DC65001 | 4A3-Cit

Instructions for Use

4A3-Cit is an ionizable lipid used for the generation of lipid nanoparticles (LNPs). To investigate the role of unsaturated lipid tails in iLNPs, the nucleophilic amines were added to ester-based linkers, followed by Michael's addition to the thiols to construct a library of 91 amino ionizable lipids. Such ionizable lipids were composed of an ionizable tertiary amine core, an ester-based degradable linker, and an alkylthiol tail periphery. Through in vitro and in vivo screening, the iLNPs with 4A3 core and citronellolbased (Cit) periphery can significantly increase endosome escape and delivery efficiency of mRNA, leading to 18-fold increase in protein expression compared with iLNPs without Cit periphery. Furthermore, the delivery efficiency of mRNA may be associated with the location/configuration of the unsaturated bond(s) in lipids. Although lipids with Cit periphery showed excellent membrane fusion ability to facilitate endosome escape, the fusion mechanism needs to be further clarified.

Product information

CAS No.	Not available
Chemical Name	4A3-Cit
Formula	C83H147N3O16S4
M.Wt	1,571.33
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: 1571.33 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	6.364 mL	1.273 mL	0.636 mL
25 mg	15.910 mL	3.182 mL	1.591 mL
50 mg	31.820 mL	6.364 mL	3.182 mL
100 mg	63.640 mL	12.728 mL	6.364 mL
250 mg	159.101 mL	31.820 mL	15.910 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

S. M. Lee, Q. Cheng, X. L. Yu, S. Liu, L. T. Johnson, D. J. Siegwart,
Angew. Chem. Int. Ed. 2021, 60, 5848.