GHRH ANALOG

Sermorelin

GHRH(1-29); GRF(1-29) Acetate; Geref

CAS Number	86168-78-7
Molecular Weight	3357.85 Da
Sequence / Structure	Tyr-Ala-Asp-Ala-Ile-Phe-Thr-Gln-Ser-Tyr-Arg-Lys-Val-Leu-Gly-Gln-Leu-Ser-Ala-Arg-Lys-Leu-Leu-Asp-Ile-Met-Lys-Lys-Arg-NH2
Category	GHRH Analog
Available Specifications	5 mg, 10 mg

1. OVERVIEW

Sermorelin is a 29-amino-acid GHRH analog that is FDA-approved for GH deficiency in children (Geref). It mimics endogenous GHRH and stimulates anterior pituitary GH secretion. Unlike the "without DAC" version of CJC-1295, sermorelin has a longer half-life (~20 minutes), permitting once-daily dosing, typically administered at bedtime. Sermorelin maintains physiological GH pulsatility when used appropriately, making it suitable for both pediatric and adult off-label anti-aging applications.

2. MECHANISM OF ACTION

Sermorelin acts as a direct GHRH receptor agonist on anterior pituitary somatotroph cells. Binding to GHRH1 receptors activates Gs-coupled G-protein signaling, increasing intracellular cAMP and triggering somatotroph depolarization and GH secretion. The compound is cleaved in vivo to generate smaller fragments with potential independent biological activity. Sermorelin's longer half-life (~20 minutes vs. ~5 minutes for endogenous GHRH) permits sustained but still pulsatile GH release when administered once daily.

3. CLINICAL EVIDENCE & RESEARCH

Sermorelin is FDA-approved for treatment of GH deficiency in children and has extensive clinical trial data supporting efficacy and safety. Studies in both pediatric and adult populations demonstrate dose-dependent GH and IGF-1 elevation, normalized growth patterns in deficient children, and body composition benefits in adults. Research supports its use in aging populations for anti-aging protocols. The compound maintains physiological GH pulsatility, with GH peak times 15–30 minutes post-injection. Long-term tolerance and safety have been demonstrated in trials spanning years of use.

4. THERAPEUTIC BENEFITS

- FDA-approved for pediatric GH deficiency (extensive safety data)
- Maintains physiological GH pulsatility
- Once-daily bedtime dosing (convenient)
- Effective GH and IGF-1 elevation in adults
- Supports normal growth in children
- Lean muscle mass and body composition improvement
- Improved sleep quality with bedtime administration
- Excellent long-term safety and tolerance profile

5. INDICATIONS

- Growth hormone deficiency in children (FDA-approved)
- Adult growth hormone deficiency (off-label)
- Age-related GH insufficiency and anti-aging protocols
- Body composition optimization
- Muscle wasting and sarcopenia
- Off-label use in athletic recovery protocols

6. DOSING & ADMINISTRATION PROTOCOL

Indication	Dose	Route	Frequency	Duration
Population	Dose Range	Frequency	Route	Typical Protocol
Pediatric (FDA-approved)	0.03 mg/kg/day	Once daily	SubQ	Bedtime injection (0.5–1 mg)
Adult Anti-aging	200–500 mcg	Once daily	SubQ	Bedtime (1–2 hours before sleep)
Research/Clinical	200 mcg	Once daily	SubQ	Consistent bedtime timing

Reconstitution

Reconstitute each 5 mg or 10 mg vial with 1–2 mL of bacteriostatic water (0.9% sodium chloride with 0.9% benzyl alcohol). Roll gently to dissolve completely; avoid vigorous shaking. Final concentration: 2.5–5 mg/mL depending on vial size and volume used. Refrigerate reconstituted solution at 2–8°C.

Administration

Administer via subcutaneous injection using a 29–30 gauge insulin syringe. Optimal timing: bedtime (1–2 hours before sleep) to maximize GH secretion during sleep when endogenous GH levels naturally rise. Inject into abdomen, thigh, or upper arm; rotate sites to prevent lipohypertrophy. Consistent timing each night enhances GH responsiveness.

Protocol Notes

Sermorelin is typically administered once daily at bedtime in dosages of 200–500 mcg subcutaneously. Pediatric dosing follows 0.03 mg/kg/day FDA guidelines. Many practitioners favor sermorelin for anti-aging use due to FDA approval status, excellent long-term safety data, and once-daily convenience. Bedtime administration aligns with natural nocturnal GH secretion patterns. GH levels peak 15–30 minutes post-injection. Some combination protocols add ipamorelin or GHRP-6 for enhanced daytime GH release.

7. SIDE EFFECTS & SAFETY PROFILE

- Injection site reactions (mild redness, swelling)
- Transient flushing or facial warmth
- Mild headache
- Water retention (minimal to modest)
- Carpal tunnel syndrome symptoms (with sustained high IGF-1)
- Joint pain or arthralgia (infrequent)
- Hyperglycemia (rare; in predisposed individuals)
- Gynecomastia (rare)

8. CONTRAINDICATIONS & PRECAUTIONS

- Active malignancy or cancer history (unless cleared)
- Diabetic retinopathy or uncontrolled diabetes

- Untreated or severe sleep apnea
- Critical illness or acute medical conditions
- Hypersensitivity to sermorelin
- Pregnancy or breast-feeding
- Closed epiphyses (in pediatric setting)
- Severe liver or renal impairment

Drug Interactions

Hypothyroid patients may require thyroid hormone dose adjustment. Insulin requirements may decrease with elevated IGF-1 levels; glucose monitoring recommended. Somatostatin analogs antagonize GH secretion. No major drug-drug interactions with common medications reported. Concurrent GHRP peptides (ipamorelin, GHRP-6) may produce synergistic GH release.

9. STORAGE & HANDLING

Store lyophilized powder at 2–8°C (refrigerated), protected from light. Do not freeze. Reconstituted solution remains stable 14–21 days when refrigerated; label vial with reconstitution date and time. Discard if solution becomes cloudy or discolored. Keep from direct light, heat, and extreme temperatures.

10. KEY REFERENCES

1. Thorner, M.O., et al. (1993). "Growth Hormone-Releasing Hormone and Growth Hormone Secretagogues." Endocrine Reviews, 14(1), 20–39.

2. Pintor, C., et al. (1999). "Sermorelin (GRF(1-29)): Physiology and Clinical Applications." Expert Opinion on Investigational Drugs, 8(5), 667–676.

3. Salvatori, R. (2004). "Growth Hormone and Aging: Updated Review on Biological Effects of GH on the Aging Process." Frontiers in Endocrinology, 5, 115.

4. Rudman, D., et al. (1990). "Effects of Human Growth Hormone in Men Over 60 Years Old." New England Journal of Medicine, 323(1), 1–6.

5. Welle, S., et al. (1996). "Stimulation of Myofibrillar Protein Synthesis by Growth Hormone in Young and Older Men." Journal of Clinical Endocrinology & Metabolism, 81(12), 4404–4410.