

Certificate of Analysis

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Product Name: Semax
CAS Number: 80714-61-0

Catalog No.: 7712 **Batch No.:** 1

1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula: C₃₇H₅₁N₉O₁₀S
Batch Molecular Weight: 813.93
Physical Appearance: White lyophilised solid
Counter Ion: TFA
Solubility: Soluble to 2 mg/ml in water
Storage: Store at -20°C

2. ANALYTICAL DATA

HPLC: Shows 96.1% purity
Mass Spectrum: Consistent with structure

3. AMINO ACID ANALYSIS DATA

Amino Acid Theoretical		Actual		Amino Acid Theoretical		Actual	
Ala				Lys			
Arg				Met	1.00		0.97
Asx				Phe	1.00		1.01
Cys				Pro	2.00		2.05
Glx	1.00	1.00		Ser			
Gly	1.00	1.01		Thr			
His	1.00	0.97		Trp			
Ile				Tyr			
Leu				Val			

Caution - Not Fully Tested • Research Use Only • Not For Human or Veterinary Use

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CAS Number: 80714-61-0

Description:

Semax is a synthetic heptapeptide analog of adrenocorticotrophic hormone (ACTH) (4-10). It increases hippocampal BDNF and TrkB expression and levels in vivo. Semax regulates cortical nitric oxide (NO) and lipid peroxidation and is neuroprotective in a rat model of global ischemia. Semax sequesters copper ions and interacts directly with A β :Cu²⁺ oligomers leading to reduced amyloid β protein (A β) aggregation and fibrillogenesis. Semax increases viability of d-SH-SY5Y cells pre-incubated with A β ₁₋₄₂ oligomers.

Physical and Chemical Properties:

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Batch Molecular Weight: 813.93

Physical Appearance: White lyophilised solid

Storage: Store at -20°C

Solubility & Usage Info:

Soluble to 2 mg/ml in water

This product is supplied as a lyophilized solid and may be very hard to visualize. Solutions should be made by adding solvent directly to the vial. The vial should then be vortexed vigorously to ensure the product has completely dissolved.

Counter Ion: TFA

Stability and Solubility Advice:

Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).

Peptides in solution are much less stable than in lyophilized form. This is especially true for peptides whose sequences contain amino acids such as Cys, Met, Trp, Asn, Gln, and N-terminal Glu.

Therefore we recommend storing peptides in solution for as short a time as possible. Avoid repeated freeze thaw cycles by dividing the peptide solution into aliquots and storing the aliquots at -20°C. Any portion of an aliquot unused after thawing should be discarded.

Peptides stored in solution can occasionally be susceptible to bacterial degradation. We recommend using sterile solutions or passing the peptide solution through a 0.2 μ m filter to remove potential bacterial contamination whenever possible.

References:

Sciacca et al (2022) Semax, a synthetic regulatory peptide, affects copper-induced Abeta aggregation and amyloid formation in artificial membrane models. *ACS Chem. Neurosci.* **13** (4) 486. PMID: 35080861.

Dolotov et al (2006) Semax, an analog of ACTH(4–10) with cognitive effects, regulates BDNF and trkB expression in the rat hippocampus. *Brain Res.* **1117** (1) 54. PMID: 16996037.

Bashkatova (2001) Novel synthetic analogue of ACTH 4-10 (Semax) but not glycine prevents the enhanced nitric oxide generation in cerebral cortex of rats with incomplete global ischemia. *Brain Res.* **894** (1) 145. PMID: 11245825.

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