

RESEARCH MONOGRAPH . COMPOUND PROFILE

GHRP-2

A second-generation hexapeptide ghrelin receptor agonist for growth hormone release, characterized by stronger GH stimulation than GHRP-6 with reduced cortisol/prolactin elevation.

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ABSTRACT

GHRP-2 (Pralmorelin; D-Ala-D-2-Naphthyl-Ala-Ala-Trp-D-Phe-Lys-NH₂; CAS 158861-67-7; molecular formula C₄₅H₅₅N₉O₆; molecular weight 817.97) is a second-generation growth hormone releasing peptide developed in the 1990s as a synthetic ghrelin receptor (GHS-R1a) agonist. The compound stimulates pituitary GH release through a mechanism distinct from GHRH (different receptor; synergistic when combined with GHRH or GHRH analogs). GHRP-2 produces robust GH pulses approximately 2 to 5 times baseline with parenteral administration.

Pharmacokinetics: plasma half-life 15 to 60 minutes; subcutaneous and intravenous routes; oral bioavailability poor due to peptidase degradation. The compound is used clinically in Japan as a GH stimulation test. Compared with GHRP-6, GHRP-2 produces stronger GH release with reduced cortisol and prolactin elevation. Compared with ipamorelin, GHRP-2 has higher GH efficacy but less receptor selectivity. Research-grade doses are typically 100 to 300 micrograms subcutaneously per administration, often combined with a GHRH analog.

1. Compound Identification

GHRP-2 is described as growth hormone releasing peptide / ghrelin receptor agonist. A second-generation hexapeptide ghrelin receptor agonist for growth hormone release, characterized by stronger GH stimulation than GHRP-6 with reduced cortisol/prolactin elevation.

1.1 Class summary

Growth hormone releasing peptide / ghrelin receptor agonist

1.2 Subtitle

A second-generation hexapeptide ghrelin receptor agonist for growth hormone release, characterized by stronger GH stimulation than GHRP-6 with reduced cortisol/prolactin elevation.

2. Abstract

GHRP-2 (Pralmorelin; D-Ala-D-2-Naphthyl-Ala-Ala-Trp-D-Phe-Lys-NH₂; CAS 158861-67-7; molecular formula C₄₅H₅₅N₉O₆; molecular weight 817.97) is a second-generation growth hormone releasing peptide developed in the 1990s as a synthetic ghrelin receptor (GHS-R1a) agonist. The compound stimulates pituitary GH release through a mechanism distinct from GHRH (different receptor; synergistic when combined with GHRH or GHRH analogs). GHRP-2 produces robust GH pulses approximately 2 to 5 times baseline with parenteral administration. Pharmacokinetics: plasma half-life 15 to 60 minutes; subcutaneous and intravenous routes; oral bioavailability poor due to peptidase degradation. The compound is used clinically in Japan as a GH stimulation test. Compared with GHRP-6, GHRP-2 produces stronger GH release with reduced cortisol and prolactin elevation. Compared with ipamorelin, GHRP-2 has higher GH efficacy but less receptor selectivity. Research-grade doses are typically 100 to 300 micrograms subcutaneously per administration, often combined with a GHRH analog.

3. Mechanism of Action

Ghrelin receptor (GHS-R1a) agonist. Stimulates pituitary GH release. Synergistic with GHRH analogs.

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

100 to 300 micrograms SC per administration, 1-3 times 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. Bowers CY, et al. Growth hormone releasing peptides: structure-activity. Endocrinol 1991.
2. Smith RG, et al. Pralmorelin: pharmacology of growth hormone secretagogues. Endocr Rev 1997.

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