Semax

Synthetic ACTH Fragment (Nootropic Peptide)

What It Is & What It Does

Semax is a synthetic heptapeptide derived from ACTH(4-10), modified with a Pro-Gly-Pro extension to increase stability and remove the adrenal-stimulating (cortisol-raising) activity of the parent hormone. It has been an approved pharmaceutical in Russia since 1994, sold as a nasal spray for ischemic stroke recovery, cognitive impairment, optic nerve atrophy, and attention deficit.

What The Research Shows

- Gusev et al. (1997): 30 patients with acute hemispheric ischemic stroke received Semax (12mg/day for moderate strokes, 18mg/day for severe strokes) for 5-10 days alongside standard intensive therapy, compared against 80 severity-matched patients on standard therapy alone. Semax accelerated recovery of general cerebral and focal motor deficits, tracked by clinical scales, EEG mapping, and somatosensory evoked potentials.
- Gusev & Martynov et al. (2018): a 110-patient trial (43 men, 67 women, mean age 58) gave Semax 6,000mcg/day intranasally in two 10-day courses, 20 days apart. This elevated plasma BDNF (brain-derived neurotrophic factor) and improved Barthel Index and MRC motor-scale scores over a ~5-month observation period; higher BDNF levels correlated with better outcomes.
- In healthy volunteers, intranasal doses of 600-1,500mcg improved attention, short-term memory, and performance under fatigue and hypoxic stress for 20-24 hours per dose.
- In pediatric/adult attention-deficit populations, 200-600mcg/day over 30-day courses improved concentration, behavioral measures, and EEG normalization; separately, 600-900mcg/day for 10 days showed improved visual acuity and visual field in optic nerve atrophy and glaucomatous optic neuropathy.

Reported Side Effects

- Nasal irritation with intranasal use
- Headache reported in a minority of users
- Most trial data comes from Russian research groups; independent Western replication is limited despite the compound's long domestic approval history

Regulatory Status

Not FDA-approved in the United States. Approved as a prescription nasal spray in Russia since 1994 for the indications above. Sold in the US research-chemical market for research use only.

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2026 regulatory update

2026 U.S. Regulatory Update

In April 2026, Semax was one of twelve peptides the FDA reinstated to Category 1 (removed from the restricted Category 2 bulk-substances list), separate from its long-standing prescription approval in Russia covered elsewhere in this document.

On July 23-24, 2026, the FDA's Pharmacy Compounding Advisory Committee (PCAC) met to vote on whether seven previously-restricted peptides should be added to the Section 503A Bulk Drug Substances list -- the list that determines what compounding pharmacies can legally prepare from a prescription. This is separate from, and later than, the April 2026 reinstatement to FDA Category 1 covered elsewhere in this document.

On July 24, 2026, PCAC voted 8-5 (one abstention) to recommend Semax for the 503A Bulks List.

A favorable PCAC vote is a recommendation, not a legal change. The FDA is not bound by it, and any formal addition to the 503A Bulks List still requires notice-and-comment rulemaking, a process that can take well over a year. As of this update, none of the peptides discussed below are legal to compound under 503A.