

Semax

Semax is a synthetic heptapeptide developed in Russia as an analogue of the adrenocorticotrophic hormone fragment ACTH(4-7), extended with a Pro-Gly-Pro tail. It is studied for neurotrophic signaling and in models of brain injury.



■ Hydrophobic ■ Acidic ■ Basic ■ Polar ■ Gly, Pro, Cys ■ Non-standard

Length	7 residues
Formula	$C_{37}H_{51}N_9O_{10}S$
Average mass	813.92 g/mol
Monoisotopic mass	813.3480 Da
Evidence	Early clinical studies
US status	Not FDA-approved; PCAC recommended 503A listing (July 2026), FDA action pending
WADA	Check the current Prohibited List

ACTH(4–7) extended with Pro-Gly-Pro.

Expected ions (monoisotopic)

$[M+H]^+$	$[M+2H]^{2+}$	$[M+3H]^{3+}$	$[M+4H]^{4+}$
814.3552	407.6813	272.1233	204.3443

What the COA should show

A semax certificate of analysis should confirm identity by mass spectrometry against the expected mass shown on this page and report HPLC purity with a chromatogram. The key compound-specific pitfall is methionine oxidation: the sulfoxide appears as a +16 Da species and often elutes slightly earlier on reverse-phase HPLC, so the MS data should address it. The certificate should also make clear whether the material is plain semax or an N-acetyl or C-amidated variant, and should report the salt form and net peptide content.

Storage and stability

Store lyophilized semax sealed at -20 °C or below, protected from light and moisture. Because the N-terminal methionine oxidizes readily, minimize exposure to air, avoid prolonged storage in solution, and consider using degassed buffers for solution work. Allow vials to warm to room temperature before opening, aliquot any prepared solution, and avoid repeated freeze-thaw cycles.

Full entry, references and latest research: <https://peptidewiki.net/compounds/semax/>
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