

Thymalin — Research Summary

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1. What It Is

Thymalin is a polypeptide complex extracted from the thymus glands of calves, developed in the 1970s at the Institute of Gerontology in the former Soviet Union by researchers Vladimir Khavinson and Vyacheslav Morozov — the same research group behind Epitalon (pineal gland peptide). Its molecular mechanism is attributed to short peptide sequences within it (KE, EW, EDP) that bind double-stranded DNA and/or histone proteins to regulate gene expression, immune protein synthesis, and stem cell differentiation. Thymalin belongs to the Khavinson family of “peptide bioregulators,” alongside Epitalon (pineal), Cortagen (adrenal cortex), and Pinealon (CNS).

Regulatory status: Thymalin has been used clinically for over 40 years in Russia and Eastern Europe but remains unavailable and unapproved in the United States and European Union; the FDA has not reviewed it for any indication. It is available in Western countries only as a research compound.

2. Reported Effects in Research Literature

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- **Immune restoration:** Khavinson’s clinical studies, primarily in elderly populations, reported that short courses of Thymalin improved T-cell counts, CD4/CD8 ratios, natural killer cell activity, and overall immune competence.
- **Longevity/geroprotective trial (the headline human data point):** A landmark study (Khavinson & Morozov, 2003, published in *Neuro Endocrinology Letters*) assessed 266 elderly/older persons (average age ~70) over 6–8 years, treated with Thymalin alone, Epithalamin (Epitalon precursor) alone, both combined, or placebo/control, via annual 5–10 day injection courses. Reported outcomes: 2.0–2.4-fold decrease in acute respiratory disease incidence; reduced incidence of ischemic heart disease, hypertension, osteoarthritis, and osteoporosis; and decreased mortality rate — 2.0–2.1-fold lower in the Thymalin-only group, 1.6–1.8-fold lower in the Epithalamin-only group, and 2.5-fold lower in the combined-treatment group versus control. A separate cohort treated with combined Thymalin plus Epithalamin annually for 6 years showed a 4.1-fold lower mortality rate versus control.
- **COVID-19 (more recent research):** A 2021 study (Kuznik, Khavinson, et al., *Advances in Gerontology*) reported that Thymalin added to standard therapy in older patients with severe COVID-19 (n=36) produced more rapid clinical improvement, higher recovery rates from lymphopenia, and faster normalization of inflammatory markers versus standard therapy alone — proposed mechanism being prevention of the “cytokine storm” associated with severe COVID-19.

Important methodological caveats: The landmark 2003 longevity trial was open-label by design (not blinded), conducted at a single research institute, and has not been independently replicated in Western randomized controlled trials. The dramatic mortality-reduction figures are a genuinely notable human longevity signal by peptide-research standards, but the trial’s design limitations (open-label, geographically narrow, small by modern epidemiological standards) mean these findings should be presented as reported outcomes from a specific study design, not as independently confirmed causal effects.

3. Clinical & Preclinical Study References

- Khavinson VKh, Morozov VG. "Peptides of pineal gland and thymus prolong human life." *Neuro Endocrinol Lett.* 2003;24(3-4):233-240. PMID: [14523363](#)
- Khavinson VKh, Morozov VG. "Geroprotective effect of thymalin and epithalamin." *Adv Gerontol.* 2002. PMID: [12577695](#)
- Kuznik B, Khavinson V, Shapovalov K, et al. "Peptide Drug Thymalin Regulates Immune Status in Severe COVID-19 Older Patients." *Adv Gerontol.* 2021;11:368-376. [Full text](#)
- Full original 2003 paper (PDF): [khavinson.info](#)

4. Reconstitution Process

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1. **Materials needed:** lyophilized (freeze-dried) Thymalin powder, bacteriostatic water, alcohol swabs, syringe with needle.
2. **Bring the vial to room temperature** before reconstitution.
3. **Sanitize** the rubber stopper of both vials with an alcohol swab.
4. **Add the water slowly** down the *inside wall* of the vial, to reduce shear/foaming.
5. **Do not shake.** Gently swirl or roll between palms until fully dissolved.
6. **Inspect the solution** — should be clear and free of particulates.
7. **Label the vial** with reconstitution date and concentration.
8. **Storage:** refrigerate (2–8°C); avoid freeze-thaw cycles.

Reference: Bacteriostatic Water Volume by Vial Size

Vial Size BAC Water Added Resulting Concentration

5 mg	1 mL	5 mg/mL
5 mg	2 mL	2.5 mg/mL
5 mg	5 mL	1 mg/mL
10 mg	1 mL	10 mg/mL
10 mg	2 mL	5 mg/mL
10 mg	4 mL	2.5 mg/mL
10 mg	5 mL	2 mg/mL
10 mg	10 mL	1 mg/mL

Notes: Higher water volume = more dilute solution; lower volume = more concentrated. Always use bacteriostatic water (0.9% benzyl alcohol) for multi-draw vials; sterile water without preservative should be discarded within 24 hours.

Document created: July 16, 2026. **Revision 1:** July 29, 2026. Regulatory status (FDA compounding lists, WADA lists) is actively shifting; re-verify against current sources before any customer-facing use.

This document is intended for research and internal reference use only. It does not constitute medical advice, dosing guidance, or an endorsement of human use. Thymalin has clinical use history in Russia and Eastern Europe but is not approved by the FDA or EMA.