

RESEARCH MONOGRAPH . COMPOUND PROFILE

Hordenine

N,N-dimethyl-tyramine; a phenethylamine alkaloid found in barley sprouts; a weak MAO-B inhibitor used as a stimulant adjunct.

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COMPOUND CLASS	Phenethylamine MAO-B inhibitor / mild stimulant

ABSTRACT

Hordenine (N,N-dimethyl-tyramine; CAS 539-15-1; molecular formula $C_{10}H_{15}NO$; molecular weight 165.23) is a phenethylamine alkaloid found in germinating barley (*Hordeum vulgare*) and several cacti. The compound is a weak monoamine oxidase B inhibitor and a weak monoamine reuptake inhibitor; the combined activity slows the degradation of dopamine and trace amines including beta-phenylethylamine (PEA), prolonging their action. Used as a supplement, particularly in combination with PEA where the MAO-B inhibition extends PEA's normally minutes-long duration. Plasma half-life is approximately 1 to 2 hours. The pharmacological effects in humans at supplement doses are modest. Used as a botanical MAO-B inhibitor in research and in supplement formulations.

1. Compound Identification

Hordenine is described as phenethylamine mao-b inhibitor / mild stimulant. N,N-dimethyl-tyramine; a phenethylamine alkaloid found in barley sprouts; a weak MAO-B inhibitor used as a stimulant adjunct.

1.1 Class summary

Phenethylamine MAO-B inhibitor / mild stimulant

1.2 Subtitle

N,N-dimethyl-tyramine; a phenethylamine alkaloid found in barley sprouts; a weak MAO-B inhibitor used as a stimulant adjunct.

2. Abstract

Hordenine (N,N-dimethyl-tyramine; CAS 539-15-1; molecular formula C₁₀H₁₅NO; molecular weight 165.23) is a phenethylamine alkaloid found in germinating barley (*Hordeum vulgare*) and several cacti. The compound is a weak monoamine oxidase B inhibitor and a weak monoamine reuptake inhibitor; the combined activity slows the degradation of dopamine and trace amines including beta-phenylethylamine (PEA), prolonging their action. Used as a supplement, particularly in combination with PEA where the MAO-B inhibition extends PEA's normally minutes-long duration. Plasma half-life is approximately 1 to 2 hours. The pharmacological effects in humans at supplement doses are modest. Used as a botanical MAO-B inhibitor in research and in supplement formulations.

3. Mechanism of Action

Weak MAO-B inhibitor and monoamine reuptake inhibitor; prolongs duration of PEA and dopamine activity.

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

Supplement 50 to 100 mg per oral administration daily.

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. Frank M, et al. The biological effects of hordenine and tyramine. Pharmacology 1990.
2. Smith TA. Phenethylamine and related compounds in plants. Phytochemistry 1977.
3. Hapke HJ, Strathmann W. Pharmacological effects of hordenine. Dtsch Tierarztl Wochenschr 1995.

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