

RESEARCH MONOGRAPH . COMPOUND PROFILE

LGD-3303

*A non-steroidal SARM developed by
Ligand Pharmaceuticals for osteoporosis;
less studied than ligandrol.*

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COMPOUND CLASS	Selective androgen receptor modulator

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ABSTRACT

LGD-3303 (9-chloro-2-ethyl-1-methyl-3-(2,2,2-trifluoroethyl)-3H-pyrrolo[3,2-f]quinolin-7(6H)-one; molecular formula C₁₆H₁₄ClF₃N₂O; molecular weight 342.74) is a non-steroidal SARM developed by Ligand Pharmaceuticals as a candidate for osteoporosis. Preclinical studies in ovariectomized rats demonstrated strong bone anabolic activity comparable to or exceeding raloxifene at appropriate doses, with reduced prostate effects. Tissue selectivity profile favors bone over muscle within the SARM class. Phase 1 human studies were conducted but the compound did not advance to phase 2. The compound retains research utility for bone-focused SARM pharmacology and is occasionally used recreationally. Plasma half-life is approximately 24 hours.

1. Compound Identification

LGD-3303 is described as selective androgen receptor modulator. A non-steroidal SARM developed by Ligand Pharmaceuticals for osteoporosis; less studied than ligandrol.

1.1 Class summary

Selective androgen receptor modulator

1.2 Subtitle

A non-steroidal SARM developed by Ligand Pharmaceuticals for osteoporosis; less studied than ligandrol.

2. Abstract

LGD-3303 (9-chloro-2-ethyl-1-methyl-3-(2,2,2-trifluoroethyl)-3H-pyrrolo[3,2-f]quinolin-7(6H)-one; molecular formula C₁₆H₁₄ClF₃N₂O; molecular weight 342.74) is a non-steroidal SARM developed by Ligand Pharmaceuticals as a candidate for osteoporosis. Preclinical studies in ovariectomized rats demonstrated strong bone anabolic activity comparable to or exceeding raloxifene at appropriate doses, with reduced prostate effects. Tissue selectivity profile favors bone over muscle within the SARM class. Phase 1 human studies were conducted but the compound did not advance to phase 2. The compound retains research utility for bone-focused SARM pharmacology and is occasionally used recreationally. Plasma half-life is approximately 24 hours.

3. Mechanism of Action

Non-steroidal SARM with bone-focused tissue selectivity. Preclinical efficacy comparable to raloxifene in ovariectomized rat osteoporosis models.

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

Recreational use commonly 10 to 30 mg per oral administration daily; preclinical osteoporosis dosing 1 to 10 mg/kg/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. Vajda EG, et al. Pharmacokinetics and pharmacodynamics of LGD-3303 in male rats. Pharm Res 2009.
2. Allan G, et al. LGD-3303 stimulates androgenic activity in muscle and bone with reduced prostate effects. J Steroid Biochem Mol Biol 2009.
3. Mohler ML, et al. Nonsteroidal selective androgen receptor modulators (SARMs). J Med Chem 2009.

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