

RESEARCH MONOGRAPH . COMPOUND PROFILE

Mucuna pruriens

A tropical bean traditionally used in Ayurveda for Parkinsonian symptoms, the natural source of L-DOPA used as standardized extracts containing 15 to 50 percent L-DOPA.

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ABSTRACT

Mucuna pruriens (velvet bean, kapikacchu) is a tropical legume used in Ayurvedic medicine for Parkinsonism, infertility, and "vata" disorders. The seeds contain L-DOPA (L-3,4-dihydroxyphenylalanine) at 5 to 7 percent of seed weight, the highest natural concentration known. Standardized extracts contain 15 to 50 percent L-DOPA depending on processing. The compound has been compared with synthetic L-DOPA in small Parkinson disease trials with broadly similar efficacy at equivalent L-DOPA content; some reports suggest slower onset and longer duration than carbidopa-levodopa formulations, possibly due to other constituents that influence pharmacokinetics. The compound is sold as a dietary supplement; doses are typically 500 to 2000 mg of extract standardized to 15 to 50 percent L-DOPA. Use for Parkinson disease should be supervised; the supplement market includes preparations with insufficient L-DOPA content for therapeutic use and potential misuse for non-Parkinson recreational dopaminergic effects.

1. Compound Identification

Mucuna pruriens is described as velvet bean / l-dopa source. A tropical bean traditionally used in Ayurveda for Parkinsonian symptoms, the natural source of L-DOPA used as standardized extracts containing 15 to 50 percent L-DOPA.

1.1 Class summary

Velvet bean / L-DOPA source

1.2 Subtitle

A tropical bean traditionally used in Ayurveda for Parkinsonian symptoms, the natural source of L-DOPA used as standardized extracts containing 15 to 50 percent L-DOPA.

2. Abstract

Mucuna pruriens (velvet bean, kapikacchu) is a tropical legume used in Ayurvedic medicine for Parkinsonism, infertility, and "vata" disorders. The seeds contain L-DOPA (L-3,4-dihydroxyphenylalanine) at 5 to 7 percent of seed weight, the highest natural concentration known. Standardized extracts contain 15 to 50 percent L-DOPA depending on processing. The compound has been compared with synthetic L-DOPA in small Parkinson disease trials with broadly similar efficacy at equivalent L-DOPA content; some reports suggest slower onset and longer duration than carbidopa-levodopa formulations, possibly due to other constituents that influence pharmacokinetics. The compound is sold as a dietary supplement; doses are typically 500 to 2000 mg of extract standardized to 15 to 50 percent L-DOPA. Use for Parkinson disease should be supervised; the supplement market includes preparations with insufficient L-DOPA content for therapeutic use and potential misuse for non-Parkinson recreational dopaminergic effects.

3. Mechanism of Action

L-DOPA source; converted to dopamine after blood-brain barrier passage. Same mechanism as synthetic levodopa.

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

500 to 2000 mg of extract (15-50 percent L-DOPA) per day.

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. Cassani E, et al. Mucuna pruriens for Parkinson's disease: low cost preparation by clinically heterogeneous extraction methods. Park Relat Disord 2016.

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