

DC67984 | L31(Lipid 31)

Instructions for Use

L31 is identified as a novel, proprietary ionizable cationic lipid that serves as the critical functional component within lipid nanoparticles (LNPs) engineered for CRISPR/Cas9 genome editing in head and neck squamous cell carcinoma (HNSCC). It was selected from a screened library of lipids for its superior performance. LNPs formulated with L31 exhibited excellent physicochemical properties, including a uniform size of 80-100 nm, low polydispersity, and high encapsulation efficiency (>85%) for both Cas9 mRNA and sgRNA. In vitro, L31-based LNPs demonstrated outstanding therapeutic efficacy, achieving approximately 68% gene editing of the oncogene SOX2 and an 88% reduction in cancer cell viability. For in vivo applications, L31-LNPs were further functionalized with anti-EGFR antibodies using the ASSET linker strategy to create targeted nanoparticles (tLNPs). This modification enhanced specific uptake by tumor cells. In a xenograft mouse model, intratumoral injection of these targeted L31-cLNPs co-encapsulating Cas9 mRNA and sgSOX2 led to potent tumor growth inhibition (90%) and a significant increase in survival, with tumor disappearance observed in half of the treated mice. In conclusion, L31 is a highly efficient ionizable lipid that forms the foundation of a potent targeted LNP platform for precise CRISPR-based cancer therapy against solid tumors.

Product information

CAS No.	Not available
Chemical Name	L31(Lipid 31)
Formula	C55H109O6N3
M.Wt	908.49
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: 908.49 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	11.007 mL	2.201 mL	1.101 mL
25 mg	27.518 mL	5.504 mL	2.752 mL
50 mg	55.036 mL	11.007 mL	5.504 mL
100 mg	110.073 mL	22.015 mL	11.007 mL
250 mg	275.182 mL	55.036 mL	27.518 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