DC67563 | S-Ac7-DOG

Instructions for Use

S-Ac7-DOg is an ionizable lipid engineered for optimized mRNA delivery to the retina, featuring a sulfur-based ester bond (S-Ac) and dual oleyl glyceride chains (DOg). Its pKa (~6.74) is finely tuned to enhance endosomal escape in acidic environments, enabling efficient cytosolic mRNA release. Unlike traditional lipids (e.g., C12-200, MC3), S-Ac7-DOg incorporates biodegradable ester linkages that hydrolyze intracellularly, minimizing lipid accumulation and reducing innate immune activation.
In vitro, S-Ac7-DOg LNPs achieved >80% transfection efficiency in retinal cells (ARPE-19, MIO-M1) with negligible cytokine secretion, outperforming MC3 and rivaling C12-200 while avoiding the latter's high immunogenicity. In vivo, intravitreal delivery in mice showed robust protein expression in the optic nerve head (ONH) and Müller glia (75–100% of eyes), sustained for ≥7 days. Critically, it induced the lowest immunogenicity among tested lipids: minimal leukocyte infiltration (<1.5-fold vs. PBS), no microglial reactivity, and reduced GFAP upregulation.

Product information

CAS No.	Not available
Chemical Name	S-Ac7-DOG
Formula	C53H97N3O8S2
M.Wt	968.48
Purity	ELSD-HPLC>95%
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: 968.48 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	10.325 mL	2.065 mL	1.033 mL
25 mg	25.814 mL	5.163 mL	2.581 mL
50 mg	51.627 mL	10.325 mL	5.163 mL
100 mg	103.255 mL	20.651 mL	10.325 mL
250 mg	258.136 mL	51.627 mL	25.814 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

Lipid nanoparticle composition for adjuvant formulation modulates disease after influenza virus infection in QIV vaccinated mice-https://www.biorxiv.org/content/10.1101/2024.01.14.575599v1