

GalNAc-Modified Five-Component Lipid Nanoparticles for Liver-Targeted Delivery of p65 siRNA to Alleviate Cytokine Storm in Liver Injury via NF- κ B Targeting

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Table 1 Physicochemical characterization of GalNAc-LNP formulations.

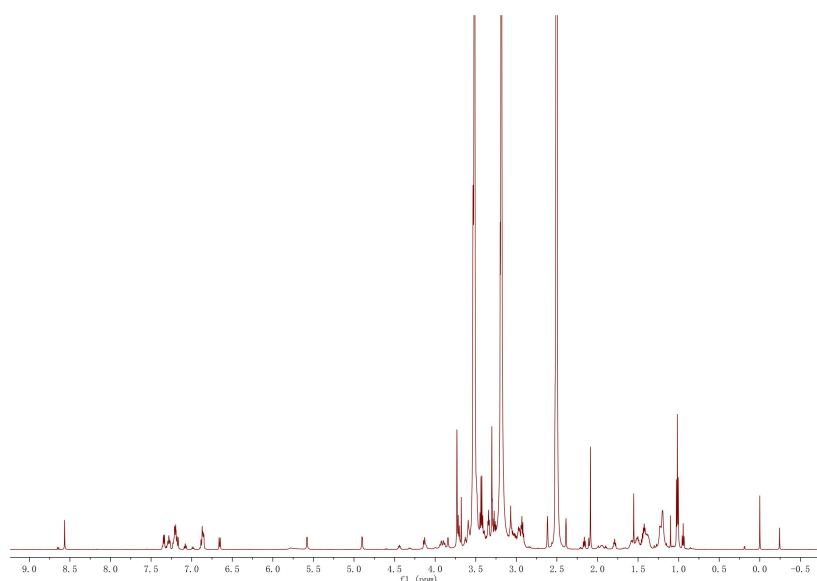
Name	Particle Size (nm)	PDI	Zeta Potential (mV)	Encapsulation Efficiency (%)
LNP-Luc	78.2 ± 0.39	0.130 ± 0.008	0.12 ± 0.35	92.18 ± 1.40
G-LNP-Luc1	78.9 ± 0.88	0.137 ± 0.012	0.67 ± 0.48	91.27 ± 0.94
G-LNP-Luc2	87.3 ± 0.33	0.146 ± 0.012	1.01 ± 0.70	90.54 ± 1.11
G-LNP-Luc3	87.2 ± 1.03	0.146 ± 0.010	0.03 ± 0.73	90.07 ± 0.92
G-LNP-Luc4	116.3 ± 0.82	0.132 ± 0.007	0.27 ± 1.03	89.20 ± 1.23

Table 2 Physicochemical characterization of GalNAc-LNP formulations.

Formulation	Particle Size (nm)	PDI	Zeta Potential (mV)	Encapsulation Efficiency (%)
LNP-Luc	74.2 ± 1.9	0.161 ± 0.012	0.38 ± 0.63	92.46 ± 0.92
G-LNP-Luc6	65.1 ± 1.9	0.091 ± 0.039	0.10 ± 0.82	92.66 ± 1.08
G-LNP-Luc7	180.7 ± 4.5	0.192 ± 0.031	-0.12 ± 0.59	91.54 ± 1.17
G-LNP-Luc8	68.9 ± 0.7	0.122 ± 0.035	-0.25 ± 1.00	90.94 ± 2.03
G-LNP-Luc9	62.5 ± 1.0	0.089 ± 0.038	-0.35 ± 0.48	90.27 ± 3.50
G-LNP-Luc10	72.3 ± 1.7	0.158 ± 0.040	-0.04 ± 1.44	93.23 ± 2.22

Table 3 Physicochemical characterization of GalNAc-LNP formulations.

Formulation	Particle Size (nm)	PDI	Zeta Potential (mV)	Encapsulation Efficiency (%)
LNP-siP65	95.86 ± 0.3	0.142 ± 0.01	0.37 ± 0.30	76.70 ± 0.84
G-LNP-siP65	90.75 ± 0.8	0.122 ± 0.02	-0.78 ± 0.51	81.63 ± 3.27

Figure S1. ¹H NMR spectra of GalNAc-PEG-DSPE.

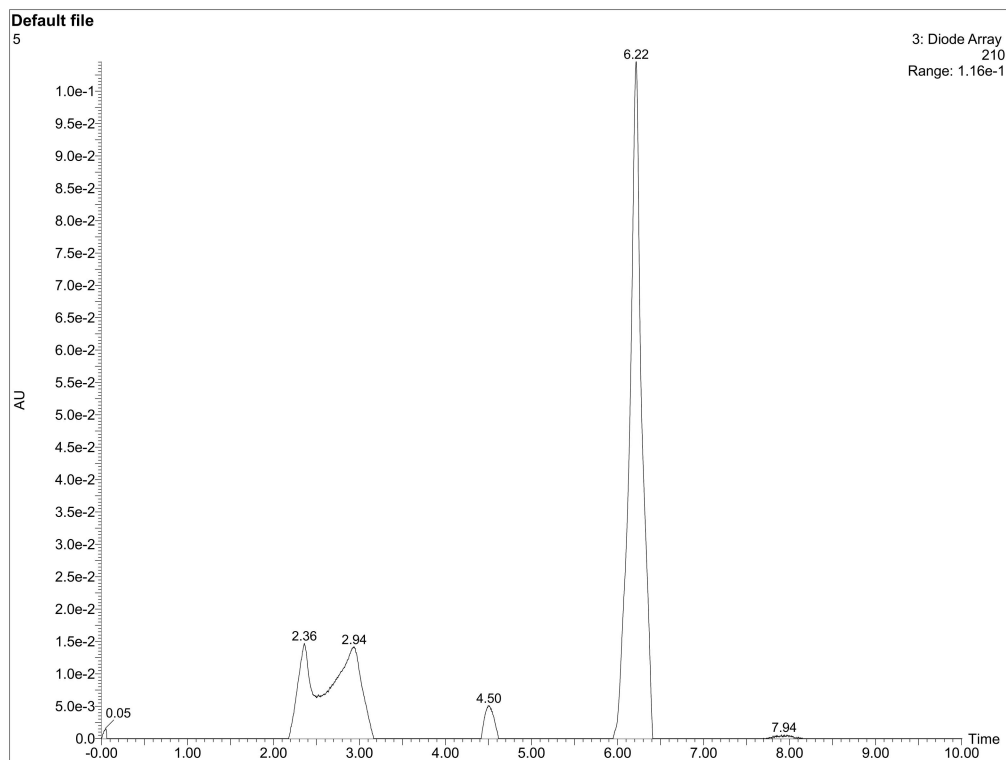


Figure S2. LC-DAD chromatogram of the optimized GalNAc-LNP formulation (Formulation 3) monitored at 210 nm.

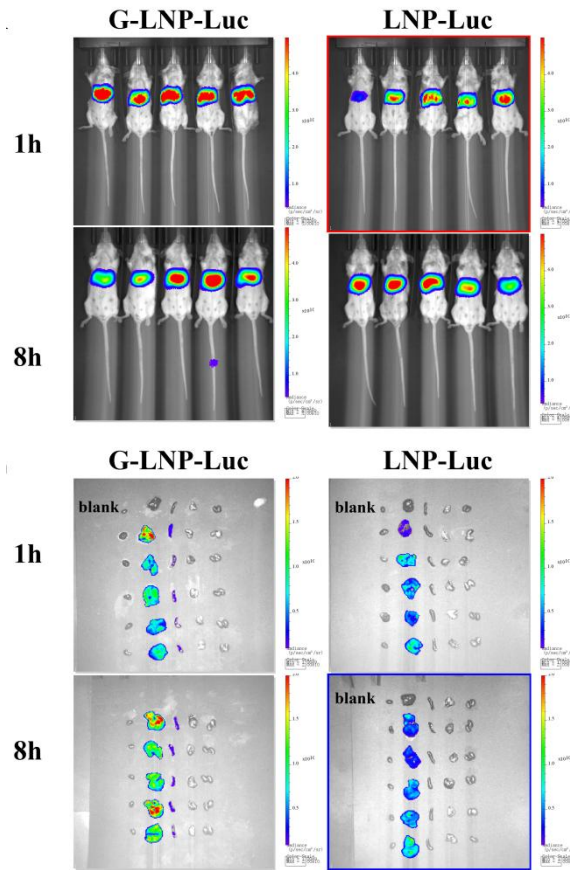


Figure S3. In vivo and ex vivo bioluminescence imaging of Luc-mRNA loaded LNPs. Representative whole-body bioluminescence images of mice at the indicated time points after intravenous injection of LNPs encapsulating Luc mRNA (up panel). Ex vivo bioluminescence images of major organs (liver, spleen, heart, lungs, kidneys) harvested at 1 h and 8 h post-injection (down panel).

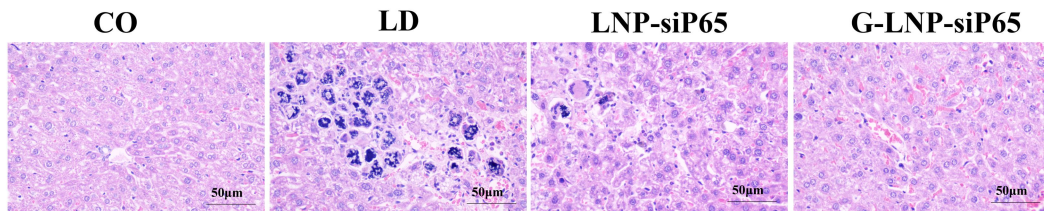


Figure S4. Representative H&E staining of liver sections (scale bar, 50 µm).