

DC68078 | Lipid K9

Instructions for Use

K9 is a novel ionizable lipid designed by the multi-objective AI model MOLEA. Its core function is to enable tissue-selective mRNA delivery. When formulated into Lipid Nanoparticles (LNPs), K9 can preferentially deliver mRNA efficiently to articular chondrocytes while significantly reducing delivery to hepatocytes. This facilitates targeted drug delivery for conditions like osteoarthritis and lowers the risk of off-target effects in the liver. In vitro experiments confirm that K9-LNPs promote endosomal escape and efficient expression of mRNA in chondrocytes. Its targeted delivery efficiency is further enhanced by optimizing the LNP formulation (e.g., lipid composition ratios) using a Design of Experiment (DoE) approach. In vivo studies show that after intra-articular injection, K9-LNPs exhibit high biodistribution and gene expression in the knee joint, with limited distribution in major organs like the liver. Therefore, K9 represents an advanced, rationally designed LNP component for achieving joint tissue-specific therapy, providing a key tool for developing targeted mRNA therapeutics.

Product information

CAS No.	Not available
Chemical Name	Lipid K9
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

Not available