Supporting Information

Influence of nanoparticle size on blood-brain barrier penetration and the accumulation of anti-seizure medicines in the brain

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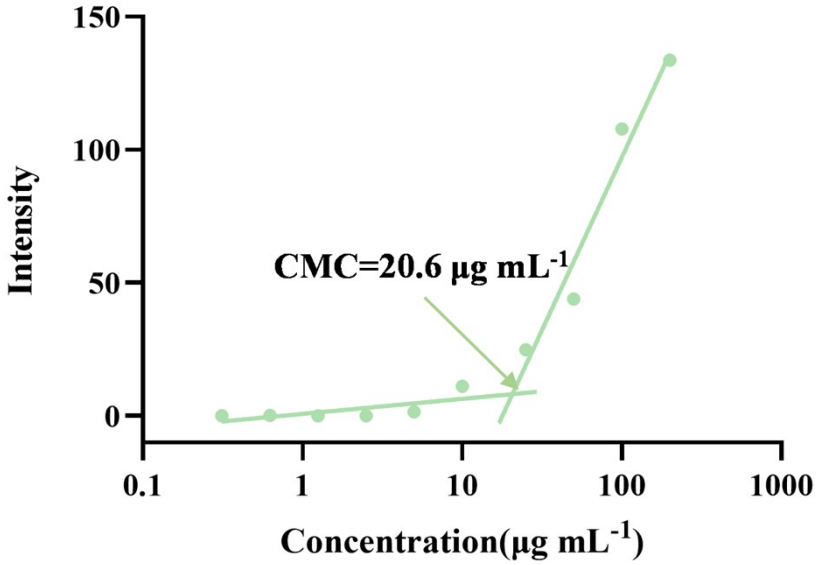

Fig S1. Determination of the CMC of $mPEG_{5K}$-$PLGA_{10K}$.

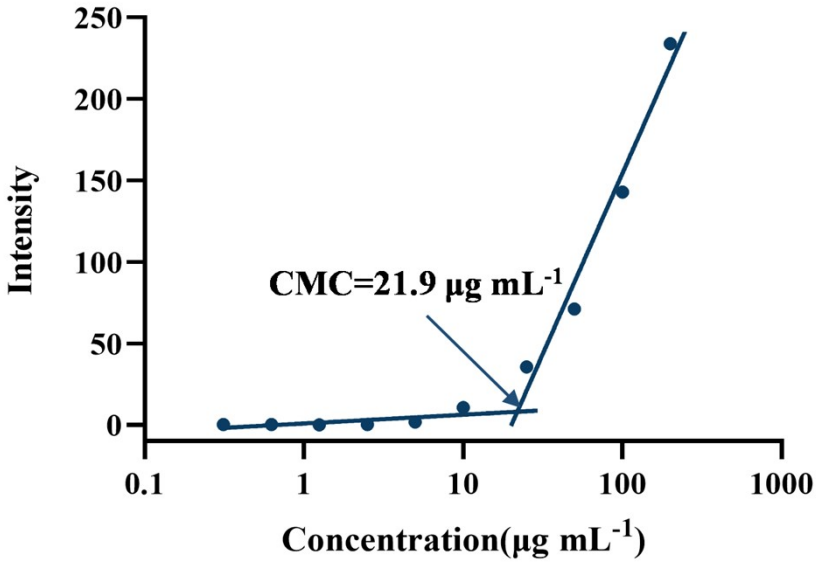

Fig S2. Determination of the CMC of $mPEG_{2K}$-$PLGA_{5K}$.

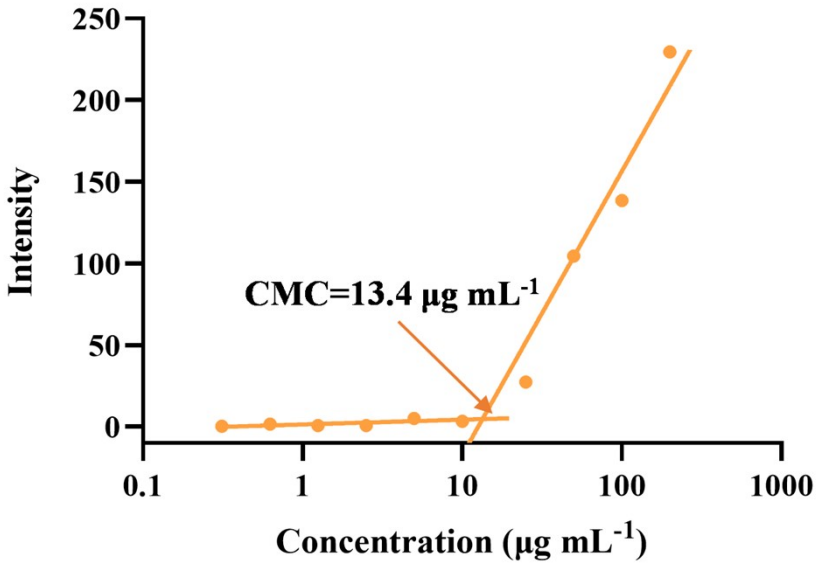

Fig S3. Determination of the CMC of $mPEG_{5K}$-$PLGA_{20K}$.

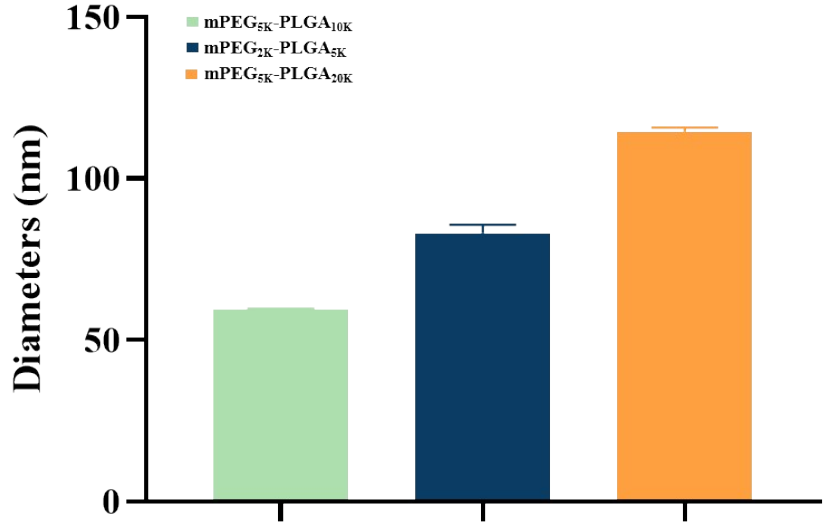

Fig S4. Average hydrodynamic diameters of $mPEG_{5K}$-$PLGA_{10K}$, $mPEG_{2K}$-$PLGA_{5K}$, $mPEG_{5K}$-$PLGA_{20K}$.

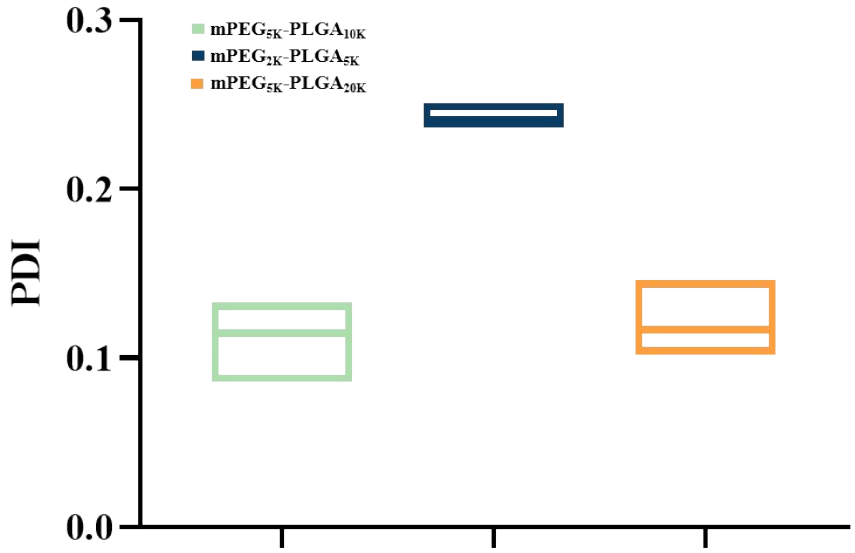

Fig S5. Polydispersity index of $mPEG_{5K}$-$PLGA_{10K}$, $mPEG_{2K}$-$PLGA_{5K}$, $mPEG_{5K}$-$PLGA_{20K}$.

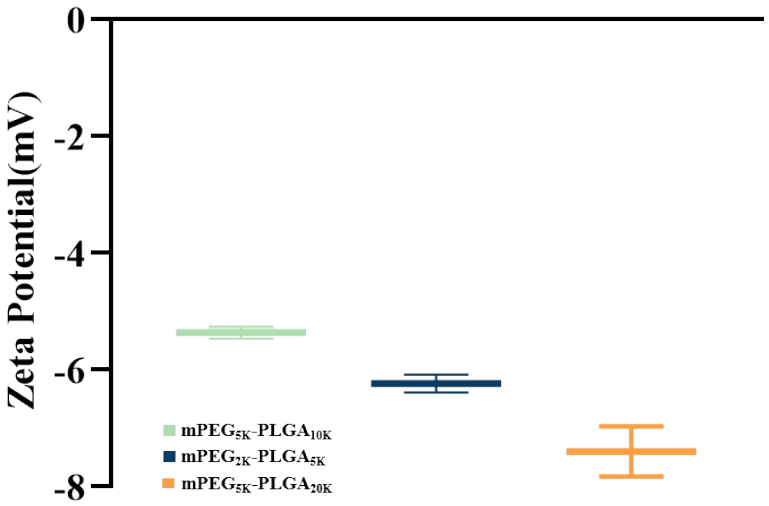

Fig S6. The Zeta potential values of $mPEG_{5K}$-$PLGA_{10K}$, $mPEG_{2K}$-$PLGA_{5K}$, $mPEG_{5K}$-$PLGA_{20K}$.

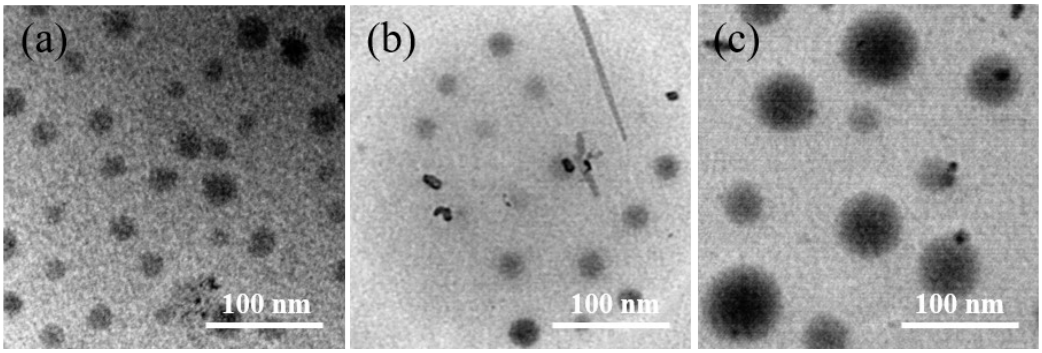

Fig S7. TEM images of polymer micelles. (a) $mPEG_{5K}$-$PLGA_{10K}$, (b) $mPEG_{2K}$-$PLGA_{5K}$, (c) $mPEG_{5K}$-$PLGA_{20K}$.

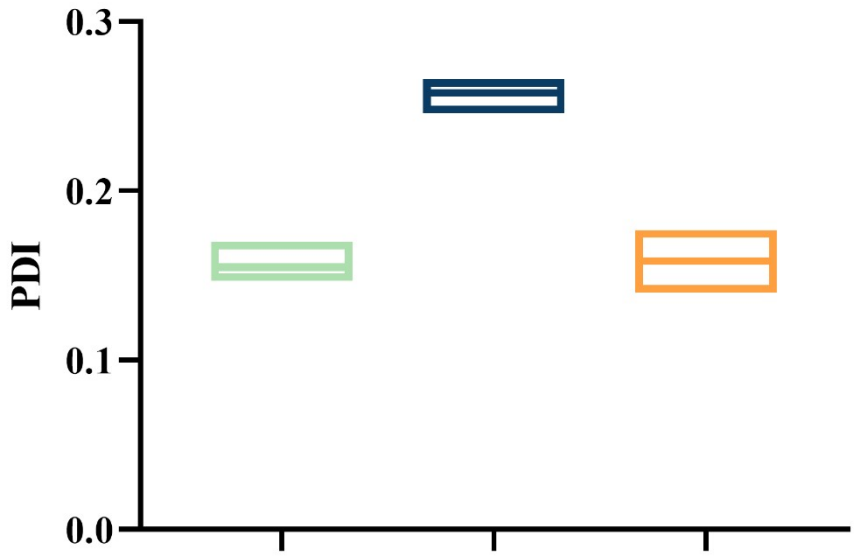

Fig S8. Polydispersity index of CNP (5K-10K), CNP (2K-5K), and CNP (5K-20K).

Table S1. The EE% and LE% of CNP (5K-10K), CNP (2K-5K), and CNP (5K-20K).

Formula	EE(%)	LE(%)
CNP(5K-10K)	68.93±0.22	9.30±0.02
CNP(2K-5K)	53.30±0.16	9.31±0.01
CNP(5K-20K)	73.87±0.15	8.92±0.03

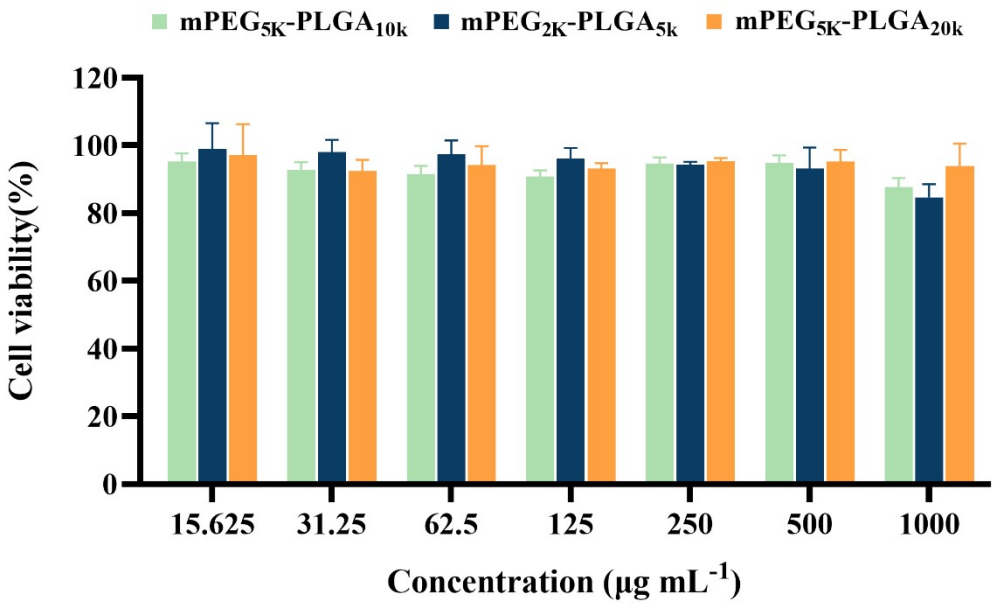

Fig S9. Cell viability of $mPEG_{5K}$-$PLGA_{10K}$, $mPEG_{2K}$-$PLGA_{5K}$, $mPEG_{5K}$-$PLGA_{20K}$ at different concentration against L929 cells for 48 h.

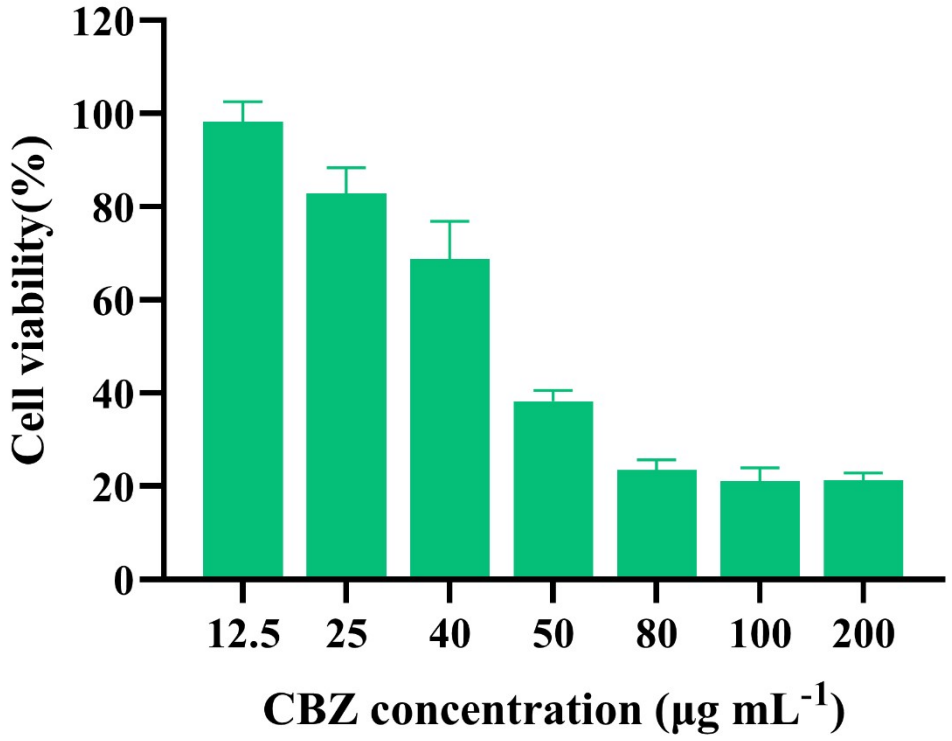

Fig S10. Cell viability of CBZ at different concentration against L929 cells for 48 h.

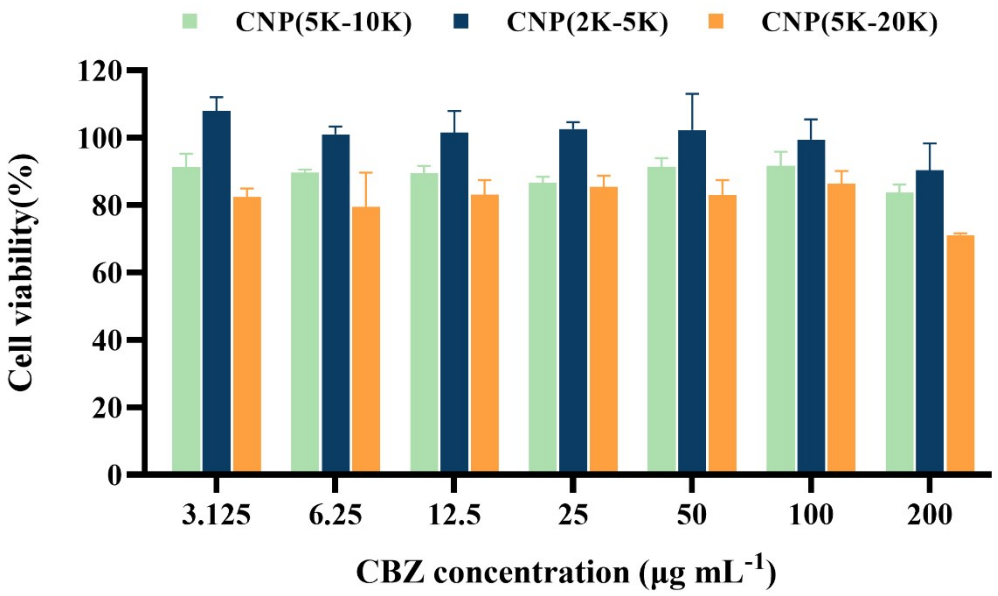

Fig S11. Cell viability CNP (5K-10K), CNP (2K-5K), and CNP (5K-20K) at different concentration against L929 cells for 48 h.

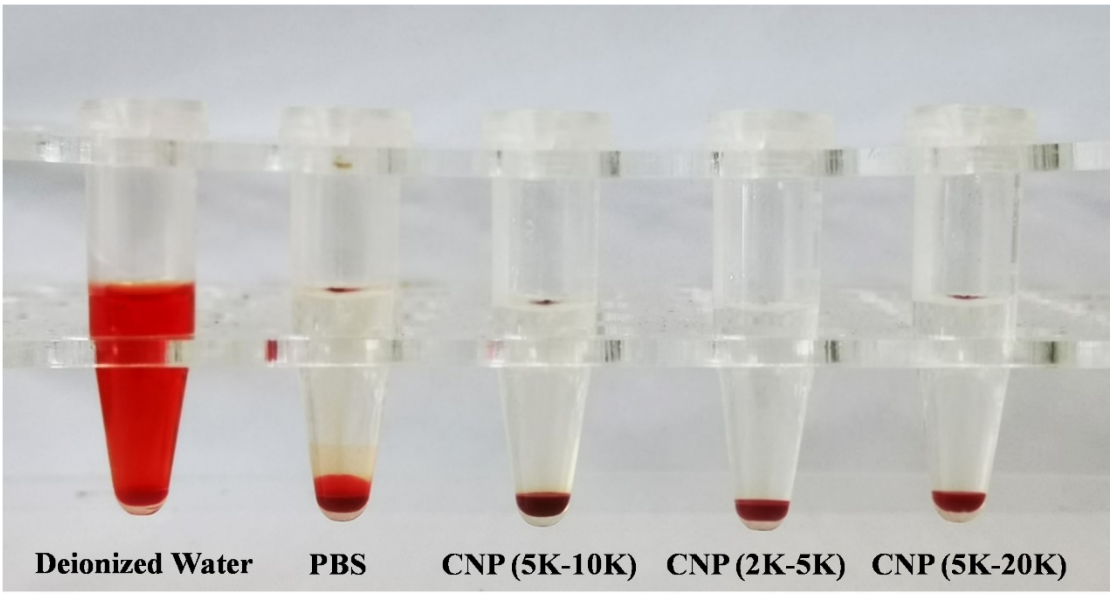

Fig S12. The hemolysis experiment images of CNP (5K-10K), CNP (2K-5K), and CNP (5K-20K).

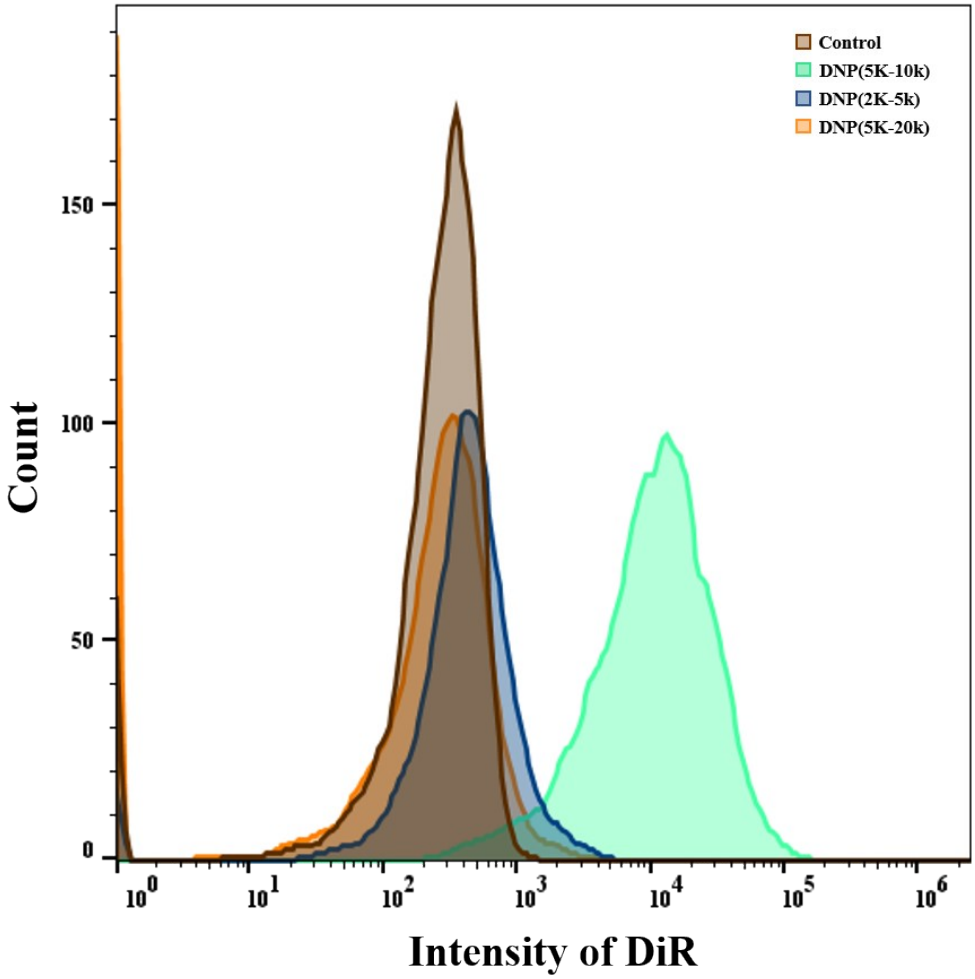

Fig S13. HCMEC/D3 cells were incubated with different DiR-loaded nanoparticles containing 1 μg mL^{-1} DiR at 37°C for 0.5 h and evaluated by flow cytometer.

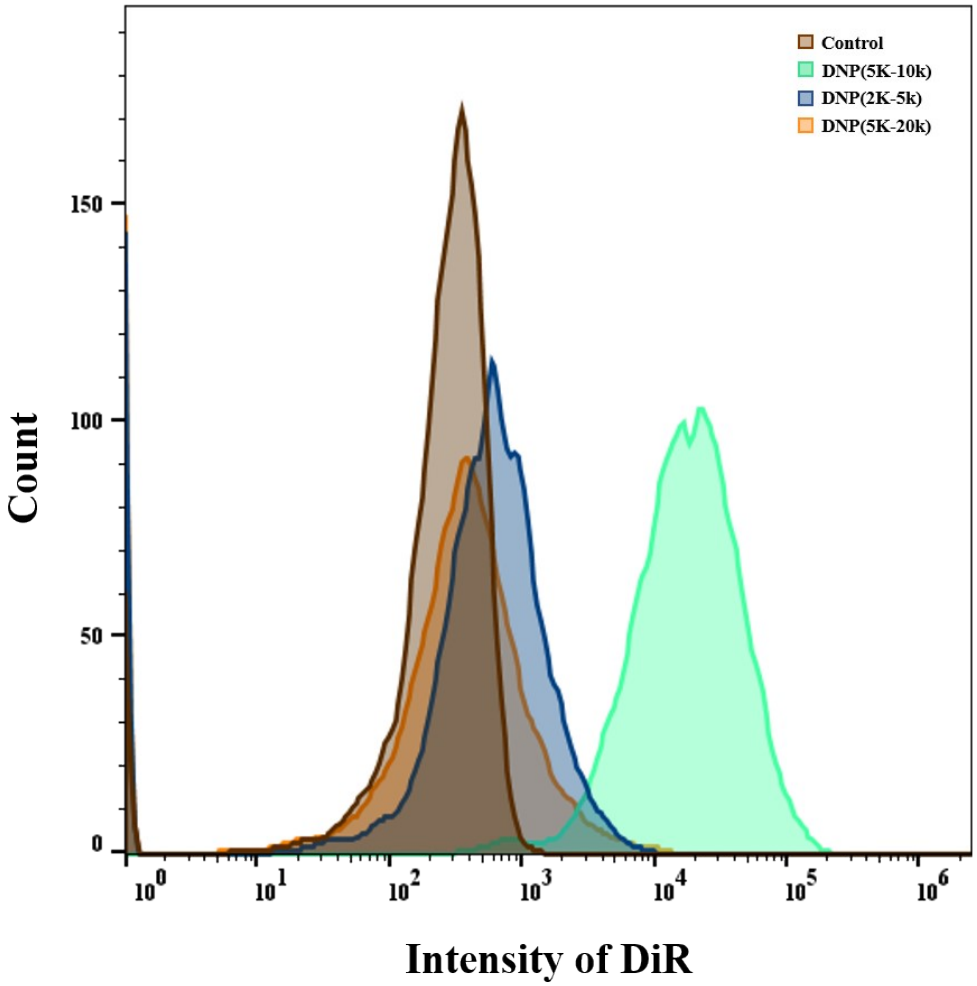

Fig S14. HCMEC/D3 cells were incubated with different DiR-loaded nanoparticles containing 1 μg mL^{-1} DiR at 37°C for 1 h and evaluated by flow cytometer.

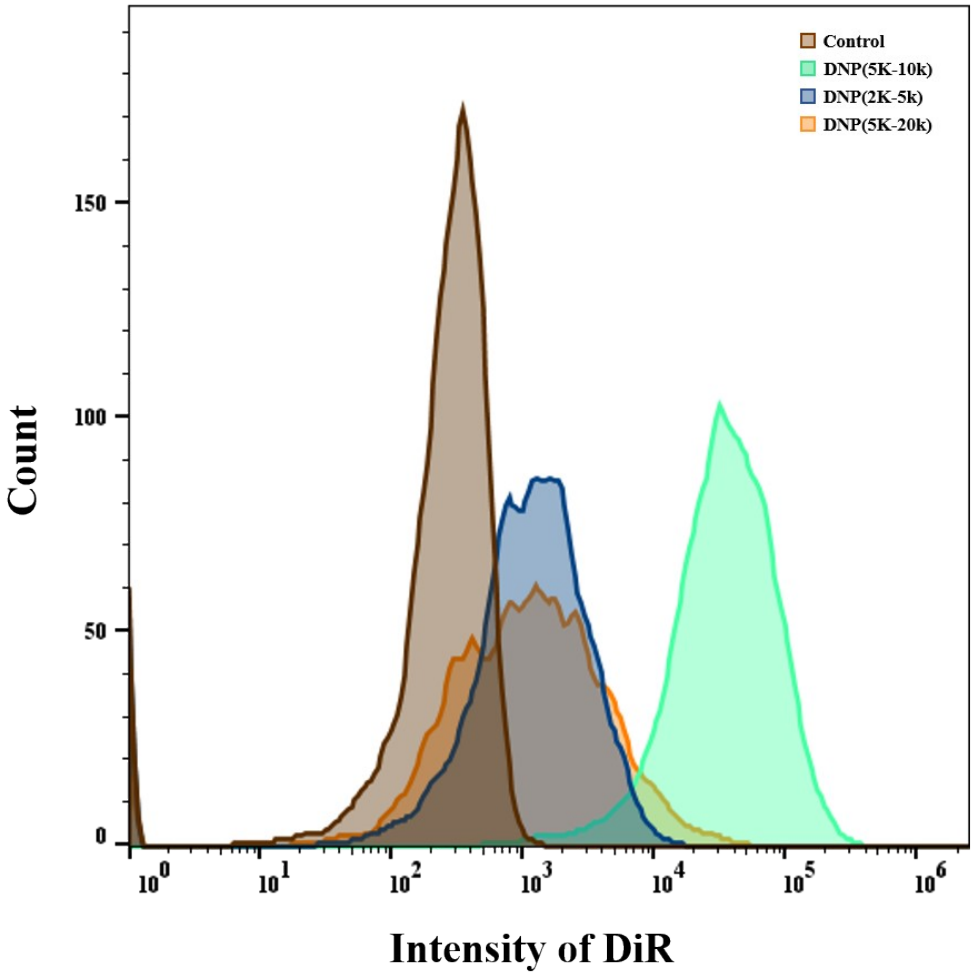

Fig S15. HCMEC/D3 cells were incubated with different DiR-loaded nanoparticles containing 1 μg mL^{-1} DiR at 37°C for 2 h and evaluated by flow cytometer.

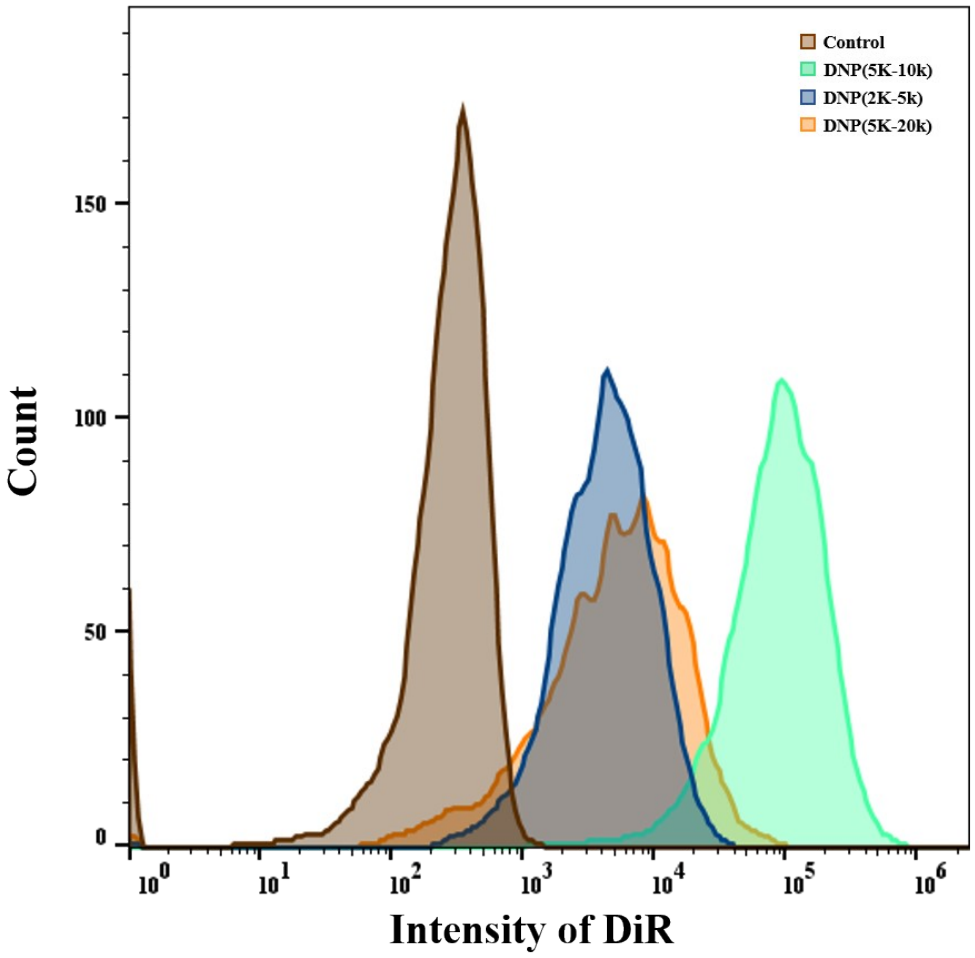

Fig S16. HCMEC/D3 cells were incubated with different DiR-loaded nanoparticles containing 1 μg mL^{-1} DiR at 37°C for 4 h and evaluated by flow cytometer.

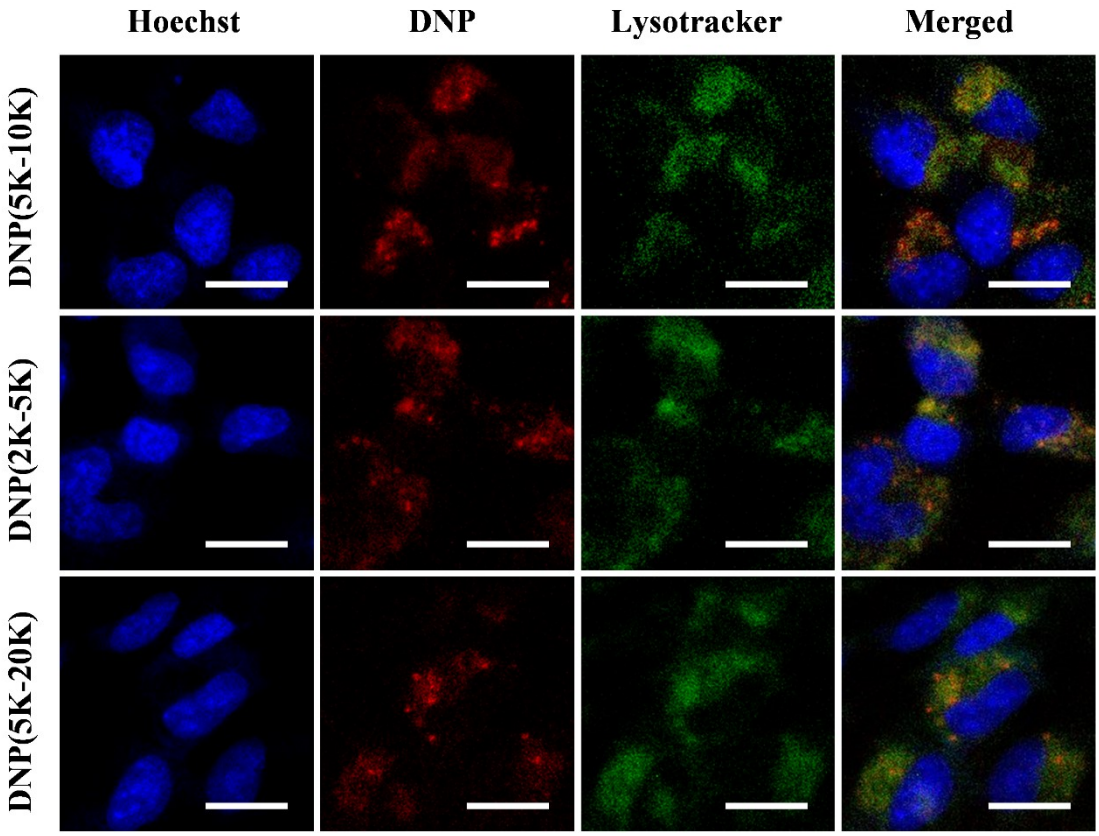

Fig S17. Confocal fluorescence images of the HCMEC/D3 cells treated with different DiR-loaded nanoparticles for 6 h. The nuclei and lysosomes were stained with Hoechst (blue) and Lysotracker (green), respectively. Scale bar: 20 μm.

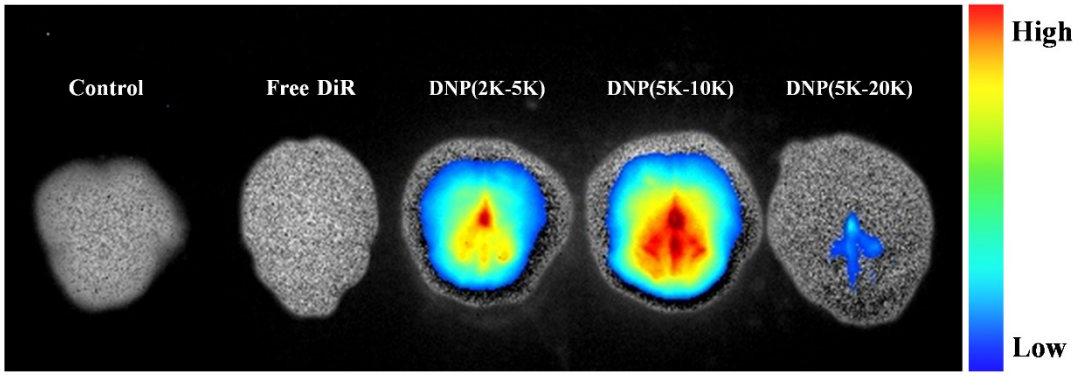

Fig S18. The fluorescence image of the mice brain treated with free DiR and different DiR-loaded nanoparticles at 4 h, color bar on the right side indicates the signal intensity of the fluorescence emission from the brain.

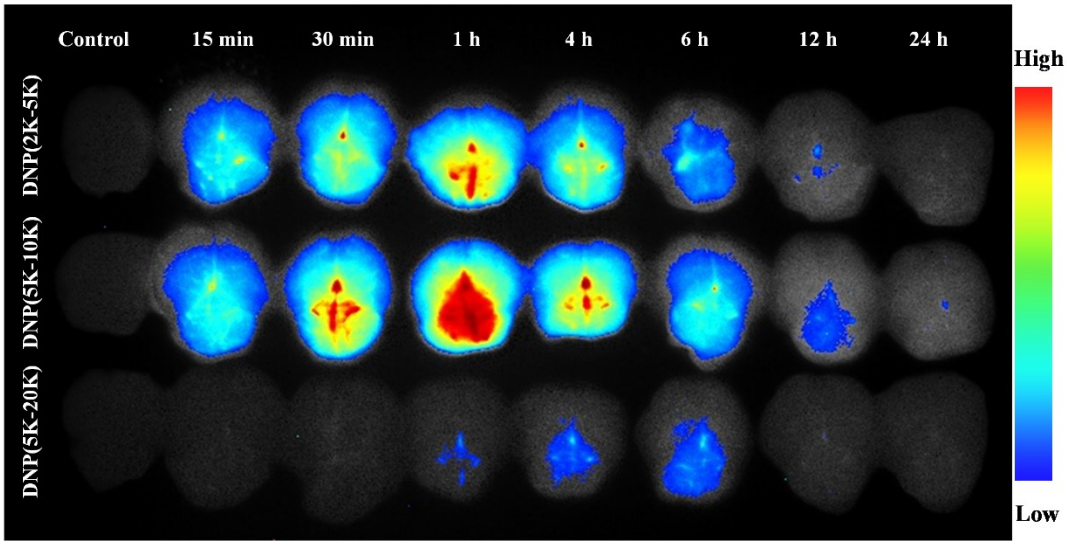

Fig S19. The fluorescence image of the mice brain in each group at different time point, color bar on the right side indicates the signal intensity of the fluorescence emission from the brain.