

DC67542 | ATX L1

Instructions for Use

L1 is a biodegradable, branched self-immolative lipid optimized for high-efficiency mRNA delivery. Its disulfide-based architecture enables rapid glutathione-triggered degradation in the cytosol (liver half-life: 4.2 days), promoting rapid clearance while maintaining serum stability. In vivo, L1 achieves exceptional mRNA translation, producing twice the hEPO protein levels of the clinically approved MC3 lipid at 0.1 mg/kg. Its apparent pKa (6.57) facilitates efficient endosomal escape without compromising safety: even at 5 mg/kg, L1 causes no significant body weight loss or sustained inflammation. Structural features (C7 alkyl tails, carbamate linker) balance potency and biodegradability, making L1 ideal for mRNA vaccines and protein-replacement therapies.

Product information

CAS No.	Not available
Chemical Name	ATX L1
Formula	C46H90O6N2S2
M.Wt	831.35
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: 831.35 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	12.029 mL	2.406 mL	1.203 mL
25 mg	30.072 mL	6.014 mL	3.007 mL
50 mg	60.143 mL	12.029 mL	6.014 mL
100 mg	120.286 mL	24.057 mL	12.029 mL
250 mg	300.716 mL	60.143 mL	30.072 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

Design and Evaluation of Biodegradable Self-Immolative Lipids for RNA Delivery-R Mukthavaram, A Sagi, H Hong, R Recatto... - Advanced healthcare materials