PEPTIDE LAB · EPISODE 15 · FREE GUIDE

The bottle file

MOTS-c through the 3-M check: what was tested in mice, what was tested in people, and who calls it "exercise in a bottle".



For learning only, not medical advice. Talk to a doctor first.

Why I made this file

- I take three peptides today: retatrutide, Semax and Selank.
- I'm thinking of adding MOTS-c, sold online as "exercise in a bottle". I haven't started it.
- Before I try anything, I check the evidence first. This file is that check.

No doses, no sources, nothing for sale. I'm not a doctor. Don't copy me.

My story · n = 1

The 3-M check

Use it on any "miracle" peptide.

◌ Theory: my own tool, not a medical test

M	The question	What to look for
Mice	Animals or people?	Human trials with published results, not mouse studies
Money	Who sells it? Who paid to test it?	Who named it, who profits, who funded the studies
Medals	Banned in sport?	The WADA Prohibited List

What MOTS-c is

- A small peptide, 16 amino acids long, made from DNA inside your mitochondria, your cells' power plants.
- Your body already makes it. It's measured in human blood and muscle.
- Found in 2015 by a team at USC. In mice, its main target looks like muscle.
- The FDA says "MOTS-c" is a common name, and different salts and versions are sold under it. Two vials with the same label may not hold the same thing.

● **Proven: Lee et al., Cell Metabolism 2015; FDA briefing, July 2026**

The good news: your body makes it

Small studies, and they don't all agree. The safe claim: one bike ride raised it in muscle, in one small study.

◐ **Reported: Reynolds 2021; von Walden 2021; 2022 athlete study**

Study	Who	What happened
One bike ride, 2021	10 young men	Up about 12 times in the thigh muscle; in the blood it barely rose and was back to normal in 4 hours
45 minutes of cycling, 2021	30 adults	Only a trend in the blood, not significant
Athletes vs non-athletes, 2022	105 people	Trained athletes had less in the blood, not more

M1 - Mice

- **The diet study (2015):** male mice on a high-fat diet, injected daily for 8 weeks, gained much less fat. On normal food it "had no effect on body weight". It prevented gain; it didn't cause weight loss.
- **The running study (2021):** old male mice treated for 2 weeks ran 2 times longer on a treadmill.
- **Lifespan:** only a trend (median +6.4%), not significant. The authors say larger studies are needed.
- Male mice only, and no human version of these tests.

○ Animal or lab: Lee 2015; Reynolds 2021

In people? Zero.

- No trial of MOTS-c itself in people has published results.
- The FDA searched the medical literature in 2026 and "did not identify clinical studies" of giving it to people.
- One test-tube study found it breaks down quickly in human blood. The FDA asks whether an injection can even reach useful levels.

● Proven: FDA briefing, July 2026; Europe PMC and ClinicalTrials.gov searches, 24 Oct 2026

The only version tested in people

A company's modified copy, CB4211. Not MOTS-c itself. Its trial enrolled 88 people in all. The liver test was 20 adults with fatty liver, 4 weeks, all living in a clinic.

- The company's own words: both groups had "substantial reductions" in liver fat.
- The trial was paused in 2018 for bumps at the injection site.
- No peer-reviewed paper of these results that I could find.

◐ Reported: CohBar results release, 10 Aug 2021; SEC filings

	The drug (11 people)	Placebo (9 people)
Liver fat change (points)	down 5.03	down 4.88
Reached a 30% liver fat drop	36%	33%

M2 - Money

- **The nickname:** the 2015 and 2021 research releases never said "exercise in a bottle". It shows up on sellers' and clinics' pages. It's a sales line, not a scientist's phrase.
- **Who profited:** the scientists who found it co-founded the company built to make it a drug, and said so publicly.
- **How it ended:** in 2023 the company said its formulation wasn't usable and it "intends to commence the process of liquidating and dissolving itself".

● Proven: SEC filings 2023; USC release 2021 · ◐ Reported: the nickname's use online

The US vote (not in the video)

- **FDA's own scientists** recommended not adding MOTS-c to the list of ingredients US pharmacies may compound: no toxicity data and no human studies.
- **The advisers voted anyway, 7 yes, 5 no, 2 abstained**, on 23 July 2026.
- An advisory vote is advice, not approval. MOTS-c is not on the list. As of 25 Oct 2026 the FDA had published no rule, and a separate interim policy on peptides, sent for White House review on 14 Oct, had not been issued. Nothing public says it names MOTS-c.

● Proven: FDA briefing and roster · ◐ Reported: the vote tally (trade press)

M3 - Medals

- In 2008, AICAR was the "exercise in a pill" (a Salk Institute release about mice).
- A blend is banned if any one ingredient is banned. If you're tested, ask your national anti-doping agency.

● Proven: WADA 2026 Prohibited List, unchanged in the 2027 list (in force 1 Jan 2027); Salk Institute, 2008

	WADA 2026 Prohibited List
MOTS-c	Named, section S4.4.1, banned at all times
AICAR	Same line, same section

What nobody knows yet

- **Immune reactions:** the FDA says it "may pose significant risk for immunogenicity" when injected.
- **Purity:** no impurity or toxin test results in the FDA's file.
- **Safety studies:** no toxicity, reproduction or cancer studies.
- **Side-effect reports:** zero, but the FDA notes compounders "generally do not report" them. Zero reports doesn't mean safe.
- **What's in a vial:** no testing data for grey-market MOTS-c.

● Proven: FDA safety-risk page, April 2026; FDA briefing, July 2026

The trial I don't count

	What the registry shows
The listing	One MOTS-c trial, 120 adults, 12 weeks
Its sponsor	Listed 8 trials, Feb to Apr 2026
What they cover	MOTS-c, BPC-157, TB-500, GHK-Cu, MT-II, tesamorelin, tirzepatide, retatrutide
The red flags	Almost all due 14 Feb 2027. One is titled "(Mock Study)"

So I don't count it. In people, trials of MOTS-c itself with results: still zero.

● Proven: ClinicalTrials.gov records, checked 25 Oct 2026 · ○ Theory: my reading of the red flags

Where I stand

- **Am I trying it? Not yet.**
- No study has tested MOTS-c with retatrutide, Semax or Selank.
- Both retatrutide and MOTS-c (in mice) push blood sugar down. Nobody has tested the pair.
- If I ever do, it's one change at a time, measured before and after.

My story · n = 1 · ◌ Theory: the blood sugar overlap

Before you talk to your doctor

Is it approved where I live, and what's actually in the vial?

_____

Which of the things I already take could overlap with it, for example on blood sugar?

_____

What will we measure before I start, and what counts as working or harming?

_____

I compete in sport. Is it on the banned list?

_____

Watch next

Can you mix peptides? Episode 14 and its free guide, the stack file.

I'm Ly. I take three peptides and I'm thinking about a fourth, so I checked it first. Your body already makes MOTS-c. So far, only the mice got the gains.

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Follow Ly for Peptide Lab.