DC60924 | AA76-lipid

Instructions for Use

AA76-lipid is a dipeptide-modified ionizable lipid, engineered with an arginine-histidine motif, that constitutes the core of the pancreatic-targeted AH-LNP delivery platform. Its chemical architecture, characterized by an externally positioned and C-terminally modified arginine residue, was identified through systematic screening as the optimal structure for function. Upon intraperitoneal administration, AH-LNPs formulated with this lipid interact with proteins in the peritoneal fluid, undergoing dynamic assembly into significantly larger complexes. This substantial increase in size (from ~100 nm to over 360 nm) exploits a physical targeting principle termed the Capsule-filter-mediated pancreatic targeting (CAMP) mechanism. Large particles are selectively filtered out by the dense capsules of other abdominal organs, leading to preferential enrichment in the capsule-deficient pancreas. Concurrently, the arginine-histidine motif directs the formation of a distinct protein corona enriched with apolipoproteins (e.g., APOE, APOB-100), which mimics very-low-density lipoprotein (VLDL). This corona enables efficient cellular internalization primarily into pancreatic stromal cells via VLDL receptor (VLDLR)-mediated endocytosis, known as the VMP pathway. The synergistic integration of the physical CAMP targeting and the biological VMP uptake mechanisms empowers AA76-lipid-based AH-LNPs to achieve highly specific, potent, and sustained mRNA delivery and gene editing within the pancreas across multiple species, demonstrating exceptional therapeutic efficacy in models of both autoimmune pancreatitis and pancreatic cancer.

Product information

CAS No.	Not available
Chemical Name	AA76-lipid
Formula	C55H101N9O6
M.Wt	984.45
Purity	ELSD-HPLC>95%
Storage	Original product: up to 1 year under the storage conditions stated on the vial, kept tightly sealed. Stock solutions: aliquots at -20°C, generally up to one month.
Shipping condition	Ships from Shanghai. Pure lipid is stable during ice-pack transport.

Formulation & study context

Literature values apply to the cited study only. Administration routes describe research, not clinical instructions.

A complete product-specific formulation has not been verified. No standard ratio is substituted.

N/P ratio	Not reported in the verified record
Cargo	Not available in the verified record
Administration route	Not available in the verified record
Animal model	Not available in the verified record

Formulation process	Not available in the verified record

N/P is a nitrogen-to-phosphate molar ratio. Lipid:cargo mass ratio is a different quantity and must not be used as N/P.

Stock-solution preparation table

Calculated using product-page MW: 984.45 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	10.158 mL	2.032 mL	1.016 mL
25 mg	25.395 mL	5.079 mL	2.539 mL
50 mg	50.790 mL	10.158 mL	5.079 mL
100 mg	101.580 mL	20.316 mL	10.158 mL
250 mg	253.949 mL	50.790 mL	25.395 mL

Volume (mL) = mass (mg) × 1000 / [MW (g/mol) × concentration (mM)]. Mathematical conversions only; not measured solubility. Confirm solvent compatibility and the exact material before preparation.

Handling & storage

Provided that storage conditions are as stated on the product vial and the vial is kept tightly sealed, the product can be stored for up to 1 year.

Wherever possible, prepare and use solutions on the same day. If stock solutions must be prepared in advance, store them as aliquots in tightly sealed vials at -20°C. Generally, these will be usable for up to one month.

Before use, and prior to opening the vial, allow the product to equilibrate to room temperature for at least 1 hour.

References

[1]. Lei J, et al. Pancreatic-targeted lipid nanoparticles based on organ capsule filtration. Nature. Published online February 25, 2026.