

DC67530 | HY-501

Instructions for Use

HY-501 is a next-generation cationically ionizable lipid engineered for high-efficiency RNA delivery developed by Biontech. Formulated at 40–50 mol% in lipid nanoparticles (LNPs) alongside DSPC, cholesterol, and polysarcosine-conjugated lipid C14pSar23, HY-501 yields uniform, stable particles (80–100 nm) with >90% RNA encapsulation. It demonstrates superior in vivo performance: driving 2-fold higher protein expression than benchmark lipids (EA-405/HY-405) in muscle tissue, minimizing off-target liver accumulation, and reducing immunogenic risks (near-zero complement activation and <5% hemolysis). Preclinically, HY-501-based LNPs encoding SARS-CoV-2 spike protein elicit potent neutralizing antibodies and T-cell responses, underscoring its utility in precision vaccines. Its combination of scalable synthesis, exceptional transfection efficiency, and biosafety establishes HY-501 as a transformative vector for therapeutic RNA delivery.

Product information

CAS No.	Not available
Chemical Name	HY-501
Formula	C ₄₈ H ₉₂ O ₄ N ₂
M.Wt	761.27
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: 761.27 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	13.136 mL	2.627 mL	1.314 mL
25 mg	32.840 mL	6.568 mL	3.284 mL
50 mg	65.680 mL	13.136 mL	6.568 mL
100 mg	131.359 mL	26.272 mL	13.136 mL
250 mg	328.399 mL	65.680 mL	32.840 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