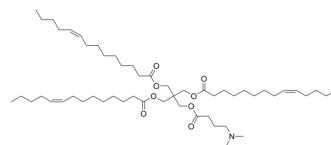


TCL053

Cat. No.:	HY-147332		
CAS No.:	2361162-70-9		
Molecular Formula:	C ₅₃ H ₉₅ NO ₈		
Molecular Weight:	874.32		
Target:	Liposome		
Pathway:	Metabolic Enzyme/Protease		
Storage:	Pure form	-20°C	3 years
	In solvent	-80°C	6 months
		-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro	DMSO : 100 mg/mL (114.37 mM; Need ultrasonic)				
		Solvent Concentration	Mass		
	Preparing Stock Solutions			1 mg	5 mg
			1 mM	1.1437 mL	5.7187 mL
			5 mM	0.2287 mL	1.1437 mL
	10 mM	0.1144 mL	0.5719 mL	1.1437 mL	
Please refer to the solubility information to select the appropriate solvent.					
In Vivo	1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: 2.5 mg/mL (2.86 mM); Clear solution; Need ultrasonic				
	2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: 2.5 mg/mL (2.86 mM); Clear solution; Need ultrasonic				
	3. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: 2.5 mg/mL (2.86 mM); Clear solution; Need ultrasonic				

BIOLOGICAL ACTIVITY

Description	TCL053 is an ionizable lipid carrier and used to introduce active components, in particular nucleic acids, into cells with excellent efficiency. TCL053, together with DPPC (Dipalmitoylphosphatidylcholine), PEG-DMG (Polyethylene glycoldimyrystoyl glycerol), and cholesterol, forms lipid nanoparticle (LNP) which is able to deliver Cas9 mRNA and sgRNA into skeletal muscle ^{[1][2]} .
In Vitro	TCL053 shows a dissociation constant pK _a = 6.8 ^[1] . TCL053 : DPPC : Cholesterol : DMG-PEG = 60 : 10.6 : 27.3 : 2.1, shows an encapsulation rate of 96%, and a size of 79.1 nm ^[1] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

TCL053-based LNP encapsulating Cas9 mRNA (TCL053-LNP-CRISPR) (20 µg total RNA; i.m.) exhibits high genome editing and exon skipping efficacy, and is higher than other in vivo mRNA delivery reagent (in vivo-jetRNA)^[1].

TCL053-based LNP, via limb perfusion method, can target multiple muscle groups, with repeated administration and low immunogenicity features^[1].

TCL053-based LNP acts as a delivery vehicle of CRISPR-Cas9 and can be used for skeletal muscle disorders research^[1].

TCL053-based LNP induces stable genomic exon skipping and restore dystrophin protein in a DMD mouse model that harbors a humanized exon sequence^[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Kenjo E, et al. Low immunogenicity of LNP allows repeated administrations of CRISPR-Cas9 mRNA into skeletal muscle in mice. Nat Commun. 2021 Dec 8;12(1):7101.

[2]. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8654819/>

Caution: Product has not been fully validated for medical applications. For research use only.

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