

Certificate of Analysis

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Product Name: RVG29-Cys

Catalog No.: 8903

Batch No.: 1

CAS Number: 1404289-25-3

1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula: C₁₄₄H₂₂₂N₄₄O₄₄S₃
Batch Molecular Weight: 3369.79
Physical Appearance: White lyophilised solid
Counter Ion: TFA
Solubility: Soluble to 1 mg/ml in water
Storage: Store at -20°C
Peptide Sequence: Tyr-Thr-Ile-Trp-Met-Pro-Glu-Asn-Pro-Arg-Pro-Gly-Thr-Pro-Cys-Asp-Ile-Phe-Thr-Asn-Ser-Arg-Gly-Lys-Arg-Ala-Ser-Asn-Gly-Cys

2. ANALYTICAL DATA

HPLC: Shows 96.8% purity
Mass Spectrum: Consistent with structure

3. AMINO ACID ANALYSIS DATA

| Amino Acid Theoretical Actual | | | Amino Acid Theoretical Actual | | |
|-------------------------------|------|--------------|-------------------------------|------|--------------|
| Ala | 1.00 | 1.01 | Lys | 1.00 | 1.01 |
| Arg | 3.00 | 2.99 | Met | 1.00 | 1.05 |
| Asx | 4.00 | 4.00 | Phe | 1.00 | 0.98 |
| Cys | 2.00 | Not Detected | Pro | 4.00 | 3.99 |
| Glx | 1.00 | 1.01 | Ser | 2.00 | 2.03 |
| Gly | 3.00 | 2.99 | Thr | 3.00 | 3.04 |
| His | | | Trp | 1.00 | Not Detected |
| Ile | 2.00 | 1.96 | Tyr | 1.00 | 1.03 |
| Leu | | | Val | | |

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

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CAS Number: 1404289-25-3

Description:

RVG29-Cys is a peptide derived from rabies virus glycoprotein (RVG) able to specifically bind on the nicotinic acetylcholine receptors (nAChR) present on neuronal cells. RVG29-Cys can be used to functionalize LNPs via thiol-maleimide click chemistry for targeting nAChR present on blood-brain barrier (BBB). mRNA LNPs functionalized with RVG29-Cys shows improved transfection efficiency in cultured brain endothelial and neuronal cells, and in vivo, after systemic administration in mice.

Physical and Chemical Properties:

Batch Molecular Formula: C₁₄₄H₂₂₂N₄₄O₄₄S₃

Batch Molecular Weight: 3369.79

Physical Appearance: White lyophilised solid

Peptide Sequence:

Tyr-Thr-Ile-Trp-Met-Pro-Glu-Asn-Pro-Arg-
Pro-Gly-Thr-Pro-Cys-Asp-Ile-Phe-Thr-Asn-
Ser-Arg-Gly-Lys-Arg-Ala-Ser-Asn-Gly-Cys

Storage: Store at -20°C

Solubility & Usage Info:

Soluble to 1 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°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 µm filter to remove potential bacterial contamination whenever possible.

References:

Han *et al* (2025) Peptide-functionalized lipid nanoparticles for targeted systemic mRNA delivery to the brain. *Nano Lett.* **25** 800. PMID: 39688915.

Liu *et al* (2009) Brain-targeting gene delivery and cellular internalization mechanisms for modified rabies virus glycoprotein RVG29 nanoparticles. *Biomaterials* **30** 4195. PMID: 19467700.

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