

DC60797 | A2C18_D5

Instructions for Use

A2C18_D5 is an optimized lipid nanoparticle (LNP) component engineered with structural modifications to enhance mRNA delivery efficiency and safety. Its design incorporates a hydrophobic head group (A2, featuring a pentyl chain) and an unsaturated C18 tail, which collectively lower its pKa to the ideal range of 6–7, enabling stable encapsulation of nucleic acids and improved endosomal escape. In vitro and in vivo studies demonstrate that A2C18_D5 achieves mRNA delivery efficiency comparable to the clinically approved LNP benchmark MC3, while exhibiting over 200-fold higher potency than its precursor lipid (A1C11). The lipid's reduced protonation capacity minimizes cytotoxicity and hemolytic risk, aligning with safety profiles of established LNPs. Upon intravenous administration, A2C18_D5 predominantly targets the liver and spleen, with a biodistribution profile favoring hepatic delivery. Its balanced combination of high transfection efficiency, low toxicity, and favorable pharmacokinetics positions A2C18_D5 as a promising candidate for next-generation mRNA therapeutics, including vaccines and treatments for liver-specific diseases. Further optimization of its head-tail structure highlights its versatility for tailored delivery applications.

Product information

CAS No.	Not available
Chemical Name	A2C18_D5
Formula	C49H96ON2S2
M.Wt	793.44
Purity	98%
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: 793.44 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	12.603 mL	2.521 mL	1.260 mL
25 mg	31.508 mL	6.302 mL	3.151 mL
50 mg	63.017 mL	12.603 mL	6.302 mL
100 mg	126.033 mL	25.207 mL	12.603 mL
250 mg	315.084 mL	63.017 mL	31.508 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