THERAPEUTIC PEPTIDE PROFILE

Semax: Nootropic & Neuroprotector

An authoritative scientific review of its synthetic design, development history, cognitive-enhancing mechanics, and safety profiles.

PART I

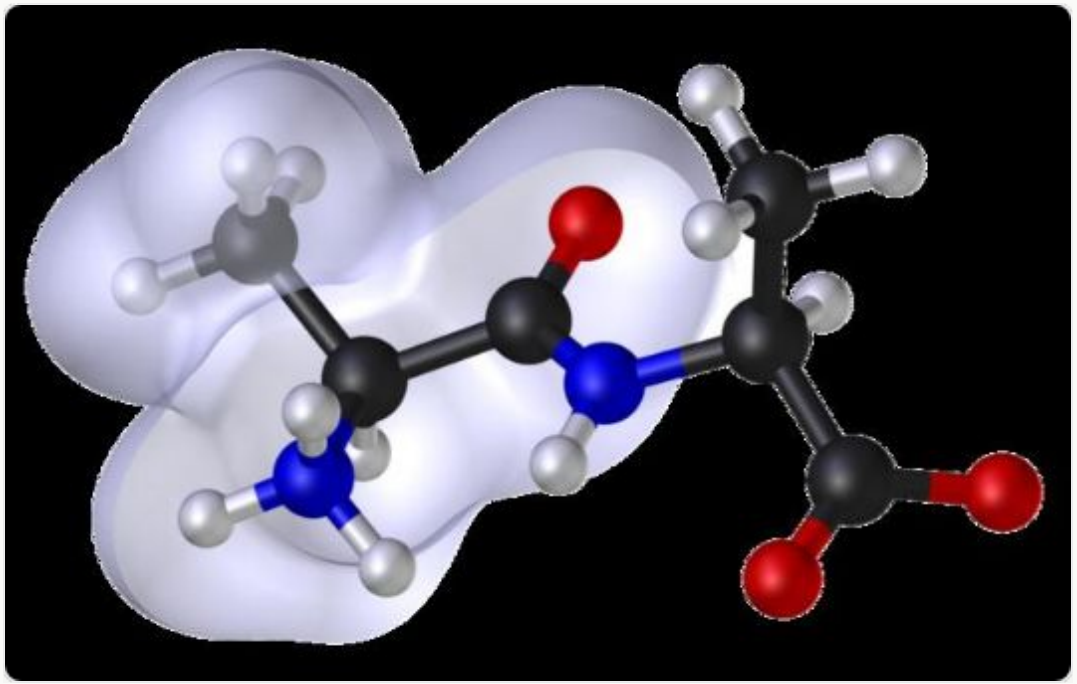
Discovery & Molecular Profile

Introduction to Semax

$C_{37}H_{51}N_9O_{10}S$

Sequence: Met-Glu-His-Phe-Pro-Gly-Pro

- **ACTH(4-7) Fragment:** Derived from the core active sequence of adrenocorticotropic hormone, retaining cognitive activity without systemic steroidal pathways.
- **Peptidase Resistance:** Enhanced with a Pro-Gly-Pro C-terminal extension, elevating tissue stability and extending active biological half-life.
- **Cerebral Pathway:** Actively crosses the nasal mucosa to directly target central nervous system receptors and neural survival networks.



History of Discovery

Soviet Academy Synthesis

Designed and developed in the late **1970s and 1980s** at the **Institute of Molecular Genetics** (Moscow) under the leadership of renowned neurobiologist Igor Ashmarin.

Created initially to enhance pilot attention, focus, and strategic processing under acute stress conditions without standard psychostimulant crash anomalies.

Following rigorous clinical validation, it was officially approved as a prescription drug in Russia in **1994** for cerebrovascular support and neurological trauma.

PART II

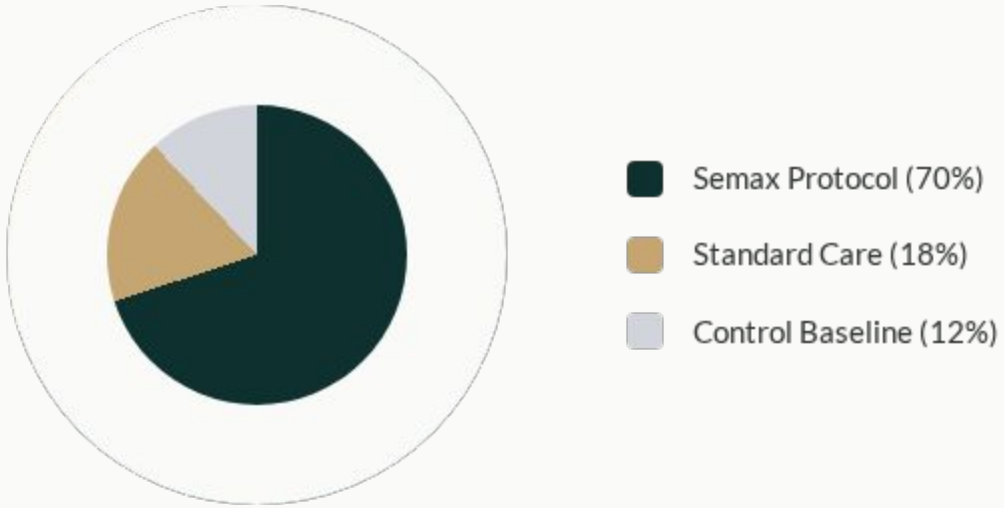
Clinical Uses & Mechanisms

Triple Action Mechanism

A multifaceted approach to neurorestoration:

- **Neurotrophin Surge:** Rapidly upregulates BDNF and NGF expression in the hippocampus and frontal cortex, fostering dendritic arborization.
- **Amine Regulation:** Modulates monoaminergic systems, optimizing dopamine and serotonin signaling to reduce ischemic fatigue.
- **Ischemic Rescue:** Modulates the transcriptome of immune and vascular genes, preventing excessive neuroinflammatory cascades.

Efficacy in Clinical Trials



Ischemic Stroke Recovery

In a controlled clinical trial of 110 patients post-ischemic stroke, Semax courses (6000 mcg/day) significantly accelerated recovery metrics.

BDNF Dynamics: Semax administration persistently elevated serum BDNF levels, correlating directly with improved functional status on the Barthel Index.

The therapy demonstrated pronounced anti-asthenic effects, improving patient spatial learning, alertness, and overall motor rehabilitation times.

Semax vs. Standard Agents

Parametric Target	Semax Peptide	Vasodilators
Mechanism	Direct neurotrophic trigger	Indirect cerebral flow
BDNF Response	Strong baseline surge	Minimal/Undetectable
Hormonal Activity	Completely absent	Varies (None to minimal)
Risk Profile	Ultra-low toxicity index	Systemic pressure drops
Delivery Route	Direct intranasal / SQ	Oral or intravenous

PART III

Administration & Safety

Dosage & Administration

Cognitive Optimization (0.1% Sol.)

Target: Memory, executive function, and focus.

Standard Regimen: 2-3 drops in each nostril, twice daily. Typically structured as a 10 to 14 day course, cycled periodically.

Cerebrovascular Post-Stroke (1.0% Sol.)

Target: Neuroprotection, recovery speed, and stroke rehab.

Clinical Regimen: 3-4 drops in each nostril, 3 to 4 times daily under clinical oversight for acute phase mitigation.

Safety & Adverse Effects

- **Exemplary Tolerability:** Clinical history reveals no chronic toxicity, addictive dependency, or withdrawal syndromes.
- **Local Irritation:** Transient nasal dryness or mucosal irritation can occur during consecutive intranasal administrations.
- **Contraindications:** Relative precautions are recommended for individuals with clinical seizure histories, active psychotic disorders, or during pregnancy.

Evidence

Peptides Have Low Levels of Medical Evidence as large scale clinical trials have not been performed.

*Levels 6, 7 and 8 only