

RESEARCH MONOGRAPH . COMPOUND PROFILE

Liraglutide

A daily-dosing GLP-1 analog FDA-approved as Victoza (T2DM, 2010) and Saxenda (obesity, 2014); the predecessor of semaglutide.

DOCUMENT	KDC-MN-132
ISSUED	2026-05-09
REVISION	1.0
AUTHOR	Kodi <i>ac</i> bio <i>l</i> abs Research
COMPOUND CLASS	Daily GLP-1 receptor agonist

ABSTRACT

Liraglutide (Victoza, Saxenda; CAS 204656-20-2; molecular weight 3751.20) is a long-acting GLP-1 receptor agonist developed by Novo Nordisk and approved by the FDA for T2DM (2010) and obesity (2014). The compound features a 16-carbon fatty acid (palmitoyl) chain attached to lysine 26 via a glutamic acid spacer, enabling reversible albumin binding for extended half-life of approximately 13 hours, supporting once-daily subcutaneous dosing. Liraglutide was the first GLP-1 agonist approved for chronic weight management. Approved doses are 0.6 to 1.8 mg daily for T2DM and titrated to 3 mg daily for obesity.

1. Compound Identification

Liraglutide is described as daily glp-1 receptor agonist. A daily-dosing GLP-1 analog FDA-approved as Victoza (T2DM, 2010) and Saxenda (obesity, 2014); the predecessor of semaglutide.

1.1 Class summary

Daily GLP-1 receptor agonist

1.2 Subtitle

A daily-dosing GLP-1 analog FDA-approved as Victoza (T2DM, 2010) and Saxenda (obesity, 2014); the predecessor of semaglutide.

2. Abstract

Liraglutide (Victoza, Saxenda; CAS 204656-20-2; molecular weight 3751.20) is a long-acting GLP-1 receptor agonist developed by Novo Nordisk and approved by the FDA for T2DM (2010) and obesity (2014). The compound features a 16-carbon fatty acid (palmitoyl) chain attached to lysine 26 via a glutamic acid spacer, enabling reversible albumin binding for extended half-life of approximately 13 hours, supporting once-daily subcutaneous dosing. Liraglutide was the first GLP-1 agonist approved for chronic weight management. Approved doses are 0.6 to 1.8 mg daily for T2DM and titrated to 3 mg daily for obesity.

3. Mechanism of Action

GLP-1 receptor agonist with palmitoyl albumin binding for daily dosing.

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

0.6 to 3 mg SC 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. Marso SP, et al. Liraglutide and cardiovascular outcomes in type 2 diabetes (LEADER). N Engl J Med 2016.

This monograph is provided for research use only. Not for medical, diagnostic, or therapeutic purposes. Not for human consumption. Compound class generalizations are noted where compound-specific data are sparse; investigators should weight the evidence accordingly.