DC68220 | C6O2B2

Instructions for Use

C6O2B2 is a cholesterol-conjugated cationic/ionizable lipid developed for ligand-free mRNA delivery to brain endothelial cells following intravenous administration. Its architecture combines a piperazine-containing polyamine core, four degradable ester-linked hydrophobic tails, and a covalently attached cholesterol moiety through a flexible five-carbon spacer. Among 51 newly synthesized cholesterol-based lipids, C6O2B2 produced the strongest brain luciferase expression. An optimized LNP formulation containing C6O2B2, DODAP, DSPC, and DMG-PEG enabled efficient functional mRNA expression throughout the cerebral vascular network, with preferential transfection of CD31-positive brain endothelial cells and minimal detectable neuronal or glial expression. The formulation preserved BBB integrity in Evans blue and contrast-enhanced MRI assessments. Mechanistic studies associated its activity with improved membrane fusion, enhanced endosomal escape, and ApoA-I enrichment in the protein corona. Delivery of IL-10 mRNA also reduced vascular leakage and inflammatory cytokines in a mouse model of acute neuroinflammation. C6O2B2 remains a preclinical research lipid requiring further pharmacokinetic and repeat-dose evaluation.

Product information

CAS No.	Not available
Chemical Name	C6O2B2
Formula	Not available
M.Wt	Not available
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: not available g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	MW unavailable	MW unavailable	MW unavailable
25 mg	MW unavailable	MW unavailable	MW unavailable
50 mg	MW unavailable	MW unavailable	MW unavailable
100 mg	MW unavailable	MW unavailable	MW unavailable
250 mg	MW unavailable	MW unavailable	MW unavailable

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

Tian Z, Wang X, Pacheco Benitez A, Guerrero E, Duan Y, Wei J, Farbiak L, Siegwart DJ. Esterified Cholesterol Conjugates Enable LNP-Mediated mRNA Delivery to the Blood–Brain Barrier Following Intravenous Administration. Advanced Materials.