DC60910 | CL15F 7-5

Instructions for Use

CL15F 7-5 is a piperidine-based ionizable lipid from the CL15F library, characterized by a symmetrically branched tail structure with a 7-carbon main chain and a 5-carbon side chain. This moderate tail length positions it between short-tail (e.g., CL15F 6-4) and long-tail (e.g., CL15F 14-12) variants, granting it a unique balance in mRNA delivery properties. Its LNPs exhibit optimized organ selectivity, enabling significant mRNA expression in both the spleen and muscle, as demonstrated by in vivo luciferase assays following intravenous and intramuscular administration. This lipid structure facilitates a favorable DSPC surface density on LNPs, which moderates interactions with serum proteins like ApoE, thereby reducing rapid hepatic clearance and promoting extrahepatic delivery. In vaccine applications, CL15F 7-5 LNPs encapsulating SARS-CoV-2 RBD mRNA elicited robust anti-RBD IgG titers and neutralizing antibodies in mice, outperforming the clinically benchmarked SM-102 lipid. The piperidine headgroup further contributes to storage stability by minimizing the generation of aldehyde impurities that can form mRNA-lipid adducts. Consequently, CL15F 7-5 represents a versatile lipid for developing stable, spleen-targeted mRNA vaccines and therapeutics, leveraging tail-length engineering for enhanced efficacy without complex formulation changes.

Product information

CAS No.	Not available
Chemical Name	CL15F 7-5
Formula	C48H91O7N
M.Wt	794.26
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: 794.26 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	12.590 mL	2.518 mL	1.259 mL
25 mg	31.476 mL	6.295 mL	3.148 mL
50 mg	62.952 mL	12.590 mL	6.295 mL
100 mg	125.903 mL	25.181 mL	12.590 mL
250 mg	314.758 mL	62.952 mL	31.476 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

Not available