

RESEARCH MONOGRAPH . COMPOUND PROFILE

Ganirelix

*A synthetic GnRH receptor antagonist;
mechanistically similar to cetrorelix and
used in the same IVF protocols.*

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RESEARCH USE ONLY

ABSTRACT

Ganirelix (Ac-D-2-Nal-D-Cpa-D-Pal-Ser-Tyr-D-(Et)2HArg-Leu-(Et)2HArg-Pro-D-Ala-NH₂; CAS 124904-93-4; molecular formula C₈₀H₁₁₃ClN₁₈O₁₃; molecular weight 1570.35) is a synthetic GnRH antagonist decapeptide developed at Organon and approved by the FDA in 1999 under the trade name Antagon (US) and Orgalutran (EU). Mechanism is identical to cetrorelix: competitive GnRH receptor antagonism producing immediate dose-dependent LH and FSH suppression. Structurally distinct from cetrorelix by the diethylhomoarginine residues at positions 6 and 8. Plasma half-life is approximately 13 hours after subcutaneous dosing, shorter than cetrorelix but adequate for daily IVF protocol dosing. Approved for prevention of premature LH surge in controlled ovarian stimulation for IVF. Comparable clinical efficacy to cetrorelix in head-to-head trials. Used as an alternative GnRH antagonist in IVF and HPG suppression research.

1. Compound Identification

Ganirelix is described as synthetic gnrh antagonist. A synthetic GnRH receptor antagonist; mechanistically similar to cetrorelix and used in the same IVF protocols.

1.1 Class summary

Synthetic GnRH antagonist

1.2 Subtitle

A synthetic GnRH receptor antagonist; mechanistically similar to cetrorelix and used in the same IVF protocols.

2. Abstract

Ganirelix (Ac-D-2-Nal-D-Cpa-D-Pal-Ser-Tyr-D-(Et)2HArg-Leu-(Et)2HArg-Pro-D-Ala-NH₂; CAS 124904-93-4; molecular formula C₈₀H₁₁₃ClN₁₈O₁₃; molecular weight 1570.35) is a synthetic GnRH antagonist decapeptide developed at Organon and approved by the FDA in 1999 under the trade name Antagon (US) and Orgalutran (EU). Mechanism is identical to cetrorelix: competitive GnRH receptor antagonism producing immediate dose-dependent LH and FSH suppression. Structurally distinct from cetrorelix by the diethylhomoarginine residues at positions 6 and 8. Plasma half-life is approximately 13 hours after subcutaneous dosing, shorter than cetrorelix but adequate for daily IVF protocol dosing. Approved for prevention of premature LH surge in controlled ovarian stimulation for IVF. Comparable clinical efficacy to cetrorelix in head-to-head trials. Used as an alternative GnRH antagonist in IVF and HPG suppression research.

3. Mechanism of Action

Competitive GnRH receptor antagonism; mechanism identical to cetrorelix with shorter plasma half-life.

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

Clinical IVF 0.25 mg subcutaneous daily from stimulation day 5 through hCG trigger.

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. Borm G, Mannaerts B, et al. Treatment with the gonadotrophin-releasing hormone antagonist ganirelix in women undergoing ovarian stimulation. Hum Reprod 2000.
2. Obery JJ, et al. Pharmacokinetic and pharmacodynamic characteristics of ganirelix. Fertil Steril 1999.
3. Fluker M, et al. Efficacy and safety of ganirelix acetate versus leuprolide acetate in women undergoing controlled ovarian stimulation. Fertil Steril 2001.

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.