

DC60941 | Antioxidant lipid AO12

Instructions for Use

AO12 is a novel antioxidant ionizable lipid derived from SM-102 skeleton with para-hydroxyphenyl propionic acid side chains. Integrated into LNPs, it efficiently scavenges diverse reactive oxygen species including $\cdot\text{OH}$ and ONOO^- , shielding encapsulated mRNA from oxidative degradation. It retains fine LNP formulation features and cellular uptake capacity of conventional lipids, boosting in vivo mRNA translation. Applied for regenerative mRNA therapy and CRISPR gene editing against fibrosis and inflammatory disorders.

Product information

CAS No.	Not available
Chemical Name	Antioxidant lipid AO12
Formula	$\text{C}_{53}\text{H}_{95}\text{NO}_7$
M.Wt	858.34
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: 858.34 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	11.650 mL	2.330 mL	1.165 mL

Mass	1 mM	5 mM	10 mM
25 mg	29.126 mL	5.825 mL	2.913 mL
50 mg	58.252 mL	11.650 mL	5.825 mL
100 mg	116.504 mL	23.301 mL	11.650 mL
250 mg	291.260 mL	58.252 mL	29.126 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

Author, A. A., Author, B. B., & Author, C. C. (2026). Antioxidant lipid nanoparticles enhance mRNA stability for tissue regeneration and gene editing. *Nature Communications*, 17, Article 73512. doi.org