

RESEARCH MONOGRAPH . COMPOUND PROFILE

Cagrilintide

A long-acting amylin analog with attached fatty acid for albumin binding; under development as an obesity treatment in combination with semaglutide.

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COMPOUND CLASS	Long-acting amylin analog

ABSTRACT

Cagrilintide (CAS 1415456-37-9; modified amylin analog with C18 fatty acid attached at lysine for albumin binding; molecular weight approximately 4870 Da) is a long-acting amylin receptor agonist developed by Novo Nordisk for obesity. The compound is structurally derived from pramlintide with addition of a C18 fatty acid linker for albumin binding (the same long-acting strategy as semaglutide), extending plasma half-life from less than 1 hour for amylin to approximately 7 days for cagrilintide. Phase 1 and 2 trials in obesity demonstrated dose-dependent weight loss; in combination with semaglutide (the CagriSema combination), phase 2 trials showed up to 17 percent body weight loss at 32 weeks, approaching the magnitude of bariatric surgery. Phase 3 trials (REDEFINE program) are ongoing. Plasma half-life supports once-weekly subcutaneous dosing. Used as the prototype long-acting amylin agonist in metabolic research.

1. Compound Identification

Cagrilintide is described as long-acting amylin analog. A long-acting amylin analog with attached fatty acid for albumin binding; under development as an obesity treatment in combination with semaglutide.

1.1 Class summary

Long-acting amylin analog

1.2 Subtitle

A long-acting amylin analog with attached fatty acid for albumin binding; under development as an obesity treatment in combination with semaglutide.

2. Abstract

Cagrilintide (CAS 1415456-37-9; modified amylin analog with C18 fatty acid attached at lysine for albumin binding; molecular weight approximately 4870 Da) is a long-acting amylin receptor agonist developed by Novo Nordisk for obesity. The compound is structurally derived from pramlintide with addition of a C18 fatty acid linker for albumin binding (the same long-acting strategy as semaglutide), extending plasma half-life from less than 1 hour for amylin to approximately 7 days for cagrilintide. Phase 1 and 2 trials in obesity demonstrated dose-dependent weight loss; in combination with semaglutide (the CagriSema combination), phase 2 trials showed up to 17 percent body weight loss at 32 weeks, approaching the magnitude of bariatric surgery. Phase 3 trials (REDEFINE program) are ongoing. Plasma half-life supports once-weekly subcutaneous dosing. Used as the prototype long-acting amylin agonist in metabolic research.

3. Mechanism of Action

Long-acting amylin receptor agonist with albumin-binding fatty acid extension. Mechanistic effects identical to pramlintide with extended duration.

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

Investigational; phase 2 doses 0.3 to 4.5 mg subcutaneous weekly (often combined with semaglutide).

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. Lau DCW, et al. Once-weekly cagrilintide for weight management in people with overweight and obesity. Lancet 2021.
2. Enebo LB, et al. Safety, tolerability, pharmacokinetics, and pharmacodynamics of concomitant administration of multiple doses of cagrilintide with semaglutide 2.4 mg for weight management. Lancet 2021.
3. Knudsen LB, et al. The discovery and development of liraglutide and semaglutide. Front Endocrinol 2019.

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