

DC31024 | SM-86(Lipid 5)

Instructions for Use

SM86 is a cationic, ionizable lipid developed by Moderna as a core component of its lipid nanoparticle (LNP) platform for mRNA therapeutic delivery. SM-086 is structurally optimized and analogous to SM-102 (used in Moderna's COVID-19 vaccines), with modifications aimed at enhancing mRNA delivery efficiency and safety. SM-86 serves as the primary cationic lipid in three investigational mRNA therapies targeting rare metabolic disorders: mRNA-3927: Restores propionyl-CoA carboxylase activity in propionic acidemia (PA).

mRNA-3705: Delivers methylmalonyl-CoA mutase mRNA for methylmalonic acidemia (MMA).

mRNA-3210: Provides phenylalanine hydroxylase mRNA to treat phenylketonuria (PKU).

Product information

CAS No.	Not available
Chemical Name	SM-86(Lipid 5)
Formula	C44H87NO5
M.Wt	710.165
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: 710.165 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	14.081 mL	2.816 mL	1.408 mL
25 mg	35.203 mL	7.041 mL	3.520 mL
50 mg	70.406 mL	14.081 mL	7.041 mL
100 mg	140.812 mL	28.162 mL	14.081 mL
250 mg	352.031 mL	70.406 mL	35.203 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

Characterizing the mechanism of action for mRNA therapeutics for the treatment of propionic acidemia, methylmalonic acidemia, and phenylketonuria--Published: 07 May 2024-Rena Baek, Patrick Finn & Paolo G. V. Martini