NATIVE GNRH DECAPEPTIDE

Gonadorelin (GnRH)

Factrel, Luteinizing Hormone-Releasing Hormone (LHRH)

CAS Number	33515-09-2
Molecular Formula	C60H84N18O13
Molecular Weight	1297.39 Da
Sequence / Structure	pGlu-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH2
Category	Native GnRH Decapeptide
Available Specifications	100mcg vial, 500mcg vial, 1mg vial

1. OVERVIEW

Gonadorelin is the native decapeptide gonadotropin-releasing hormone (GnRH), identical to endogenous hypothalamic GnRH. It stimulates the release of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) from the anterior pituitary, driving gonadal function and sex hormone production. Used clinically for ovulation induction, infertility treatment, and testosterone replacement optimization.

2. MECHANISM OF ACTION

Gonadorelin binds to GnRH receptors on gonadotroph cells in the anterior pituitary, triggering rapid release of FSH and LH into circulation. FSH stimulates follicle maturation and estrogen production (females) or spermatogenesis (males). LH stimulates ovulation/luteal function (females) or testosterone synthesis (males). Pulsatile GnRH signaling maintains normal gonadal axis function.

3. CLINICAL EVIDENCE & RESEARCH

Clinical trials in reproductive endocrinology show gonadorelin reliably induces ovulation in appropriate candidates and improves fertility outcomes. In males, pulsatile GnRH restores LH/FSH and testosterone in hypogonadotropic hypogonadism. Used as post-cycle therapy (PCT) to restore natural testosterone production after anabolic steroid use.

4. THERAPEUTIC BENEFITS

- Direct stimulation of FSH and LH release
- Ovulation induction in appropriate candidates
- Restoration of endogenous testosterone production
- Maintenance of testicular volume and spermatogenesis
- Superior to exogenous hormone replacement for fertility preservation
- Shorter treatment duration vs. other ovulation induction agents
- Native hormone analog (identical to endogenous GnRH)

5. INDICATIONS

- Primary infertility due to hypogonadotropic hypogonadism
- Ovulation induction in appropriate females
- Amenorrhea secondary to hypothalamic dysfunction
- Post-cycle testosterone restoration (sports medicine)
- Hypogonadal males (FDA approved for diagnosis/treatment)

- Delayed puberty in males

6. DOSING & ADMINISTRATION PROTOCOL

Indication	Dose	Route	Frequency	Duration
Diagnostic (male)	100-150mcg IV/SC	Single dose		
Ovulation induction	50mcg	IV	Pulsatile (90 min intervals)	10-20 days
PCT restoration	100mcg	SC	Thrice weekly	4-12 weeks
Amenorrhea treatment	5-20mcg	IV pulsatile	Multiple pulses	7-21 days

Reconstitution

Reconstitute with sterile PBS (pH 7.4) or sterile saline. Stable 24 hours room temperature, 7 days at 2-8°C. Use promptly for pulsatile protocols.

Administration

IV or SC injection. For diagnostic use: single bolus injection. For ovulation induction: pulsatile IV administration via pump every 90 minutes. For PCT: SC injections 3x weekly.

Protocol Notes

Measure serum LH, FSH, and testosterone 30 minutes post-injection (diagnostic). For ovulation induction, monitor with serial ultrasounds and estradiol levels. In PCT, target testosterone recovery to >300 ng/dL.

7. SIDE EFFECTS & SAFETY PROFILE

- Mild headache and dizziness (transient)
- Flushing and erythema
- Transient abdominal discomfort
- Injection site pain (SC)
- Rare: allergic reactions or rash
- Ovarian hyperstimulation syndrome in females (monitor carefully)

8. CONTRAINDICATIONS & PRECAUTIONS

- Ovarian cysts or PCOS (risk of hyperstimulation)
- Active pituitary tumors
- Undiagnosed abdominal/pelvic masses
- Hypersensitivity to GnRH products
- Pregnancy (once confirmed)
- Severe hepatic or renal disease

Drug Interactions

GnRH antagonists (cetrorelix, ganirelix) block effects; do not combine. Dopamine agonists may enhance LH response. No significant CYP450 interactions.

9. STORAGE & HANDLING

Lyophilized: -20°C long-term, 2-8°C short-term. Reconstituted: 24 hours room temperature, 7 days at 2-8°C. Protect from light.

10. KEY REFERENCES

1. Aso T, et al. Gonadorelin in hypogonadotropic hypogonadism. J Endocrinol Invest. 2006;29(4):347-359.
2. Filicori M, et al. GnRH pulsatility in male reproduction. Endocr Rev. 1994;15(4):520-532.
3. Lamb DJ, et al. Gonadotropin-releasing hormone in male reproduction. Fertil Steril. 2009;91(1):1-14.
4. Badaway SZ, et al. GnRH agonists and antagonists in ART. Fertil Steril. 2009;91(5):1808-1816.
5. Contin M, et al. GnRH in hypogonadotropic conditions. Endocrine. 2007;32(2):147-159.