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01 What SS-31 Actually Is

SS-31 is the research name for a drug called elamipretide. Your cells contain mitochondria, the parts that turn food into usable energy. SS-31 sticks to cardiolipin, a fat that helps hold the inner wall of the mitochondria in the right shape. The drug has a real FDA approval, sold under the name Forzinity, for improving muscle strength in people with Barth syndrome who weigh at least 30 kg. It has also produced measurable changes in how much energy human cells can make. [1-6]

The story you see online

Your mitochondria are damaged, SS-31 repairs them, and only then can NAD+ or MOTS-c work properly. Parts of that story come from real biology, but the full sequence has never been shown to happen in a human study.

THE MOST IMPORTANT POINT IN THIS GUIDE

Being tired, having brain fog, getting older, or feeling better or worse after taking SS-31 does not tell you whether your mitochondria were broken. How you react to SS-31 is not a test for mitochondrial damage.

02 Is SS-31 FDA Approved?

Yes, but only for one rare disease. The approval does not cover general “mitochondrial repair.” On September 19, 2025, the FDA approved Forzinity (elamipretide) to improve muscle strength in adults and children with Barth syndrome who weigh at least 30 kg. Barth syndrome is a rare inherited disease in which faulty cardiolipin biology is the central problem. [1,2,15]

What it is approved for	Improving muscle strength in Barth syndrome, in people weighing 30 kg or more. [1,2]
The approved dose	40 mg injected under the skin, once a day, in that specific group. Some adults with reduced kidney function get a lower dose. [1]

How it got approved, step by step

1 A small randomised trial Twelve people, with the drug compared against placebo. [2,4]	2 Both original goals missed Walking distance over six minutes and tiredness were no better than placebo. [2,4]	3 Muscle strength improved Knee strength rose in the longer phase where everyone knew they were on the drug. [2,3]	4 Approved, conditionally The FDA accepted strength as a stand-in likely to predict benefit. A confirmatory trial is still required. [15,19]
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WHAT THE APPROVAL DOES SHOW Elamipretide is a real medicine with real evidence behind it. That evidence covers one specific mitochondrial disease and one specific outcome.	WHAT IT DOES NOT SHOW It does not prove that healthy people have damaged mitochondria, that SS-31 permanently repairs them, or that it reliably gives ordinary users more energy.
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The wording matters	The FDA calls Forzinity a mitochondrial cardiolipin binder. The approved claim is improved muscle strength in Barth syndrome. It is not “repairs mitochondria.” [1,2]
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03 What the Human Trials Actually Show

Mitochondria are involved in a lot of diseases, so elamipretide has been tested in very different groups of people. The results are not uniformly good, and that is worth paying attention to. A convincing mechanism does not guarantee that a drug helps everywhere it is tried. [4-12]

Older adults whose mitochondria were measurably underperforming	POSITIVE SIGNAL	A single IV dose. The amount of energy their cells could make went up right away, but their resistance to fatigue did not meaningfully improve. [6]
Inherited mitochondrial muscle disease (MMPOWER-2)	ENCOURAGING BUT SMALL	40 mg under the skin daily for 4 weeks. People walked about 20 m further in six minutes, small enough that it could have been chance. The fatigue questionnaires moved more clearly, though those were secondary measures and the larger trial that followed did not reproduce them. [8, 9]
Inherited mitochondrial muscle disease (MMPOWER-3)	MAIN RESULT NEGATIVE	40 mg under the skin daily for 24 weeks, 218 people. No better than placebo for walking distance or overall tiredness. One subgroup, planned before the trial began, did show something: people whose disease came from faults in nuclear DNA walked further, while those whose disease came from faults in mitochondrial DNA showed no difference. That is a real signal worth studying further, and it is also a subgroup result inside a trial that failed overall. [9]
Barth syndrome	NARROW POSITIVE	40 mg under the skin daily. Approved for muscle strength, but the original walking and tiredness measures were negative. [1,2,4,5]
Heart failure with a weakened pump	MAIN RESULT NEGATIVE	4 mg or 40 mg under the skin daily for 28 days. No meaningful improvement in the main measurements of heart size and pumping. [10]
Major heart attack	MAIN RESULT NEGATIVE	Given by IV during the procedure to reopen the blocked artery. It did not reduce the amount of damaged heart muscle or improve the other planned outcomes. [11]
Narrowed kidney artery	PRELIMINARY ONLY	A small IV pilot around a stent procedure. Blood flow and oxygen measures in the kidney looked better, but 14 people is not proof of kidney repair. [12]

What the pattern tells us

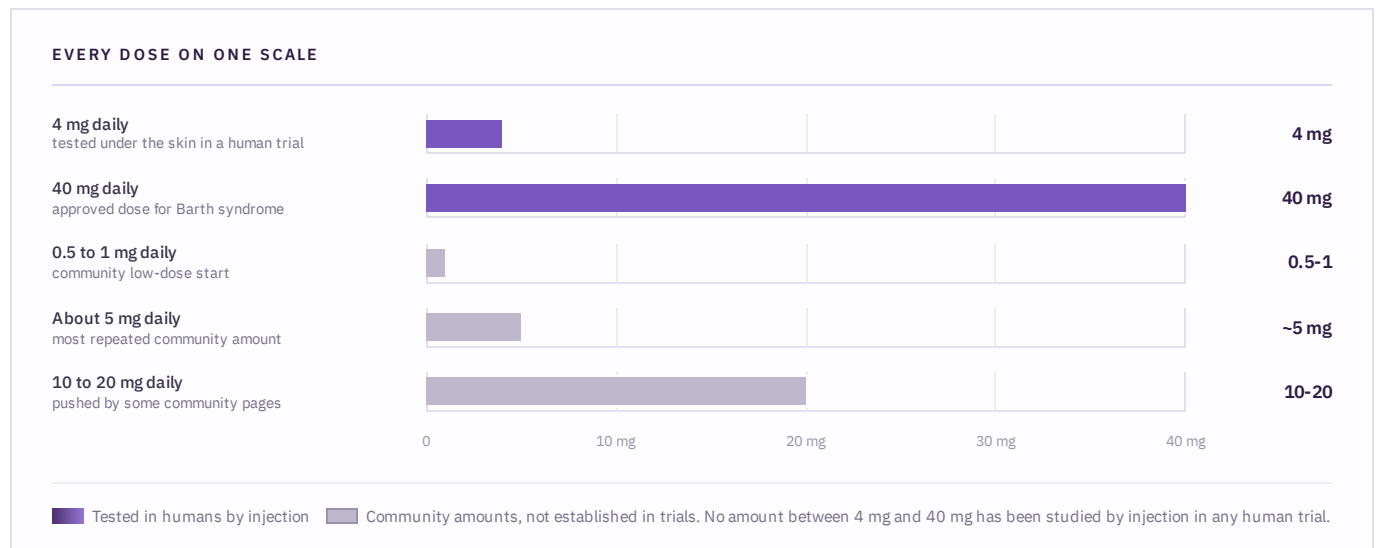
SS-31 has a real target and real effects in humans. Whether those effects turn into a benefit depends on the disease, on what is going wrong inside it, and on what the trial chose to measure. A mechanism that works in one setting can fail completely in another.

04 Dosing: What Was Studied, What Circulates Online, and What Can Actually Be Ruled Out

SS-31 dosing gets confusing because three different things keep getting blended together: doses used in human trials, doses circulating on peptide sites, and rules invented around the “mitochondrial repair” story. They are not the same thing. Pharmacology can settle some of these questions. It cannot settle all of them.

What humans were actually given

Early muscle-disease dose study	0.01, 0.10 or 0.25 mg per kg of body weight per hour, dripped in by IV over 2 hours, once a day for 5 days. This was an IV research design, not a home injection protocol. [7]
Older adults with measurably low energy output	0.25 mg per kg per hour by IV over 2 hours, once. Cell energy output improved right away; fatigue resistance did not. An IV dose cannot simply be converted milligram-for-milligram into an under-the-skin dose. [6]
Heart failure trial	4 mg or 40 mg under the skin once daily for 28 days. This gives a genuine low-dose human anchor for injection, but neither dose proved a general energy benefit and the main heart measure did not improve. [10]
Muscle-disease and Barth programmes	40 mg under the skin once daily, used repeatedly across MMPOWER-2, MMPOWER-3 and the Barth trials. It is now the approved Forzinity dose for Barth syndrome at 30 kg and above. It is not a general wellness dose. [1,4,8,9]



What the community most commonly does

Peptide sites do not agree on a single standard. Across the pages reviewed for this guide, the broad cluster is roughly 0.5-10 mg under the skin once a day. The single most repeated “working” amount is around 5 mg a day. 0.5-1 mg shows up as a cautious starting approach, while some pages push 10-20 mg a day. The popular 5-days-on / 2-days-off pattern and the 4-8 week “repair cycle” are community inventions, not schedules taken from any trial. [C9-C12]

What the pharmacology can and cannot settle

Dose frequency	SETTLED	Once a day, every day, makes more pharmacological sense than 5 on / 2 off. FDA data show the drug is absorbed quickly (peak blood level about 30-60 minutes after injection), that about 92% of an injected dose reaches the bloodstream, that doubling the dose roughly doubles the blood level across 2-80 mg, and that it barely builds up day to day. The approved label and every major injection trial use daily dosing. There is no receptor to “reset” and no weekend-repair rationale. [1,4,8-10]
Timing	SETTLED	Consistency matters more than timing it around workouts. The label simply says the same time each day. No human trial shows that fasting, morning dosing or injecting 30-60 minutes before exercise improves anything. [1]
Cycling	SETTLED	No scheduled break or step-up ladder has been established. If the goal is less exposure, lowering the daily amount is more internally consistent than inventing two untested days off. Feeling tired is not a reason to push the dose because “repair is happening,” and feeling nothing is not evidence that a higher dose is needed.
The four-week mark	SETTLED	Treating four weeks as a point to reassess is more defensible than calling 4-8 weeks a “repair cycle.” Several human injection studies assessed at four weeks, so it is a real research window. It does not mean mitochondria are “repaired” by week 4. Longer stretches of 12-24 weeks and beyond have also been studied in people with disease. [4,8-10]
How much	NOT SETTLED	Only two under-the-skin doses have ever been given to humans in a trial: 4 mg and 40 mg. Both were tested in trials that missed their primary endpoints. Nothing between those two numbers has been studied in anyone. The 40 mg figure is now the approved dose for one rare disease, not a general amount, and 4 mg is evidence that a low dose was tolerated, not evidence that it does anything. [1,9,10]

The sharpest conclusion

Logic can rule things out. It can tell you that daily dosing beats 5-on/2-off, that pre-workout timing has no basis, and that a “repair cycle” is not a milestone anyone has measured. What it cannot do is produce an amount. The human data do not establish a benefit in healthy people at any dose, so there is no effect to dose toward and no non-arbitrary number to land on. Averaging a failed trial’s low arm against the most repeated figure on vendor sites produces a number that looks triangulated and is not.

05 Does SS-31 Really “Repair” Damaged Mitochondria?

The word repair is not completely invented. Elamipretide binds cardiolipin, a fat that helps organise the inner wall of the mitochondria and the protein machinery that makes energy there. In systems that are already malfunctioning, that interaction can improve how well the mitochondria work. [1,6,13,14]

1 Cardiolipin matters It helps hold the inner membrane and the energy-making machinery in the right arrangement.	2 SS-31 binds there Elamipretide gathers in the parts of the membrane that are rich in cardiolipin.	3 Function can improve Human and lab studies show better energy output in some situations.
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Where the word “repair” starts to mislead

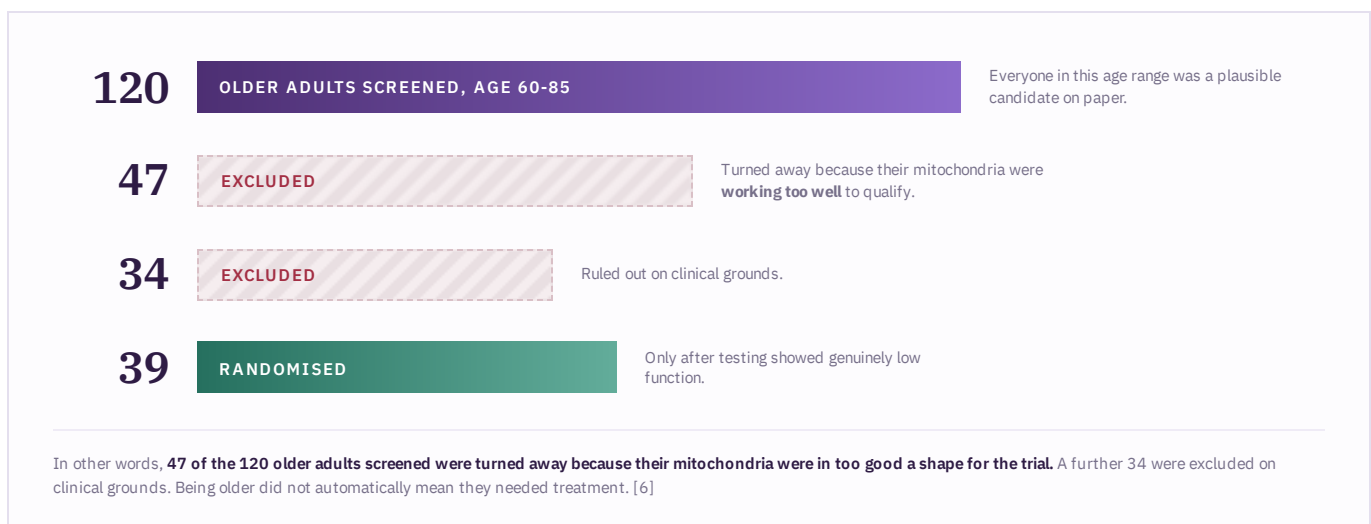
Fair shorthand	“SS-31 can steady mitochondrial membrane function and improve energy output in some malfunctioning settings.”
Taking it too literally	“SS-31 rebuilds broken mitochondria, repairs mitochondrial DNA, or permanently fixes the structure.”
An important human clue	In the older-adult study, the energy-production advantage showed up straight after treatment. By day 7 it had gone, and the treated group was no different from placebo. [6]
The honest conclusion	SS-31 can improve function without permanently rebuilding anything. “Steadying how it works” is more accurate than picturing a broken machine that gets fixed once and stays fixed.

The FDA itself describes Forzinity as a mitochondrial cardiolipin binder. Its approved use is improved muscle strength in Barth syndrome, not generic “mitochondrial repair.” [1,2]

06 Would You Even Know If Your Mitochondria Needed Repair?

Usually, no. Tiredness, brain fog, poor recovery, struggling with exercise and simply getting older can all happen alongside mitochondrial problems, but none of them points to one cause. Poor sleep, eating too little, low iron, thyroid problems, medications, illness, low mood and plain fitness level can all produce the same feelings. [16,17]

One SS-31 study makes this point unusually well



What a real mitochondrial assessment involves

The clinical picture	Doctors look for a pattern of symptoms across multiple organs, not tiredness on its own.
Genetic testing	Testing mitochondrial DNA and related genes is central when an inherited mitochondrial disorder is suspected.
Supporting tests	Blood tests such as lactate and pyruvate can support the picture. Scans, exercise testing and sometimes a tissue sample are used when the clinical picture calls for it.

THE SIMPLE ANSWER

There is no routine test that tells an ordinary person “your mitochondria are 40% damaged.” And symptoms alone cannot tell you that either.

07 If SS-31 Changes How You Feel, Does That Prove Something Was Broken?

No. This is one of the most common logic errors around SS-31: using your reaction to the drug as proof of the problem that supposedly justified taking it in the first place. Both versions of this reasoning show up openly in community discussions. [C2,C6]

“I felt much better”

Does not prove your mitochondria were damaged

A real drug effect is possible. So is a placebo effect, a change in sleep or activity, something else you were taking, ordinary day-to-day variation, or a benefit that says nothing about what caused the symptom to begin with. This cuts both ways in the trials themselves. In the older-adult study, the placebo group’s cell energy output also rose measurably right after infusion.

“I felt nothing”

Does not prove your mitochondria were fine

It could mean no meaningful effect, or that the thing being measured was never relevant to you, or simple person-to-person variation, or a difference in the product itself. There is no validated “SS-31 response test.”

Why this matters

A response to treatment can tell you that something changed. It usually cannot tell you what was wrong beforehand. Working backwards from the result to the diagnosis is where the reasoning breaks.

The same mistake runs in the opposite direction

Some people are told that if SS-31 made a big difference, their mitochondria must have been damaged, and that if they felt little or nothing, their mitochondria must already be healthy. Neither conclusion has been tested and confirmed in humans. [C2]

BOTTOM LINE

Feeling energised after SS-31 is not proof that mitochondrial damage was repaired. Feeling nothing is not proof that nothing needed repairing.

08 If SS-31 Makes You Exhausted, Is That “Deep Mitochondrial Cleanup”?

This belief comes up a lot in current community discussions. People who become noticeably more tired or foggy after starting SS-31 are sometimes told that the body is spending energy rebuilding cells, that “deep mitochondrial cleanup” is happening, or that getting worse means the peptide is doing its job. [C4,C5]

You feel better

“The repair worked.”

You feel worse

“Repair is happening, and it takes energy.”

You feel nothing

“Your mitochondria were probably healthy already.”

Every possible outcome is used to confirm the same theory

Put all three side by side and the problem shows itself. A claim that cannot fail is not a biomarker, and it is not a clinical test.

WHAT HUMAN STUDIES ACTUALLY MEASURED

Trials tracked energy production, walking distance, tiredness, muscle strength and similar outcomes. None of them describe an expected early “repair crash” or a tiredness phase that proves rebuilding is happening.

WHAT FEELING WORSE ACTUALLY MEANS

It means the person feels worse. The cause could be the drug, the underlying condition, another treatment, sleep, food, an illness, or something else entirely. Getting worse is not evidence that a treatment is working.

WHY THIS ONE MATTERS MORE THAN IT LOOKS

A theory that treats both improvement and deterioration as proof that a treatment is working is almost impossible to prove wrong. This is why symptoms make a poor home “mitochondrial repair meter.”

09 Is the Energy Effect Real, or Is It Placebo?

SS-31 is not a sugar pill. It has measurable biological effects. The much harder question is whether it reliably makes people *feel* more energetic. Human trials give a mixed answer. [6,8,9]

CELL ENERGY OUTPUT, STRAIGHT AFTER A SINGLE IV DOSE



Rise from each group's own starting point in 39 selected older adults, with complete data for 18 per group. The result was borderline: the percentage change reached statistical significance, the absolute change did not. **By day 7 the two groups were no longer different from each other.** [6]

39 selected older adults

BORDERLINE POSITIVE

One IV infusion. Cell energy output rose about 27% from baseline on elamipretide versus about 12% on placebo, right after the infusion. The authors reported this as significant for percentage change and just short of it for absolute change, in a study they noted was too small for the absolute measure. The main planned test of fatigue resistance was negative, though two reanalyses done afterwards were suggestive. The gap between groups was gone by day 7. [6]

MMPOWER-2, 30 people

SUGGESTIVE

40 mg under the skin daily for 4 weeks. People walked about 20 m further in six minutes, small enough that it could have been chance. The fatigue questionnaires moved more clearly, though those were secondary measures and the larger trial that followed did not reproduce them. [8,9]

MMPOWER-3, 218 people

NO ADVANTAGE

40 mg under the skin daily for 24 weeks in people with genetically confirmed mitochondrial disease. Elamipretide did not beat placebo on walking distance or overall tiredness. Both groups improved by almost exactly the same amount. [9]

WHAT IS CLEARLY REAL

Elamipretide can change mitochondrial energy measurements in humans, and it holds a disease-specific FDA approval.

WHAT IS NOT ESTABLISHED

A predictable “energy boost” for ordinary users. How energetic you feel depends on many things, and the largest placebo-controlled study found no reliable advantage on tiredness.

The conclusion

It is not all placebo, but it is not a dependable stimulant either. A measurable rise in cell energy output does not automatically become better endurance, less tiredness, or a noticeable lift.

10 “Fix the Engine Before You Add Fuel”: Does the SS-31 + NAD+ Logic Hold Up?

A very widespread analogy now describes the body as a machine, mitochondria as the engine, NAD+ as the fuel, SS-31 as the mechanic, and MOTS-c as the turbo. The conclusion follows neatly: if the machinery is damaged, NAD+ or MOTS-c will not work well until SS-31 fixes it first. [C1,C3,C6,C7]



Why the analogy feels convincing

It borrows several true statements and lines them up. Mitochondria really do make most of the body's energy, cardiolipin really does help organise the inner membrane, SS-31 really does target that membrane, NAD+ really is essential to energy metabolism, and MOTS-c really does affect metabolic signalling. The pieces fit so neatly that the sequence sounds like settled physiology. [6,13,18]

Where the analogy breaks

NAD+ is not literally fuel	The chemical energy comes from food. NAD+ is mainly a helper molecule that shuttles electrons, moving that energy through metabolism. Calling it fuel makes it sound like something you can top up like a petrol tank. [18]
The “broken engine” is usually just assumed	Tiredness or brain fog does not establish cardiolipin damage, or any mitochondrial defect that would need SS-31 first. [16,17]
The sequence has never been tested	No controlled human trial has shown that taking SS-31 first makes NAD+ or MOTS-c work better than taking them without a “repair phase.”
The repair is not proven permanent	In the older-adult study, the energy advantage faded rather than sticking as a one-time fix. [6]

THE SIMPLEST CONCLUSION

The machine-and-fuel analogy explains the theory. It does not prove the protocol.

11 Does SS-31 Repair the Heart, Kidneys or Brain, or Slow Aging?

Mitochondria are found in almost every tissue, so a mitochondrial drug can be made to sound relevant to almost every organ. This is why results in specific conditions carry more weight than the mechanism on its own.

Heart “repair”	NOT ESTABLISHED	A 71-person heart-failure trial did not improve its main measures of heart structure and pumping, and the heart-attack trial did not reduce the amount of damaged muscle. [10,11]
Kidney “repair”	PRELIMINARY ONLY	A 14-person pilot in people having a narrowed kidney artery stented produced encouraging blood-flow signals. Fourteen people is not enough to establish SS-31 as a kidney-repair therapy. [12]
Brain fog and thinking	NOT ESTABLISHED	This guide did not find a controlled human trial showing that SS-31 reliably improves ordinary brain fog or mental sharpness in healthy people.
Anti-aging	NOT ESTABLISHED	The older-adult study was a short experiment measuring cell energy output. It was not a study of lifespan, dementia prevention or reversing biological age. [6]

Why the anti-aging claim still sounds believable

1 Aging changes mitochondria True. Mitochondrial function can decline with age, though not for everyone and not evenly.	2 SS-31 affects underperforming systems True. There is strong animal data and a direct human signal on cell energy output.	3 “Therefore it reverses aging” Here is where the reasoning jumps. No human trial has measured lifespan or years of healthy life on this drug.
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RULE TO REMEMBER

A pathway being involved in a disease or in aging does not prove that changing that pathway will repair the organ, reverse the disease, or add healthy years.

12 What Is Actually Established About Safety?

The 2025 Forzinity approval gives far better safety and absorption information than older peptide write-ups could. It also brings one distinction into focus: an approved, ready-made medicine is not the same thing as a freeze-dried research vial. [1,3]

Injection-site reactions	Very common in the Barth programme. Redness, pain, hardening of the skin and itching were all frequent. [1,2]
Allergic reactions	Serious allergic reactions can happen, and they are listed in the official FDA label. [1]
White blood cell changes	Some patients showed raised counts of eosinophils, a type of white blood cell, during longer treatment. [1]
Cleared by the kidneys	The drug and its inactive breakdown products leave the body mainly in urine. Poor kidney function raises blood levels, which is why the adult dose is reduced in that situation. [1,3]
It does not build up	At 40 mg a day it clears the blood within a few hours and barely accumulates. Trials still used once-daily dosing. [3]

An approved medicine is not a research vial

FORZINITY, THE APPROVED PRODUCT

A sterile, ready-to-use 80 mg/mL prescription solution. Its inactive ingredients, storage rules and handling instructions were all reviewed as part of the approval.

A VIAL LABELLED “SS-31”

Freeze-dried powder mixed up by a research vendor. Identity, strength, inactive ingredients, sterility and shelf stability fall outside that reviewed evidence package.

WHY THIS MATTERS

Now that an approved elamipretide product exists, those handling instructions cannot simply be transferred across. A vial labelled “SS-31” from outside that system should not be assumed to be the same thing.

13 Evidence Summary

“SS-31 repairs mitochondria”	PARTLY TRUE, TOO LITERAL	Real cardiolipin-targeted biology and real improvement in function. Permanent rebuilding is not established.
Tiredness or brain fog means damaged mitochondria	NOT A DIAGNOSIS	Those symptoms are far too general; a real assessment is much more involved. [16,17]
Feeling better proves damage was repaired	NOT ESTABLISHED	How you respond to SS-31 is not a validated diagnostic test.
Feeling worse means “deep repair”	NO HUMAN EVIDENCE	No trial describes a repair crash or cleanup phase.
SS-31 must come before NAD+ or MOTS-c	NEVER TESTED	The machine-and-fuel analogy is reasoning about mechanism, not a tested human sequence.
SS-31 can change cell energy output	BORDERLINE HUMAN SIGNAL	Energy output improved right away in selected older adults with measurably low function, in a small study with a borderline result. [6]
SS-31 reliably improves tiredness or endurance	MIXED TO NEGATIVE	Small hints were not confirmed in the 218-person MMPOWER-3 trial. [8,9]
FDA approval proves general mitochondrial repair	NO	The approval is for muscle strength in Barth syndrome at 30 kg and above, under accelerated approval. [1,2]
4-8 weeks, then “repair complete”	UNVALIDATED	No human milestone supports this cycle.
5-on / 2-off, morning or pre-workout timing	RULED OUT	The drug’s absorption and clearance give no basis for weekend breaks or workout timing. [1,3]
A “sensible” wellness dose	DOES NOT EXIST	Only 4 mg and 40 mg have been given by injection in human trials, both in trials that missed their primary endpoints. Nothing in between has been studied. [1,9,10]
Heart, kidney or brain repair	NOT BROADLY ESTABLISHED	Human results are condition-specific and mixed; the kidney evidence is preliminary. [10-12]
Anti-aging or longer life	NOT ESTABLISHED	No human trial has measured lifespan or years of healthy life. [6]

Conclusion

WHAT IS REAL

SS-31 is a genuine cardiolipin-targeted mitochondrial drug, with a narrow FDA-approved use, real measurable activity in humans and years of clinical development behind it.

WHAT IS BEING ADDED ONLINE

A home diagnosis of “broken mitochondria,” guaranteed energy, a deep-repair crash, mandatory SS-31-first sequencing, fixed repair cycles, and broad anti-aging or organ-repair claims.

The practical bottom line

The online repair story starts with real biology and then stretches it into diagnoses and protocol rules the human trials have never established. Asking whether SS-31 affects mitochondria is the wrong question, because it does. The better question is whether a particular person has a mitochondrial problem that this drug has been shown to improve.

14 Sources Used for This Guide

- 1 U.S. FDA. **Forzinity (elamipretide) Prescribing Information**. Initial U.S. approval 2025. Indication, 40 mg once-daily SC dose, renal adjustment, safety, formulation and administration.
- 2 U.S. FDA. **Drug Trials Snapshot: Forzinity**. Pivotal 12-person Barth syndrome trial, original walk/fatigue endpoints, muscle-strength data and adverse reactions.
- 3 U.S. FDA. **Integrated Review, NDA 215244 (2025)**. Pharmacology, pharmacokinetics, evidence review and accelerated-approval reasoning.
- 4 Thompson WR, et al. **Genetics in Medicine**. 2021;23:471-478. Randomized crossover trial and open-label extension in Barth syndrome. PMID 33077895.
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- 6 Roshanravan B, et al. **PLoS One**. 2021;16:e0253849. Randomized older-adult study: 120 screened, 39 randomized for low mitochondrial function; acute ATPmax response and fatigue-resistance testing. PMID 34264994.
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- 17 Parikh S, et al. **Genet Med**. 2015/2016. Diagnosis and management of mitochondrial disease: Mitochondrial Medicine Society consensus statement.
- 18 **Molecular Biology of the Cell / NCBI Bookshelf**. NAD+ and NADH as electron-carrying redox coenzymes in cellular metabolism.
- 19 U.S. FDA **Accelerated Approval Program**. Ongoing Forzinity postmarketing requirement for a randomized confirmatory trial.

Community sources reviewed

These sources record what people are being told online. They are not used as evidence that the claims are true.

- C1 **PeptPath**, "Repair First, Optimize Second: The Smart Way to Stack SS-31, MOTS-c & NAD+" (June 26, 2026). Explicit repair-first sequencing.
- C2 **Reddit / r/PeptideGuide**, "Running MOTS-c and SS-31 at the same time" (Apr. 8, 2026). Includes the claim that a strong SS-31 response means the mitochondria were likely damaged and are now repaired.
- C3 **Alpha Peptide Research Labs, SS-31 page**. Uses the exact car analogy: NAD+ as fuel, MOTS-c as performance upgrade, SS-31 as the mechanic who fixes the engine.
- C4 **Reddit / r/Biohackers**, "SS-31 exhaustion, fatigue even more brain fog" (Mar. 3, 2026). Worsening fatigue interpreted as the peptide "repairing" damage.
- C5 **Reddit / r/Biohacking**, "Low energy on SS-31" (Aug. 19, 2026). Includes the "deep mitochondrial cleanup" explanation for early fatigue.
- C6 **Reddit / r/Biohacking**, "SS-21 Questions" (June 19, 2026). Community phrasing: SS-31 mechanic, NAD fuel, MOTS-c turbo; "fix things before you rev them up."
- C7 **Reddit / r/Biohacking**, "MOTS-c + NAD+ without SS-31" (Apr. 19, 2026). User reports being told not to run NAD+/MOTS-c without SS-31 repair first.
- C8 **Peptide Supermarket**, "Why Most People Use MOTS-C Wrong" (2026). Commercial repair-first cycle: SS-31 + NAD+ first, then MOTS-c, followed by time off.
- C9 **Peptide Dosing Protocols, SS-31 protocol (2026)**. Lists 5 mg/day as a common anecdotal cluster, with 1 mg/day low-support and 10-20 mg/day higher community ranges.
- C10 **The Peptide Catalog, SS-31 dosing guide (2026)**. Documents a 500 mcg daily, 5-on/2-off, 8-week community protocol and contrasts it with much higher clinical doses.
- C11 **Advance Peptides Canada, SS-31 dosing protocol (2026)**. Community guide using 500 mcg daily initially, then 1-2 mg/day, 5-on/2-off; max 5 mg in that guide.
- C12 **PeptideDosages.com, SS-31 protocol (2026)**. Educational page listing 5-10 mg SC daily as typical, with higher 15-20 mg/day protocols.