

DC67650 | EB-Lipid

Instructions for Use

EB-Lipid is an innovatively engineered ionizable lipid designed to replace conventional PEG-lipid in mRNA vaccine formulations. Its structure comprises three key components: an Evans Blue-derived headgroup with high affinity for albumin, a tetraethylene glycol linker that enhances colloidal stability, and dual oleate tails for anchoring into lipid bilayers. This molecular design enables EB-Lipid to actively recruit endogenous albumin, forming an albumin-rich protein corona on the surface of lipid nanoparticles (LNPs). Following intramuscular administration, these albumin-bound EB-LNPs are preferentially transported through lymphatic vessels rather than entering the bloodstream, thereby avoiding hepatic accumulation and associated hepatotoxicity risks. Experimental data demonstrate that EB-LNPs achieve significantly higher accumulation in lymph nodes, where they are efficiently internalized by dendritic cells via albumin receptor-mediated endocytosis (e.g., gp60). This process enhances antigen presentation and activates robust cellular and humoral immune responses. In both tumor models (B16-OVA and HPV-associated) and infectious disease models (H1N1 and SARS-CoV-2 Omicron), EB-LNP-based mRNA vaccines elicited potent cytotoxic T-cell activation and durable neutralizing antibody production at low doses. Unlike traditional PEG-LNPs, EB-LNPs show minimal liver distribution, reduced immunogenicity, and improved safety profiles after repeated administrations. By leveraging albumin's natural trafficking pathway, EB-Lipid represents a transformative delivery platform that combines targeted lymph node delivery with enhanced biosafety, positioning it as a promising candidate for next-generation mRNA vaccines and therapeutics.

Product information

CAS No.	Not available
Chemical Name	EB-Lipid
Formula	C42H78O5N2S
M.Wt	723.15
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: 723.15 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	13.828 mL	2.766 mL	1.383 mL
25 mg	34.571 mL	6.914 mL	3.457 mL
50 mg	69.142 mL	13.828 mL	6.914 mL
100 mg	138.284 mL	27.657 mL	13.828 mL
250 mg	345.710 mL	69.142 mL	34.571 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

Feng, Y., Tai, W., Huang, P. et al. Albumin-recruiting lipid nanoparticle potentiates the safety and efficacy of mRNA vaccines by avoiding liver accumulation. Nat. Mater. (2025).