

DC67785 | KC3-OA

Instructions for Use

KC3-OA, chemically known as 3-((S)-2,2-di((Z)-octadec-9-en-1-yl)-1,3-dioxolan-4-yl)-N,N-dimethylpropan-1-amine, is an ionizable cationic lipid (ICL) optimized for lipid nanoparticle (LNP) formulations in nucleic acid delivery, particularly for mRNA vaccines. It features a unique structure with mono-unsaturated alkyl chains (C18:1), which enhances oxidative stability compared to polyunsaturated analogs like KC3, while maintaining efficient membrane fusion and endosomal escape capabilities. In LNP compositions, KC3-OA is typically incorporated at 46-54 mol% of total lipids, with an N/P ratio of 4-6 relative to mRNA, ensuring high encapsulation efficiency and transfection potency.

Experimental data demonstrate that KC3-OA-based LNPs achieve superior mRNA expression in human dendritic cells, outperforming alternatives like KC3-PA or KC3-01 in both in vitro and in vivo models. For instance, in FIG. 2, KC3-OA LNPs showed ~2-fold higher mCherry expression at low mRNA doses (0.1 µg/mL) due to improved cellular uptake and reduced degradation. Its synergy with anionic phospholipids like DPPS (5 mol%) further enhances dendritic cell targeting via receptor-mediated internalization, leading to robust CD4+ and CD8+ T-cell responses against Mycobacterium tuberculosis antigens. This balance of stability, efficiency, and immunogenicity makes KC3-OA a leading candidate for next-generation vaccines.

Product information

CAS No.	Not available
Chemical Name	KC3-OA
Formula	C44H85O2N
M.Wt	660.17
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: 660.17 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	15.148 mL	3.030 mL	1.515 mL
25 mg	37.869 mL	7.574 mL	3.787 mL
50 mg	75.738 mL	15.148 mL	7.574 mL
100 mg	151.476 mL	30.295 mL	15.148 mL
250 mg	378.690 mL	75.738 mL	37.869 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