

COMPOUND GUIDE

Semax — ACTH-Derived Nootropic Peptide

7-AA peptide · Russian vital drug · Intranasal (primary) or SubQ

Quick Start

WHAT IT IS

Semax is a synthetic 7-amino acid peptide (Met-Glu-His-Phe-Pro-Gly-Pro) derived from the ACTH(4-10) fragment of adrenocorticotrophic hormone. Unlike ACTH, it does not stimulate cortisol or steroidogenesis. It was developed by the Institute of Molecular Genetics of the Russian Academy of Sciences and is included on Russia's vital and essential drugs list for stroke and cerebral ischaemia.

RESEARCH DOSING

Intranasal (primary): ~0.6–1.5 mg/day split into 2–3 intranasal applications. **SubQ:** Sub-milligram doses per administration; less common. Intranasal delivery bypasses blood-brain barrier limitations and is the route most studied in Russian clinical research. Half-life: very short (<10 min) but downstream effects (BDNF upregulation) persist hours.

REGULATORY STATUS

Russia: vital and essential drug (stroke/ischaemia indication). FDA: removed from 503A Category 2 effective April 23, 2026; PCAC review scheduled July 24, 2026 for cerebral ischaemia and trigeminal neuralgia indications. FDA has flagged immunogenicity risk from impurities/aggregation. Not approved in US. For research purposes only.

Dosing Protocol

ROUTE	DOSE	FREQUENCY	DURATION	NOTES
Intranasal	0.6–1.5 mg total/day	2–3 administrations/day	14–28 day courses + washout	Favoured route in Russian clinical research; crosses nasal mucosa to brain
SubQ	0.1–0.5 mg	Once or twice daily	4 weeks on, 4 off	Western research context; less studied than intranasal

Supplies & Reconstitution (SubQ)

Reconstitution Math — 11 mg Vial (3 mL BAC)

TARGET DOSE	UNITS (U-100)	DOSES / VIAL
100 mcg	2.7 units	110
200 mcg	5.5 units	55
300 mcg	8.2 units	36.7
500 mcg	13.6 units	22
600 mcg	16.4 units	18.3
1000 mcg	27.3 units	11

Reconstitute the 11 mg vial with 3.0 mL bacteriostatic water → 3.67 mg/mL (3,667 mcg/mL). U-100 syringe = 100 units per mL. Swirl gently — do not shake. Refrigerate 2–8°C.

Reconstitution Steps

01

Warm the vial

Allow vial to reach room temperature from freezer (10–15 min).

02

Swab and draw

Alcohol swab both vial tops. Draw required BAC water volume.

03

Inject along the wall

Run BAC water slowly down the inside wall of the peptide vial.

04

Swirl gently

Swirl until clear. Do not shake. Solution should be colourless.



Mechanism of Action

BDNF / TRKB SIGNALLING

Upregulates BDNF (Brain-Derived Neurotrophic Factor) expression and activates TrkB (BDNF receptor) signalling in hippocampus and prefrontal cortex. BDNF/TrkB is the primary proposed mechanism for cognitive effects.

MONOAMINE MODULATION

Modulates dopaminergic and serotonergic transmission in limbic and prefrontal regions. Does not stimulate cortisol, ACTH, or steroidogenesis (key distinction from ACTH itself).

NEUROPROTECTION

Alters gene expression in ischaemic brain tissue — particularly genes involved in mitochondrial function, inflammation, and cell survival. Studied in rat middle cerebral artery occlusion (MCAO) models and human stroke studies in Russia.

RESISTANCE TO DEGRADATION

The Pro-Gly-Pro C-terminal extension added to the ACTH(4-7) core sequence significantly increases resistance to enzymatic degradation compared to ACTH fragments, explaining why effects persist beyond the short plasma half-life.



FDA IMMUNOGENICITY CONCERN

The FDA has flagged a potential immunogenicity risk for Semax from aggregation and impurities in compounded preparations. Aggregated peptides can trigger immune responses including antibody formation. This is a compounding-quality issue, not inherent to the pure peptide, but it underscores the importance of sourcing from quality-tested suppliers.



Storage

STATE	TEMPERATURE	DURATION	NOTES
Lyophilised (powder)	–20°C (freezer)	Up to 24 months	Protect from light and moisture; minimise freeze-thaw cycles
Reconstituted (liquid)	2–8°C (refrigerator)	Up to 30 days	Do not freeze after reconstitution; protect from light



DISCLAIMER

This document is an educational research reference only. Semax is not FDA-approved. Published human data is primarily from Russian sources. FDA has flagged immunogenicity concerns for compounded preparations. By purchasing from LA LAB you confirm you are 18+ and that products are for research purposes only.