

# Certificate of Analysis

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**Product Name:** Helianorphin-19

**Catalog No.:** 7541

**Batch No.:** 1

CAS Number: 2883653-86-7

## 1. PHYSICAL AND CHEMICAL PROPERTIES

<b>Batch Molecular Formula:</b>	C <sub>81</sub> H <sub>132</sub> N <sub>26</sub> O <sub>16</sub> S <sub>2</sub>
<b>Batch Molecular Weight:</b>	1790.21
<b>Physical Appearance:</b>	White lyophilised solid
<b>Counter Ion:</b>	TFA
<b>Solubility:</b>	Soluble to 2 mg/ml in water
<b>Storage:</b>	Store at -20°C
<b>Peptide Sequence:</b>	<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">             Cyclo(Cys-Tyr-Gly-Gly-Phe-Leu-Arg-Arg-Cys-Ile-Arg-Pro-Lys-Leu-Lys)         </div>

## 2. ANALYTICAL DATA

<b>HPLC:</b>	Shows 98.7% purity
<b>Mass Spectrum:</b>	Consistent with structure

## 3. AMINO ACID ANALYSIS DATA

Amino Acid Theoretical Actual			Amino Acid Theoretical Actual		
Ala			Lys	2.00	2.00
Arg	3.00	2.97	Met		
Asx			Phe	1.00	1.01
Cys	2.00	Not Detected	Pro	1.00	1.00
Glx			Ser		
Gly	2.00	1.99	Thr		
His			Trp		
Ile	1.00	0.89	Tyr	1.00	1.01
Leu	2.00	2.01	Val		

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

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**Catalog No.:** 7541

**1**

CAS Number: 2883653-86-7

**Description:**

Helianorphan-19 is a high affinity, potent and selective G protein-biased  $\kappa$ -opioid receptor (KOR) agonist ( $K_i = 25$  nM;  $EC_{50} = 45$  nM). Helianorphan-19 exhibits approximately 200-fold selectivity for KOR over  $\mu$  and  $\delta$ -opioid receptors. In vivo Helianorphan-19 shows potent peripheral analgesic efficacy in a mouse model of visceral pain without affecting motor coordination/sedation.

**Physical and Chemical Properties:**

Batch Molecular Formula:  $C_{81}H_{132}N_{26}O_{16}S_2$

Batch Molecular Weight: 1790.21

Physical Appearance: White lyophilised solid

**Peptide Sequence:**

Cyclo(Cys-Tyr-Gly-Gly-Phe-Leu-Arg-Arg-Cys-Ile-Arg-Pro-Lys-Leu-Lys)

**Storage:** Store at  $-20^{\circ}C$

**Solubility & Usage Info:**

Soluble to 2 mg/ml in water

This product is supplied in lyophilized form. It may appear as a solid, gel or film and 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  $45-60^{\circ}C$  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  $-20^{\circ}C$ . 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  $0.2 \mu m$  filter to remove potential bacterial contamination whenever possible.

**References:**

**Muratpahić et al** (2021) Design of a stable cyclic peptide analgesic derived from sunflower seeds that targets the  $\kappa$ -opioid receptor for the treatment of chronic abdominal pain. *J.Med.Chem.* **64** 9042. PMID: 34162205.

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