

DC60821 | Lipid TOT-5

Instructions for Use

TOT-5, a tri-oleoyl-Tris ionizable lipid (pKa 6.2), enables splenic B cell-targeted mRNA delivery via 15% DSPC-incorporated LNPs. Its charge-neutral, hydrophobic surface minimizes hepatic ApoE uptake and enhances complement C3 adsorption, facilitating CD21/35-mediated uptake by marginal zone B cells. In vivo, intravenous 15% DSPC-LNPs showed 8-fold higher spleen-to-liver luciferase expression vs 3% DSPC, with anti-CD21/35 blocking 60% B cell uptake. Intramuscular administration induced robust OVA-specific IgG (10^5 titer) and CTL responses (3.5% tetramer+ CD8+ T cells) while reducing hepatotoxicity (ALT/AST levels ≤ 40 U/L vs SM-102-LNPs' 80-120 U/L). Cryo-ET confirmed stable lamellar structures (80-100 nm, ζ -potential -2 mV). This formulation achieves safe, ligand-free splenic targeting for mRNA vaccines.

Product information

CAS No.	Not available
Chemical Name	Lipid TOT-5
Formula	C ₆₆ H ₁₂₀ N ₂ O ₇
M.Wt	1,052.91
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: 1052.91 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	9.497 mL	1.899 mL	0.950 mL
25 mg	23.744 mL	4.749 mL	2.374 mL
50 mg	47.487 mL	9.497 mL	4.749 mL
100 mg	94.975 mL	18.995 mL	9.497 mL
250 mg	237.437 mL	47.487 mL	23.744 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

Splenic B cell-targeting lipid nanoparticles for safe and effective mRNA vaccine delivery-Yuichi Suzuki et al, Journal of Controlled Release