

# Certificate of Analysis

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**Product Name:** CTAP  
CAS Number: 103429-32-9

**Catalog No.:** 1560 **Batch No.:** 11

## 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:** C<sub>51</sub>H<sub>69</sub>N<sub>13</sub>O<sub>11</sub>S<sub>2</sub>  
**Batch Molecular Weight:** 1104.32  
**Physical Appearance:** White lyophilised solid  
**Net Peptide Content:** 79%  
**Counter Ion:** TFA  
**Solubility:** Soluble to 1 mg/ml in water  
**Storage:** Store at -20°C  
**Peptide Sequence:**

D-Phe-Cys-Tyr-D-Trp-Arg-Thr-Pen-Thr-NH<sub>2</sub>

## 2. ANALYTICAL DATA

**HPLC:** Shows 98.4% purity  
**Mass Spectrum:** Consistent with structure

## 3. AMINO ACID ANALYSIS DATA

Amino Acid Theoretical		Actual		Amino Acid Theoretical		Actual	
Ala				Lys			
Arg	1.00	1.00	Met				
Asx			Phe	1.00	1.00		
Cys	1.00	0.31	Pro				
Glx			Ser				
Gly			Thr	2.00	1.12		
His			Trp	1.00	0.08		
Ile			Tyr	1.00	0.98		
Leu			Val				

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

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**Catalog No.:** 1560

**11**

CAS Number: 103429-32-9

**Description:**

CTAP is a potent and selective  $\mu$  opioid receptor antagonist ( $IC_{50}$  = 3.5 nM). Displays > 1200-fold selectivity over  $\delta$  opioid and somatostatin receptors. Brain penetrant and active in vivo.

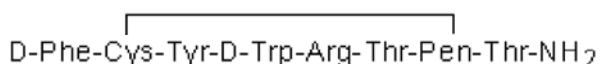
**Physical and Chemical Properties:**

Batch Molecular Formula:  $C_{51}H_{69}N_{13}O_{11}S_2$

Batch Molecular Weight: 1104.32

Physical Appearance: White lyophilised solid

**Peptide Sequence:**



**Storage:** Store at -20°C

**Solubility & Usage Info:**

Soluble to 1 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.

**Net Peptide Content:** 79% (Remaining weight made up of counterions and residual water).

**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  $\mu$ m filter to remove potential bacterial contamination whenever possible.

**References:**

**Abbruscato et al** (1997) Blood-brain barrier permeability and bioavailability of a highly potent and  $\mu$ -selective opioid receptor antagonist, CTAP: comparison with mor. *J.Pharmacol.Exp.Ther.* **280** 402. PMID: 8996221.

**Kramer et al** (1989) Novel peptidic mu opioid antagonists: pharmacologic characterization *in vitro* and *in vivo*. *J.Pharmacol.Exp.Ther.* **249** 544. PMID: 2566679.

**Pelton et al** (1986) Design and synthesis of conformationally constrained somatostatin analogues with high potency and specificity for  $\mu$  opioid receptors. *J.Med.Chem.* **29** 2370. PMID: 2878079.

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