where applicable), and pharmacodynamic interactions (additive sedation, additive serotonergic activity, additive hemodynamic effects).

The stack interaction section in published monographs of well-characterized compounds is necessarily incomplete for any specific combination; investigators should treat novel combinations with elevated caution and titrate gradually.

9. References

1. Kruegel AC, et al. As above.

This monograph is provided for research use only. Not for medical, diagnostic, or therapeutic purposes. Not for human consumption. Compound class generalizations are noted where compound-specific data are sparse; investigators should weight the evidence accordingly.