

SERMORELIN

A nudge, not a replacement.

What the evidence says about sermorelin – how it signals your body's own growth hormone, what the research shows, and what to weigh before you start.

29

amino acids, the active piece of natural GHRH

1990

first FDA approval, as a diagnostic test (Geref)

Nightly

small injection at bedtime

A signal that asks your body to make its own growth hormone – on its own rhythm.

Sermorelin is a short copy of growth hormone-releasing hormone (GHRH), the signal the brain sends to the pituitary gland. Instead of adding growth hormone directly, it prompts the pituitary to release its own, in natural pulses that the body can still regulate.

It was FDA-approved in 1990 as a diagnostic test and in 1997 to treat growth hormone deficiency in children. Its maker discontinued it in 2008, and the FDA later confirmed it was not withdrawn for safety or effectiveness. In adults, evidence for wellness and healthy-aging uses comes from small, short studies and is still limited.

KEY FINDINGS

- 1 Works upstream.** Sermorelin signals the pituitary rather than replacing growth hormone, so the body's feedback brakes stay in place.
- 2 Raises the body's own levels.** Small studies in older adults showed higher growth hormone and IGF-1 with daily dosing.
- 3 Modest body changes.** In one 16-week study, skin thickness rose in men and women; lean mass and insulin sensitivity improved in men only.
- 4 Well tolerated.** About 1 in 6 people in trials had a reaction at the injection site; other side effects were uncommon.
- 5 Limited adult evidence.** Wellness and aging benefits are not FDA-established; studies are small and short.
- 6 Compounded today.** With the branded product discontinued, sermorelin is available only as a compounded medication.

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01 *A message to the master gland.*

Your brain's hypothalamus releases **GHRH** to tell the pituitary gland to release growth hormone. Sermorelin is the first 29 amino acids of GHRH - the part that does the signaling - so it delivers the same message.

PITUITARY

Its own release

Prompts the pituitary to make and release growth hormone it already produces.

LIVER

More IGF-1

Growth hormone signals the liver to make IGF-1, which carries many of its effects.

FEEDBACK

Built-in brakes

Somatostatin and IGF-1 still slow release when levels are high enough.

IN PRACTICE

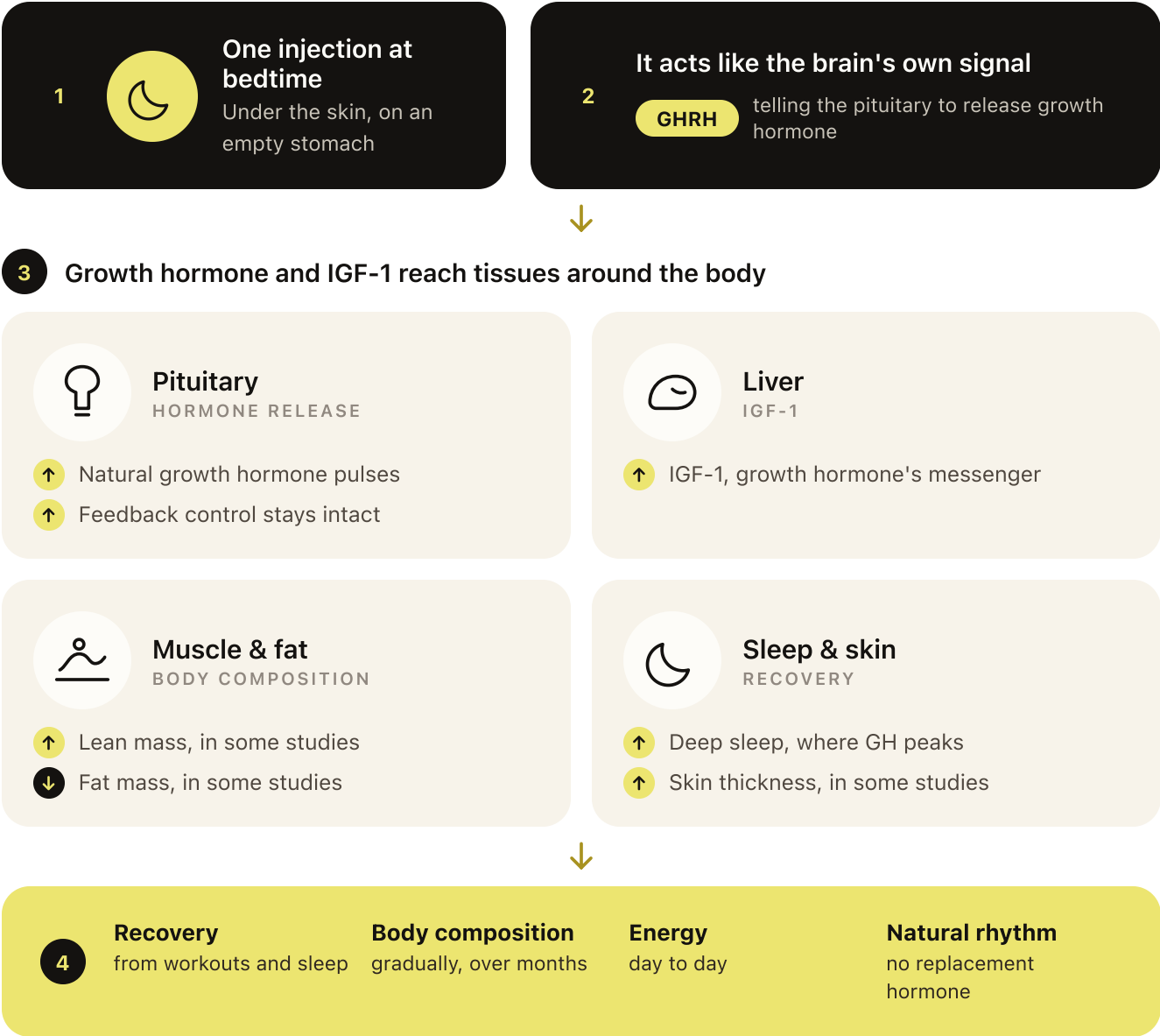
Sermorelin clears from the blood within minutes, but the growth hormone pulse it triggers carries on. It is usually injected under the skin at bedtime, when the body naturally releases the most growth hormone, and on an empty stomach, since food can blunt the response.

Growth hormone release declines with age, and part of that decline sits upstream of the pituitary. That is the rationale for studying sermorelin in older adults: the pituitary can often still respond when asked.

"Sermorelin works with your body's rhythm. Sleep, protein, and strength training still do the heavy lifting."

The Lttl care team

From one bedtime dose to effects around the body.



Simplified illustration. Effects vary by person and are not FDA-established for wellness or aging uses.

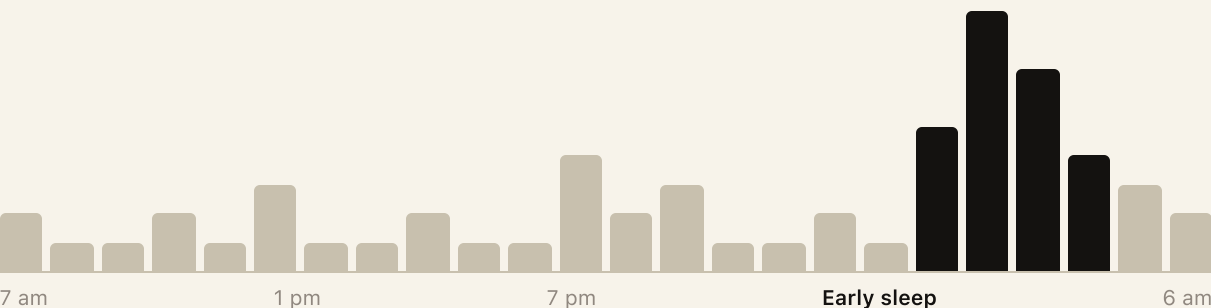
02

Small studies, a consistent signal.

Sermorelin was studied in children before its 1990 and 1997 approvals. In adults, research is smaller: mostly short studies in healthy older men and women, measuring growth hormone, IGF-1, and body composition.

Why bedtime · growth hormone release across a typical day

Illustrative



The largest natural growth hormone pulse comes in the first hours of deep sleep. Bedtime dosing aims to support that peak rather than create a new one.

STUDY	WHO WAS STUDIED	WHAT WAS FOUND
Corpas 1992	10 healthy older men, twice daily for 2 weeks	At the higher dose, growth hormone and IGF-1 rose to levels seen in young men
Khorram 1997	19 men and women aged 55-71, nightly for 16 weeks*	Higher GH and IGF-1; thicker skin in both; lean mass and insulin sensitivity up in men
Vittone 1997	11 men aged 64-76, nightly for 6 weeks	Possible gain in muscle strength; once-nightly dosing less effective than multiple daily doses
Geref label	350 children in clinical trials	Approved to treat GH deficiency; 3 of 350 stopped due to site reactions

Adult studies enrolled 10-19 people for weeks to months. *Khorram used a closely related GHRH(1-29) analog. Long-term outcomes in adults have not been established.

03 *Ask for it, or add it in.*

Synthetic human growth hormone (somatropin) replaces the hormone directly. Sermorelin asks the pituitary to release its own. That difference shapes how each behaves, what it is approved for, and its risks.

SERMORELIN

Signals upstream

Brain signal → pituitary → growth hormone.
The body's feedback can still slow release, which limits how high levels go.

SYNTHETIC HGH

Replaces directly

Growth hormone goes straight into the blood, bypassing the pituitary. Levels depend on the dose, not the body's own controls.

	SERMORELIN	SYNTHETIC HGH
How it works	Prompts the pituitary to release its own GH	Supplies growth hormone directly
Release pattern	Natural pulses	Set by dose and timing
Feedback control	Preserved	Bypassed
Needs a working pituitary	Yes	No
FDA status	Approved 1990 (diagnostic) and 1997 (children); approval withdrawn 2009 at the maker's request	Approved for specific deficiencies; not for anti-aging use
Typical dosing	Nightly injection under the skin	Daily or weekly injection

Sermorelin's effects on growth hormone are generally gentler than direct HGH. The right option depends on your health history, lab results, and goals.

04 *Mostly mild. Mostly at the site.*

In clinical trials, sermorelin was generally well tolerated. The most common side effect, in about 1 in 6 people, was pain, swelling, or redness where the injection went in. Because it works through the body's own controls, runaway growth hormone levels are unlikely.

Common

Pain, swelling, or redness at the injection site – about 1 in 6 people in trials.

Less common (under 1%)

Headache, flushing, dizziness, trouble swallowing, restlessness or drowsiness, hives.

What helps

Rotate sites, let the vial reach room temperature, and inject on an empty stomach at bedtime.

TALK TO YOUR CLINICIAN FIRST IF YOU HAVE

Active or past cancer. Growth hormone and IGF-1 support cell growth; sermorelin is generally avoided with active cancer.

Diabetes or prediabetes. Growth hormone can affect blood sugar; monitoring may be needed.

Pituitary or brain conditions. Including past head injury or surgery near the pituitary.

Thyroid conditions. Untreated low thyroid can blunt the response; levels should be checked and treated first.

Allergy to sermorelin. Stop and seek care for hives, swelling, or trouble breathing.

Other hormone treatments. Including steroids, estrogen, testosterone, or thyroid medication.



Pregnancy and breastfeeding. Sermorelin is not recommended during pregnancy or while breastfeeding; safety data are limited. Tell your clinician if you are pregnant or planning to be.

05

Once branded, now compounded.

Geref, the branded sermorelin, was discontinued in 2008 as a business decision. In 2013 the FDA confirmed it was not withdrawn for safety or effectiveness, which allows licensed pharmacies to compound it for individual patients today.

	BRANDED (GEREF, 1990-2008)	COMPOUNDED (TODAY)
FDA status	FDA-approved as a diagnostic test (1990) and for GH deficiency in children (1997)	Not FDA-approved; not reviewed before use
Made by	The manufacturer, under drug-manufacturing standards	A state-licensed or FDA-registered compounding pharmacy
When it's used	Diagnosis and treatment of pediatric GH deficiency	When a prescriber identifies a patient-specific need
Format	Powder to be mixed before use	Pre-mixed liquid vials at Lttl; concentrations vary by pharmacy
Evidence	Pediatric trials applied directly	Adult wellness benefits are not FDA-established

QUESTIONS TO ASK ANY PROVIDER

- Which pharmacy prepares it, and is it licensed or FDA-registered?
- What is the concentration, and how many units is my dose?
- Will you check labs such as IGF-1 before and during treatment?
- Who can I reach with questions, and when?

THE DOSING DETAIL THAT MATTERS

Sermorelin doses are measured in micrograms, and compounded concentrations differ between pharmacies. Always confirm your dose in micrograms **and** the exact syringe marking with your care team, especially with each new vial.

06 *Gradual by design.*

Because sermorelin works through the body's own rhythm, changes build slowly. Studies measured effects over about 16 weeks. Many people notice sleep first; body changes, if they come, take months and depend on training, protein, and rest.

WEEKS 1-4

Settling in

Some notice deeper sleep or more vivid dreams. Site reactions are most common now.

MONTHS 1-3

Early signals

Energy and recovery may improve. Your clinician may check IGF-1.

MONTHS 3-6

Body changes

Lean mass and body composition shifts, if any, tend to show here.

ONGOING

Review

Reassess benefit, labs, and goals with your clinician.

HOW L TTL SUPPORTS TREATMENT

Board-certified clinicians

Licensed providers review your history and guide every dose change.

FDA-registered pharmacy partners

Pre-mixed vials prepared by certified U.S. pharmacies and shipped to your door.

Unlimited 24/7 support

Reach the care team any time at (888) 847-7806 📞 or hello@lttl.com.



Where the findings come from.

1. Walker RF, et al. Sermorelin: a better approach to management of adult-onset growth hormone insufficiency? Clin Interv Aging. 2006;1(4):307-308.
2. Corpas E, Harman SM, Piñeyro MA, Roberson R, Blackman MR. Growth hormone (GH)-releasing hormone-(1-29) twice daily reverses the decreased GH and insulin-like growth factor-I levels in old men. J Clin Endocrinol Metab. 1992;75(2):530-535.
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4. Vittone J, Blackman MR, Busby-Whitehead J, et al. Effects of single nightly injections of growth hormone-releasing hormone (GHRH 1-29) in healthy elderly men. Metabolism. 1997;46(1):89-96.
5. Prakash A, Goa KL. Sermorelin: a review of its use in the diagnosis and treatment of children with idiopathic growth hormone deficiency. BioDrugs. 1999;12(2):139-157.
6. Geref (sermorelin acetate for injection). Prescribing information. Serono Laboratories. NDA 20-443.
7. U.S. Food and Drug Administration. Determination that GEREf (sermorelin acetate) injection was not withdrawn from sale for reasons of safety or effectiveness. Fed Regist. March 4, 2013 (Docket FDA-2012-P-1071).
8. U.S. Food and Drug Administration. Bulk drug substances used in compounding under section 503A of the FD&C Act.

IMPORTANT INFORMATION

This whitepaper is educational and does not replace medical advice, diagnosis, or treatment. Study results describe specific populations under study conditions and may not reflect individual outcomes.

Compounded medications are not FDA-approved, and the wellness and healthy-aging benefits of sermorelin are not FDA-established. Sermorelin is not right for everyone; it is generally avoided with active cancer, during pregnancy, and while breastfeeding. Discuss your full health history and all medications with a licensed clinician before starting.

Questions? Talk to our care team.

(888) 847-7806  hello@lttl.com · lttl.com

Lttl



Sermorelin

Compounded
injectable

Multiple doses
Rx only