

RESEARCH MONOGRAPH . COMPOUND PROFILE

Tetrahydroharmine (THH)

*A reduced tetrahydro-beta-carboline from
Banisteriopsis caapi; a serotonin reuptake
inhibitor and minor MAO-A inhibitor in
ayahuasca.*

DOCUMENT	KDC-MN-339
ISSUED	2026-05-09
REVISION	1.0
AUTHOR	Kodiac bioLABS Research
COMPOUND CLASS	Beta-carboline (tetrahydro reduced)

RESEARCH USE ONLY

ABSTRACT

Tetrahydroharmine (THH, 7-methoxy-1-methyl-2,3,4,9-tetrahydro-1H-pyrido[3,4-b]indole; CAS 17019-01-1; molecular formula C₁₃H₁₆N₂O; molecular weight 216.28) is a tetrahydro-reduced beta-carboline alkaloid from *Banisteriopsis caapi*, the third major harmala alkaloid alongside harmine and harmaline. Distinct from the parent oxidized beta-carbolines by a different mechanism: THH is a moderate serotonin reuptake inhibitor (SRI) rather than an MAO-A inhibitor; the MAO-A activity is minor compared to harmine/harmaline. The SRI activity contributes a distinct serotonergic component to ayahuasca pharmacology beyond the MAO-mediated DMT potentiation. Plasma half-life is comparable to other beta-carbolines (approximately 2 to 3 hours). Used as a reference SRI beta-carboline in ayahuasca pharmacology research.

1. 1. Compound Identification

Tetrahydroharmine (THH) is described as beta-carboline (tetrahydro reduced). A reduced tetrahydro-beta-carboline from *Banisteriopsis caapi*; a serotonin reuptake inhibitor and minor MAO-A inhibitor in ayahuasca.

1.1. 1.1 Class summary

Beta-carboline (tetrahydro reduced)

1.2. 1.2 Subtitle

A reduced tetrahydro-beta-carboline from *Banisteriopsis caapi*; a serotonin reuptake inhibitor and minor MAO-A inhibitor in ayahuasca.

2. Abstract

Tetrahydroharmine (THH, 7-methoxy-1-methyl-2,3,4,9-tetrahydro-1H-pyrido[3,4-b]indole; CAS 17019-01-1; molecular formula C₁₃H₁₆N₂O; molecular weight 216.28) is a tetrahydro-reduced beta-carboline alkaloid from *Banisteriopsis caapi*, the third major harmala alkaloid alongside harmine and harmaline. Distinct from the parent oxidized beta-carbolines by a different mechanism: THH is a moderate serotonin reuptake inhibitor (SRI) rather than an MAO-A inhibitor; the MAO-A activity is minor compared to harmine/harmaline. The SRI activity contributes a distinct serotonergic component to ayahuasca pharmacology beyond the MAO-mediated DMT potentiation. Plasma half-life is comparable to other beta-carbolines (approximately 2 to 3 hours). Used as a reference SRI beta-carboline in ayahuasca pharmacology research.

3. Mechanism of Action

Tetrahydro-reduced beta-carboline; moderate serotonin reuptake inhibitor with minor MAO-A activity (distinct from parent harmine/harmaline).

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. 5. Reported Research Dose Ranges

Ayahuasca-context use 50 to 100 mg per oral administration (component of brew).

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. 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. 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 time-frame 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. 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. 9. References

1. Callaway JC, et al. Quantitation of N,N-dimethyltryptamine and harmala alkaloids in human plasma after oral dosing with ayahuasca. J Anal Toxicol 1996.
2. Riba J, et al. Pharmacology of ayahuasca administered in two repeated doses. Psychopharmacology 2003.
3. McKenna DJ. Clinical investigations of the therapeutic potential of ayahuasca. Pharmacol Ther 2004.

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.