

RESEARCH MONOGRAPH . COMPOUND PROFILE

Bufotenin

5-hydroxy-N,N-dimethyltryptamine; a tryptamine related to DMT and serotonin; found in Anadenanthera seeds and toad secretions.

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COMPOUND CLASS	Tryptamine / 5-HT2A agonist

ABSTRACT

Bufotenin (5-hydroxy-N,N-dimethyltryptamine, 5-HO-DMT; CAS 487-93-4; molecular formula C₁₂H₁₆N₂O; molecular weight 204.27) is a tryptamine isolated from *Anadenanthera* seeds (used for South American snuffs called yopo and cohoba) and from *Bufo* amphibian secretions. Structurally bufotenin is the 5-hydroxy analog of N,N-DMT and the N,N-dimethyl analog of serotonin. Pharmacology: 5-HT_{2A} agonism with poor blood-brain barrier penetration owing to the polar 5-hydroxy group; the central versus peripheral effect ratio is shifted toward peripheral 5-HT effects (cardiovascular, sympathetic) compared to DMT. The compound's psychoactivity in humans has been debated for decades, with some 1950s and 1960s studies reporting psychotic-like effects (confounded by toxicity) and other studies suggesting limited central activity. Schedule I in the US. Used as a research probe for 5-HT_{2A} pharmacology and as a comparator to DMT in tryptamine structure-activity studies.

1. Compound Identification

Bufotenin is described as tryptamine / 5-HT_{2A} agonist. 5-hydroxy-N,N-dimethyltryptamine; a tryptamine related to DMT and serotonin; found in Anadenanthera seeds and toad secretions.

1.1 Class summary

Tryptamine / 5-HT_{2A} agonist

1.2 Subtitle

5-hydroxy-N,N-dimethyltryptamine; a tryptamine related to DMT and serotonin; found in Anadenanthera seeds and toad secretions.

2. Abstract

Bufotenin (5-hydroxy-N,N-dimethyltryptamine, 5-HO-DMT; CAS 487-93-4; molecular formula $C_{12}H_{16}N_2O$; molecular weight 204.27) is a tryptamine isolated from *Anadenanthera* seeds (used for South American snuffs called yopo and cohoba) and from *Bufo* amphibian secretions. Structurally bufotenin is the 5-hydroxy analog of N,N-DMT and the N,N-dimethyl analog of serotonin. Pharmacology: 5-HT_{2A} agonism with poor blood-brain barrier penetration owing to the polar 5-hydroxy group; the central versus peripheral effect ratio is shifted toward peripheral 5-HT effects (cardiovascular, sympathetic) compared to DMT. The compound's psychoactivity in humans has been debated for decades, with some 1950s and 1960s studies reporting psychotic-like effects (confounded by toxicity) and other studies suggesting limited central activity. Schedule I in the US. Used as a research probe for 5-HT_{2A} pharmacology and as a comparator to DMT in tryptamine structure-activity studies.

3. Mechanism of Action

5-HT_{2A} agonist; poor blood-brain barrier penetration owing to 5-hydroxyl group. Central activity disputed; peripheral 5-HT effects dominant.

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

Sparse human pharmacokinetic data; rodent research 1 to 10 mg/kg.

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. Fabing HD, Hawkins JR. Intravenous bufotenine injection in the human being. Science 1956.
2. McBride MC. Bufotenine: toward an understanding of possible psychoactive mechanisms. J Psychoactive Drugs 2000.
3. Torres CM, Repke DB. Anadenanthera: visionary plant of ancient South America. Haworth Press 2006.

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