DC68022 | Lipid A1F5C5

Instructions for Use

A1F5C5 is a core fluorinated ionizable lipid that forms the basis of the F5-LNP platform. Its key biological functions are multifaceted. Primarily, it enables efficient, targeted mRNA delivery in vivo. Following intravenous administration, F5-LNPs exhibit a strong tropism for the spleen and tumor sites, successfully transfecting over 70% of splenic macrophages and more than 20% of tumor-infiltrating macrophages. This allows for in situ cell engineering. Beyond delivery, A1F5C5 possesses intrinsic immunostimulatory activity. It promotes the maturation and activation of antigen-presenting cells (e.g., upregulating CD80/86 on dendritic cells) and enriches immune-related pathways like "cytokine-cytokine receptor interaction." Mechanistically, its unique 5-fluorine (F5) configuration confers superior membrane fusion capability, which is critical for efficient endosomal escape and cytosolic mRNA release. Therapeutically, when loaded with CAR mRNA, it serves as a platform for in vivo generation of CAR-macrophages (CAR-M). These CAR-M cells phagocytose tumors, reprogram the tumor microenvironment by shifting macrophages to an M1 phenotype, and activate CD8+ T cells. Notably, this approach synergizes powerfully with anti-PD-L1 therapy, achieving complete tumor regression in preclinical models.

Product information

CAS No.	Not available
Chemical Name	Lipid A1F5C5
Formula	Not available
M.Wt	Not available
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: not available g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	MW unavailable	MW unavailable	MW unavailable
25 mg	MW unavailable	MW unavailable	MW unavailable
50 mg	MW unavailable	MW unavailable	MW unavailable
100 mg	MW unavailable	MW unavailable	MW unavailable
250 mg	MW unavailable	MW unavailable	MW unavailable

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