Product Data Sheet

Product Name: Cys(Npys)-(Arg)9 acetate
Cat. No.: GC78895

Chemical Properties

Cas. No.			
Formula	$C_{62}H_{118}N_{40}O_{12}S_2 \cdot xC_2H_4O_2$	M.Wt	1679.99
Solubility		Storage	Sealed storage, away from moisture
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure			

Background

Cys(Npys)-(Arg)9 acetate is a synthetic cationic cell-penetrating peptide with a reversible thiol-reactive nitropyridyl (Npys) group. Cys(Npys)-(Arg)9 acetate efficiently mediates the internalization and delivery of various " cargo " such as proteins and antibodies by forming reversible disulfide bonds with surface-exposed cysteine residues. Cys(Npys)-(Arg)9 acetate endows TALEN proteins

with cell-penetrating activity, enabling gene knockout in mammalian cells and protein transduction in wheat microspores. Cys(Npys)-(Arg)9 acetate can be conjugated with antibodies to form cationized IgG for enhancing endosomal escape of oligonucleotides, or form siRNA delivery complexes. When the molar ratio of Cys(Npys)-(Arg)9 acetate to loaded molecules is higher than 1:1, it exerts certain cytotoxic effects on cells. Cys(Npys)-(Arg)9 acetate can be used in studies related to oral squamous cell carcinoma and HIV infection [1] [2] [3] [4] [5].

In Vitro, Upon conjugation with CCR5-targeting TALEN protein, Cys(Npys)-(Arg)9 acetate induces CCR5 gene knockout in HeLa cells at a frequency of approximately 16% when delivered at a peptide-to-protein ratio of 8:1 or 15:1 (1 μM; 2 hr)[1]. After conjugation of Cys(Npys)-(Arg)9 acetate to TALEN proteins targeting BMPR1A, delivery at peptide-to-protein ratios of 1:1, 2:1 or 4:1 (1 μM; 2 h) induces knockout of the BMPR1A gene in HEK 293 cells, with a maximum frequency of up to 4%[1]. Cys(Npys)-(Arg)9 acetate-conjugated TALEN proteins do not reduce the viability of HeLa cells or HEK 293 cells[1].

References:
[1]. Liu J, et al. Cell-penetrating peptide-mediated delivery of TALEN proteins via bioconjugation for genome engineering. PLoS One. 2014;9(1):e85755. Published 2014 Jan 20.
[2]. Yamayoshi A, et al. Development of Antibody-Oligonucleotide Complexes for Targeting Exosomal MicroRNA. Pharmaceutics. 2020;12(6):545. Published 2020 Jun 12.
[3]. Kim SS, et al. Antibody-mediated delivery of siRNAs for anti-HIV therapy. Methods Mol Biol. 2011;721:339-353.
[4]. Sinha R K, et al. TALE protein mediated overexpression of embryogenesis related marker genes in wheat microspores[J]. South African Journal of Botany, 2021, 138: 50-56.
[5]. Bilichak A, et al. Intracellular delivery of fluorescent protein into viable wheat microspores using cationic peptides. Front Plant Sci. 2015;6:666. Published 2015 Aug 28.