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PATIENT GUIDE

Epitalon *for healthy aging*

Epitalon is a short synthetic peptide modeled on an extract of the pineal gland. Most of its research comes from cell and animal work, with a smaller number of human studies.

COMPOUND	CLASS	ROUTES	RESEARCH	SOURCES
Epitalon (AEDG)	Tetrapeptide	Injection, spray	Early, mostly lab	34 · PMID linked

§ 01

Overview

Epitalon is a very small peptide, only four amino acids long, that has drawn steady interest in longevity medicine. It grew out of more than three decades of work on the pineal gland, the small gland in the brain that produces melatonin and helps set the body's daily rhythm. In laboratory studies it has been linked to two ideas that matter a great deal in aging research: protecting the ends of chromosomes, called telomeres, and supporting the natural nightly rise in melatonin that tends to fade with age.[1] [2]

This guide is written so you can talk about epitalon with us from an informed place. The research is interesting but early. Much of it comes from one research group in Russia and has been done in cells and animals, and the human studies that exist are older and small. Every source is listed at the end with a link so you can read it yourself.

4 **Amino acids long.** Epitalon is the synthetic tetrapeptide alanine, glutamic acid, aspartic acid, glycine, written Ala Glu Asp Gly or AEDG. It was designed from the makeup of a pineal gland extract called epithalamin.[2]

10 **Extra cell divisions in the dish.** In human fetal lung cells grown in culture, epitalon lengthened telomeres, and the treated cells divided 10 more times than untreated cells before stopping.[3]

28% **Fewer deaths at 12 years.** In a long study of elderly patients with coronary disease, those given the pineal extract epithalamin had 28 percent fewer deaths than the comparison group. This was the extract, not synthetic epitalon.[4]

7 to 4 **Advisory committee vote.** In July 2026 an FDA advisory committee voted 7 to 4 to recommend that epitalon be allowed in pharmacy compounding. The FDA has not yet made its final decision, and since 30 October 2026 a temporary federal policy has allowed pharmacies to compound it under strict conditions.[25] [30]

§ 02

What epitalon is

The story starts with **epithalamin**, a mixture of small peptides extracted from the pineal glands of cattle. Researchers at what is now the St Petersburg Institute of Bioregulation and Gerontology, led by Professor Vladimir Khavinson, began studying it in the 1970s and reported effects on melatonin, antioxidant activity and lifespan in rats, mice and fruit flies.[1] [5]

Because an extract varies from batch to batch, the same group analyzed its amino acid composition and designed a single short peptide to reproduce its activity. That peptide is **epitalon**, also spelled epithalon or epithalone, and sometimes called by its four letter code AEDG.[1] [2] In 2017 the group reported detecting AEDG among the natural tetrapeptides of the pineal extract itself.[6] When you read the research, note that most of the long human studies used the extract, while most of the laboratory and animal work used the synthetic peptide, so we label which is which.

EPITALON AT A GLANCE	
Name	Epitalon
Also called	Epithalon, epithalone, AEDG peptide
Sequence	Ala Glu Asp Gly (four amino acids); sold as the free peptide or as an acetate salt[26]
Origin	Designed from epithalamin, an extract of bovine pineal gland; made synthetically[2]
Class	Short regulatory peptide, described by its developers as a peptide bioregulator[7]
How it is given	Mostly studied as an injection under the skin in animals; human studies used a spray under the tongue and injections near the eye[2] [26]

§ 03

How epitalon works

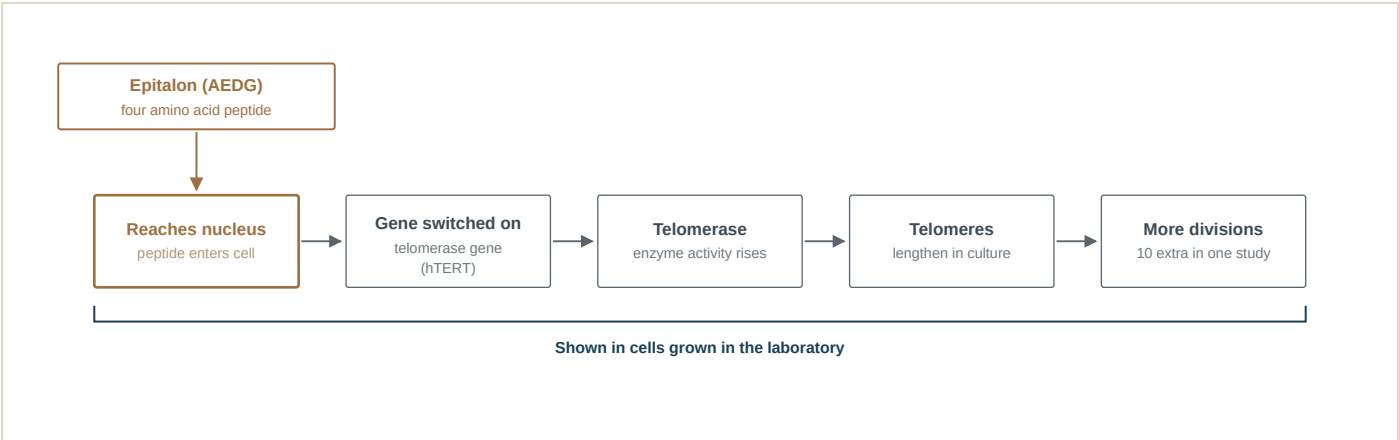
Most of the interest in epitalon comes from two ideas, and each rests on a different kind of study.

Telomeres and telomerase (cell studies). Telomeres are protective caps on the ends of chromosomes. They shorten each time a cell divides, and when they become too short the cell stops dividing. An enzyme called telomerase can rebuild them, but most adult cells keep it switched off. In 2003 the Khavinson group reported that adding epitalon to human fetal lung cells that had no telomerase activity switched on the telomerase gene, raised enzyme activity and lengthened telomeres.[8] A follow up study found that treated cells went on to divide 10 more times than untreated cells.[3] Fluorescent tagging studies suggest the peptide can enter the cell nucleus, where it may interact with DNA directly.[9]

An independent team in the United Kingdom has since repeated part of this work. In 2025 they treated normal human fibroblasts and breast epithelial cells with epitalon for three weeks and saw telomeres lengthen, along with a fourfold and a 26 fold rise in telomerase activity. The same study found that epitalon also lengthened telomeres in two breast cancer cell lines, through a different route that does not depend on telomerase.[10] Like the earlier work, all of this was done in cells grown in a dish.

Melatonin and daily rhythm (animal and human studies). In old rhesus monkeys, epitalon increased evening melatonin and brought the daily cortisol rhythm closer to that of young animals.[11] In elderly people, the extract epithalamin raised night time melatonin in those whose levels started low, and tended to lower it in those whose levels were already normal.[12] When epitalon was added directly to rat pineal glands in the laboratory, though, it did not change melatonin release, so any effect in the body is probably indirect.[13]

Gene activity (cell and animal studies). Epitalon changed the activity of 98 of more than 15,000 genes tested in mouse heart tissue[14] and loosened tightly packed DNA in white blood cells taken from people aged 76 to 80 and studied in the dish.[15]



In the laboratory, epitalon switches on the enzyme that rebuilds chromosome ends. This chain has been reported in human cells grown in culture by the original research group and, in 2025, by an independent team.[8] [10] Whether the same happens in the human body has not yet been measured.

KEY POINT

The telomere findings come from cells in culture, and the melatonin findings come mostly from animals and from studies of the extract rather than the synthetic peptide. These findings are worth taking seriously, and they also show that epitalon is still an early treatment whose effects in people have yet to be established.[2] [26]

§ 04

What the research shows

Epitalon has a large body of published work behind it, most of it from the St Petersburg group and its collaborators, and much of it in Russian journals or their English translations. An independent 2025 review from Poland described more than 25 years of cell, animal and computer modeling studies, and noted that the physical and structural chemistry of the peptide has been studied far less.[2] An independent report from the Alzheimer's Drug Discovery Foundation observed that the published preclinical and clinical studies it reviewed had all come from Professor Khavinson's group.[27] Independent groups have begun to add their own laboratory work in the last few years.[10] [16]

What the evidence supports

In animals, the findings are consistent within the group that produced them. Synthetic epitalon given by injection under the skin for a few days each month throughout life did not change average lifespan in one strain, but the last 10 percent of surviving mice lived 13.3 percent longer, chromosome damage in bone marrow cells fell by 17.1 percent, and overall tumor rates were unchanged.[17] In another strain, mean survival rose by 5.3 percent with fewer spontaneous tumors.[18] In mice bred to develop breast cancer, epitalon reduced the number and size of tumors.[19] The extract epithalamin increased mean lifespan by 11 to 31 percent in fruit flies, mice and rats.[5] In cells, telomerase activation has now been seen by two separate teams.[8] [10] An independent Chinese team also found that epitalon reduced oxidative stress and protected mitochondria in aging mouse egg cells in culture.[16]

What is not yet known

The human evidence is more limited. The largest human studies used the extract epithalamin, were carried out in Russia and Ukraine, and are available mostly as short English abstracts. In one, 266 elderly people were treated with pineal or thymus peptides for the first 2 to 3 years and followed for 6 to 8 years; deaths in the epithalamin group were reported to be 1.6 to 1.8 times lower than in the comparison group.[20] In another, 79 elderly patients with coronary disease were randomly assigned to regular courses of epithalamin plus usual care, or usual care alone, for three years. After 12 years there were 28 percent fewer deaths in the epithalamin group, and cardiovascular deaths were halved.[4 21] These results are encouraging, though they have not yet been repeated by an independent group and the full methods are not available in English.[27]

For synthetic epitalon itself, the human studies are smaller. One study gave an epitalon spray under the tongue for 20 days to middle aged women working night shifts whose melatonin output was low, and found that a urinary marker of melatonin rose 1.7 times and several body clock genes shifted toward normal.[22 26] That study did not measure sleep. An earlier trial in people with retinitis pigmentosa, an inherited eye disease, reported a positive clinical effect in 90 percent of cases treated with epitalon injected near the eye.[23 2] No published trial has yet tested epitalon injected under the skin in people, which is the way it is usually prescribed today.[26]

HUMAN STUDIES Human evidence for the extract (epithalamin) and the synthetic peptide (epitalon), as published

STUDY	N	DESIGN AND POPULATION	REPORTED FINDING
Khavinson and Morozov, 2003[20]	266	Elderly people in St Petersburg and Kiev; **epithalamin** and thymus peptides for 2 to 3 years, followed 6 to 8 years	Mortality 1.6 to 1.8 times lower with epithalamin than control; less acute respiratory illness
Korkushko et al, 2006 and 2011[4 21]	79	Randomized; elderly coronary patients; **epithalamin** courses for 3 years (39) or usual care (40)	28 percent fewer deaths at 12 years; cardiovascular deaths 2 times lower; better exercise tolerance
Korkushko et al, 2004[12]	Not stated in abstract	Healthy elderly people; course of **epithalamin**	Night melatonin rose in those with low pineal function
Ivko et al, 2020[22 26]	75 (20 on **epitalon**, 20 placebo)	Women aged 40 to 50 working night shifts; spray under the tongue twice daily for 20 days	Urinary melatonin marker 1.7 times higher; clock genes shifted; sleep not measured
Khavinson et al, 2002[23 2]	162 (per 2025 review)	Controlled trial; retinitis pigmentosa; **epitalon** injected beside the eye for 10 days	Positive clinical effect in 90 percent of cases; no side effects reported

SUMMARY

Epitalon rests on a long and consistent body of laboratory and animal research, on older human studies of the pineal extract it was modeled on, and on a few small human studies of the peptide itself. The central laboratory finding, telomerase activation, has now been seen by an independent team. No modern, independent clinical trial has yet tested epitalon in people using the route and doses used today. For those reasons we regard it as promising but early.

§ 05

How epitalon is given

Epitalon has been studied by several routes, and they differ a great deal in how much research sits behind them. No regulator anywhere has set a dose of epitalon for people. Where a published human study used a specific dose we give it; otherwise the dose, the length of a course and the timing are set by your physician.[26] Under the federal compounding policy

now in place, pharmacies may prepare epitalon only as an injection under the skin or into the muscle, dispensed in intermittent courses. [31]

Injection under the skin

This is how epitalon is most often prescribed today, and it is the route put forward to the FDA for compounding, as injections containing 10 mg per mL or 3,000 mcg per mL.[26] It is also the route used in most of the animal research, where mice received small injections under the skin on five days each month for most of their lives. [17] [19] The FDA's 2026 review found no published human study using this route, so there is no human dose to point to and your physician will set one. [26] As with any injection, some redness or tenderness where the needle went in is possible.

Injection into the muscle

The long human studies of the extract used injections into the muscle. According to an independent summary of the 12 year study, each course was five injections of 10 mg of epithalamin given three days apart, repeated every six months for three years.[27] [4] Synthetic epitalon has been given into the muscle to old rhesus monkeys. [11] [26] Published human studies of epitalon itself by this route were not found.

Spray under the tongue

The one published human study of synthetic epitalon in healthy people used a spray under the tongue, twice a day for 20 days. A 2025 review describes the daily amount as 0.5 mg.[22] [2] [26] The study measured a melatonin marker and body clock genes. It did not measure sleep or report on side effects. [26]

Nasal spray and capsules by mouth

Epitalon has been given as nose drops and by mouth to rats in laboratory studies.[2] Its small size has led some to suggest it may survive digestion better than larger peptides, but that has not been measured in people. [2] Human studies of epitalon by these routes have not been published.

Injection beside the eye

In the retinitis pigmentosa trial, a very small amount of epitalon, 5 micrograms per eye, was injected into the tissue around the eye each day for 10 days by eye specialists.[2] [23] That is a specialist eye treatment, separate from the way epitalon is usually prescribed.

COMPARING THE OPTIONS

	UNDER THE SKIN	INTO THE MUSCLE	UNDER THE TONGUE	NASAL OR BY MOUTH
How it is given	Small injection	Injection in clinic	Spray	Drops or capsule
Human research	None published[26]	Extract only, older studies[4]	One small study[22]	None found in our search[2]
Animal research	EXTENSIVE[17]	MONKEYS[11]	Human study only[22]	RATS[2]
Published dose in people	None; set by physician	10 mg of the extract per injection[27]	Twice daily for 20 days[26]	None
Common experience	Possible tenderness at the site	Possible tenderness at the site	Not reported	Not reported

Your physician can help you decide whether epitalon fits your goals, and if so, which form and schedule make sense for you.

§ 06

What to expect

The published human work gave epitalon in short courses: for 10 to 20 days in the studies of the peptide, and in courses repeated every six months in the long studies of the extract.[22] [23] [21] The effects that were measured were changes in blood and urine markers such as melatonin, and over many years, differences in health and survival. [12] [20]

None of these studies described a change that people could feel from day to day, and the one study of the peptide under the tongue did not measure sleep.[26] So we suggest you think of epitalon as a longer term measure and do not expect to notice a change within days. Some patients do report sleeping better, and we are glad to hear about your own experience, but that has not yet been tested in a published trial.

DURING A COURSE

- If you are using injections, you will be shown how to give them and how to store the vials.
- Keep a simple note of your sleep and energy, so that we can look at any change together.
- Tell us about anything that feels unusual, including redness or swelling at an injection site that does not settle.

§ 07

Safety

Safety reports so far are reassuring, but there are few of them. No serious side effects were reported in the long human studies of the extract, and a report published in Russian on both the extract and the peptide described them as having no side effects in elderly people.[27] [24] None of the patients treated with epitalon in the retinitis pigmentosa trial reported side effects. [2] In mice given epitalon for most of their lives, there was no effect on body weight or food intake, fewer chromosome changes, and no increase in overall tumors. [17]

At the same time, the FDA's 2026 review found no published clinical study designed to measure the safety of epitalon in people, and no human data for the injection under the skin that is used today. Its adverse event database held no reports for epitalon, which the agency noted does not by itself show that a substance is safe.[26] [28] The FDA also raised a theoretical question. Because epitalon can switch on telomerase in cells, long continuous use might in principle help damaged cells avoid their normal limits on division. [26] The animal cancer studies point the other way, with fewer tumors in treated mice, [19] [17] but the question has not been studied in people, and one laboratory study found telomere lengthening in breast cancer cells as well as in normal cells. [10] As with any injected peptide, the quality and purity of the preparation also matter. [26]

TELL YOUR PHYSICIAN BEFORE STARTING IF ANY OF THESE APPLY

- You have a current or past cancer diagnosis, or you are under surveillance for one.
- You are pregnant, trying to conceive, or breastfeeding.
- You take melatonin, a prescription sleep medicine, or any hormone therapy.
- You have had an allergic reaction to an injected medicine or peptide before.
- You compete in a sport that tests for drugs.
- You take any prescription medication, over the counter product or supplement. Please bring the full list.

Long term safety data on synthetic epitalon in people do not yet exist. The published human studies of the peptide lasted 10 to 20 days, and the long studies of the extract used a different product.[22] [23] [4] For that reason we review how you are doing at set points.

§ 08

Is this right for you

Epitalon suits some patients who are interested in healthy aging and comfortable with early evidence, and it is not the right starting point for others. We work out at your consultation which group you are in.

Before we begin

- [ ] A review of your medical history, current medications and supplements
- [ ] Blood pressure, weight, and a short history of your sleep
- [ ] Baseline bloodwork, so that anything we see later can be compared against a starting point
- [ ] A clear note of what you are hoping to feel, written down, so we can tell together whether it worked

If you are coming to us because of poor sleep or low energy, we will look for findable causes first. Sleep problems in particular often have causes that respond well to specific treatment, and finding one of those would serve you better than any peptide.

Reviewing your progress

We will reassess against your documented starting point after a defined course, so that treatment does not run open ended. If you are doing well, we will plan together whether and when to repeat it. If you are not, we will say so and look at other options. You are welcome to stop at any time.

> QUESTIONS TO ASK YOUR PHYSICIAN
>
> What would you expect me to notice, and by when? How will we measure whether this is working? How long is a course, and would it be repeated? What would make you recommend stopping?

§ 09

Regulatory status

Epitalon is not approved by the U.S. Food and Drug Administration for any indication. It is not part of any FDA approved medicine and has no official United States Pharmacopeia standard.[26] Since 30 October 2026, a federal enforcement discretion policy from the U.S. Department of Health and Human Services has allowed licensed pharmacies to compound epitalon under strict conditions. [30] [31] The conditions that matter most to you are these:

- The preparation is made on a prescription written for you personally.
- Epitalon is its only active ingredient. Blends and stacks are not covered.
- It is given only as an injection under the skin or into the muscle, and it is dispensed in intermittent courses.
- The ingredient comes from an FDA registered manufacturer and carries a certificate of analysis.
- Serious side effects and quality problems are reported to the FDA.

The policy is temporary. It applies until the FDA addresses epitalon in a final rule on the list of substances pharmacies may use in compounding, and it may be revisited. It is also not an approval. The policy itself states that compounded drugs are not FDA approved and that the FDA does not review their safety, effectiveness or quality before they are sold.[30] Prescribing a compounded or unapproved preparation is lawful and common in American medicine, and it is a decision your physician makes with you. It does mean no regulator has reviewed this preparation for your use, and you should know that before you consent.

The policy follows earlier steps in the FDA's review. In April 2026 the FDA updated its list of bulk substances that may present significant safety risks, and epitalon is now shown there as withdrawn from that category.[28] In July 2026 the FDA's Pharmacy Compounding Advisory Committee considered epitalon for insomnia and voted 7 to 4 to recommend adding it to the list of substances pharmacies may use in compounding, although FDA staff had recommended against it. [25] [26] The committee's vote is advisory. The FDA must still make its own decision and complete a formal rulemaking process.

If you compete in sport, please know that epitalon is not named on the 2026 World Anti Doping Agency Prohibited List. The list does, however, prohibit at all times any substance not covered elsewhere on it that has no current government approval for human therapeutic use, so athletes should check with their sport's testing authority before using it.[29]

If you would like details about the preparation used in your treatment, please ask.

§ 10

Common questions

Is it safe to try, and what side effects should I expect?

No serious side effects were reported in the long human studies of the extract, and none of the patients treated with epitalon in the retinitis pigmentosa trial reported side effects.[27] [2] The FDA's 2026 review found no published clinical study designed to measure its safety in people, and no human data for the injection under the skin used today. [26] As with any injection, some redness or tenderness where the needle went in is possible.

How soon will I notice a difference?

The studies did not measure that. None of them described a change that people could feel from day to day, and the one study of the peptide under the tongue did not measure sleep.[26] What they measured were blood and urine markers such as melatonin and, over many years, differences in health and survival, so we think of epitalon as a longer term measure. [12] [20]

How is it given, and for how long?

Under the current federal policy, compounded epitalon is given as an injection under the skin or into the muscle and is dispensed in intermittent courses.[31] The published human work also used courses: 10 to 20 days in the studies of the peptide, and courses repeated every six months in the long studies of the extract. [22] [23] [21] No regulator has set a dose or a course length for people, so your physician sets both with you. [26]

Can I take it together with other peptides?

The federal policy covers only preparations with a single active ingredient, so a blend or stack that contains epitalon falls outside it.[30] If you already take other peptides or supplements, please bring the full list so your physician can review them with you.

Who should not use it?

People with a current or past cancer diagnosis, or under surveillance for one, should talk with their physician before starting, as should anyone who is pregnant, trying to conceive, or breastfeeding. The same applies if you take melatonin, a prescription sleep medicine or any hormone therapy, or have reacted to an injected medicine or peptide before. Cancer

history is on this list because epitalon can switch on telomerase in cells, and the FDA has raised a theoretical question about long continuous use that has not been studied in people.[26] [10]

What happens if I stop?

Epitalon was used in the research as courses with breaks between them, so finishing a course and stopping is part of how it has been studied.[22] [21] You are welcome to stop at any time. If you are thinking about it, tell us, and we will review your progress together.

How will we know if it is working?

Before you begin, we will write down what you are hoping to feel and record a starting point, including baseline bloodwork and a short history of your sleep. After a defined course we will reassess against that starting point and decide together whether and when to repeat it. A simple note of your sleep and energy during the course helps us look at any change together.

Where is a compounded medicine made, and who oversees it?

Federal law sets out two kinds of compounding. Under section 503A, a state licensed pharmacy or physician prepares a medicine for one patient against that patient's own prescription, and the state board of pharmacy carries the day to day oversight while the FDA inspects for cause and on surveillance.[32] Under section 503B, an outsourcing facility registers with the FDA, works to federal manufacturing quality standards, reports adverse events and the products it makes to the agency, and is inspected by the FDA on a risk based schedule; it may also supply a clinic directly rather than for one named patient.[33] We use both kinds, and which one prepares your medicine depends on the preparation. For epitalon the October 2026 federal policy applies to section 503A compounding only.[30]

Is a compounded medicine the same as an FDA approved one?

No, and the difference matters. A compounded preparation is not FDA approved, and the agency does not check its safety, effectiveness or quality before it is sold, which is why an approved product is the first choice whenever one fits your situation.[32] What a prescription from a licensed pharmacy or a registered outsourcing facility does give you is a named prescriber, a facility answerable to a state board or to the FDA, ingredients that meet federal requirements, and a route for reporting a problem. A vial bought online and labelled for research use only has none of that: the FDA treats those products as unapproved new drugs when they are meant for people, and has written to the companies selling them.[34] Please do not use one.

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States that compounded drugs are not FDA approved and that the FDA does not verify their safety, effectiveness or quality before they are marketed; describes state board and FDA oversight. Page current as of 16 September 2025. fda.gov, accessed 4 November 2026.

33 **U.S. Food and Drug Administration.** Compounding laws and policies.
Describes the conditions of sections 503A and 503B, including patient specific prescriptions, current good manufacturing practice requirements for outsourcing facilities, adverse event and product reporting, and risk based inspection. Page current as of 17 December 2024. fda.gov, accessed 4 November 2026.

34 **U.S. Food and Drug Administration.** Warning letter to Royal Peptides LLC.
Center for Drug Evaluation and Research, 24 August 2026. States that products marketed for research use only are intended to be drugs for human use and are unapproved new drugs under section 505(a) of the Federal Food, Drug, and Cosmetic Act. fda.gov, accessed 4 November 2026.

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PATIENT SIGNATURE | DATE | REVIEWING PHYSICIAN

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