Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Preparation of Pt(IV)-crosslinked polymer nanoparticles with anti-detoxifying effect for enhanced anticancer therapy

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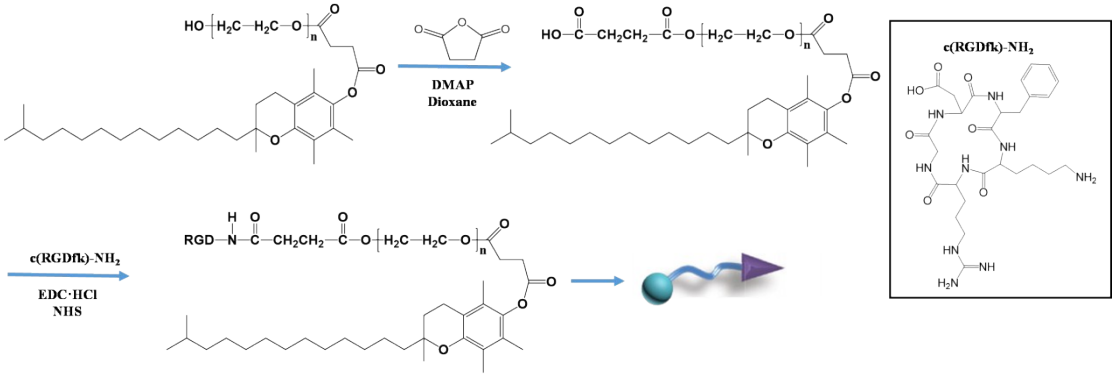

Scheme S1 Synthetic scheme of the TPGS-cRGD conjugate.

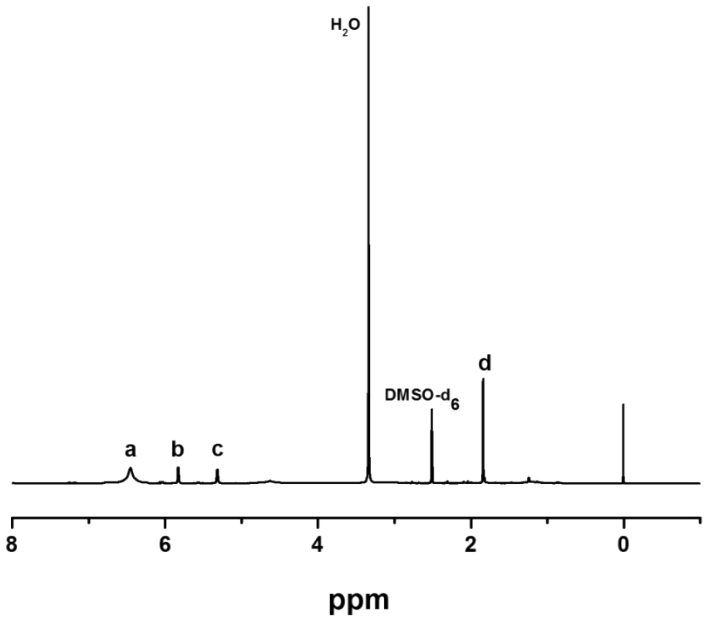

Fig. S1 ^{1}H NMR spectroscopy of $Pt(NH_3)_2Cl_2(OOCC(CH_3)=CH_2)_2$. δ6.45, (6 H,$NH_3$); δ5.83, δ5.31 ppm (4 H, CH_2=CHCOO); δ1.84 ppm (2H, CH_2=C*H*COO).

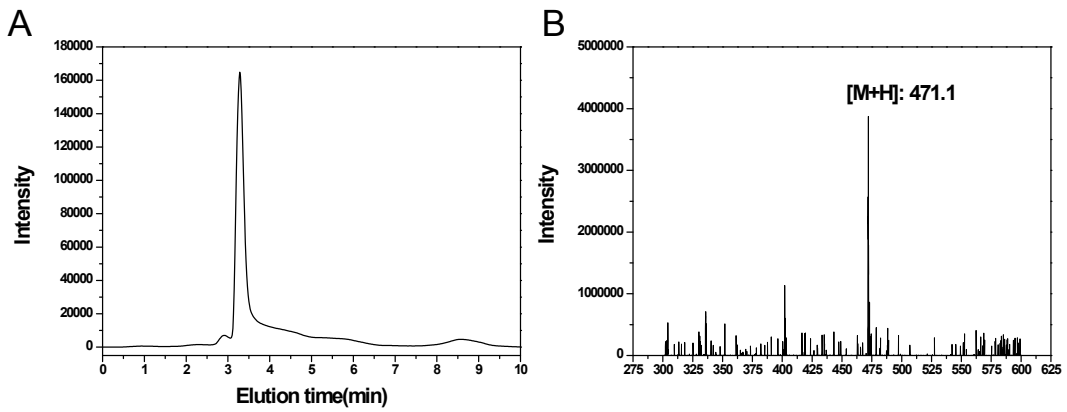

Fig. S2 LC-MS spectra of $Pt(NH_3)_2Cl_2(OOCC(CH_3)=CH_2)_2$

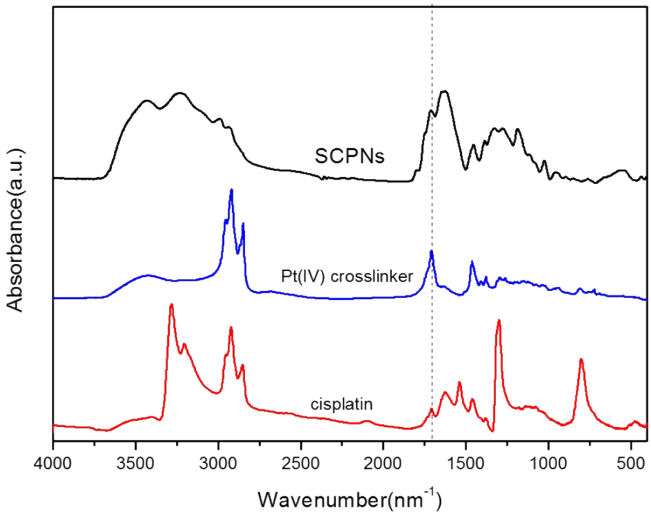

Fig. S3 FTIR spectra of cisplatin, $Pt(NH_3)_2Cl_2(OOCC(CH_3)=CH_2)_2$ and SCPNs. Compared with cisplatin, the dimethacrylate Pt(IV) prodrug clearly revealed the presence of an absorbance peak at 1731 cm^{-1} characteristic of carboxyl moieties

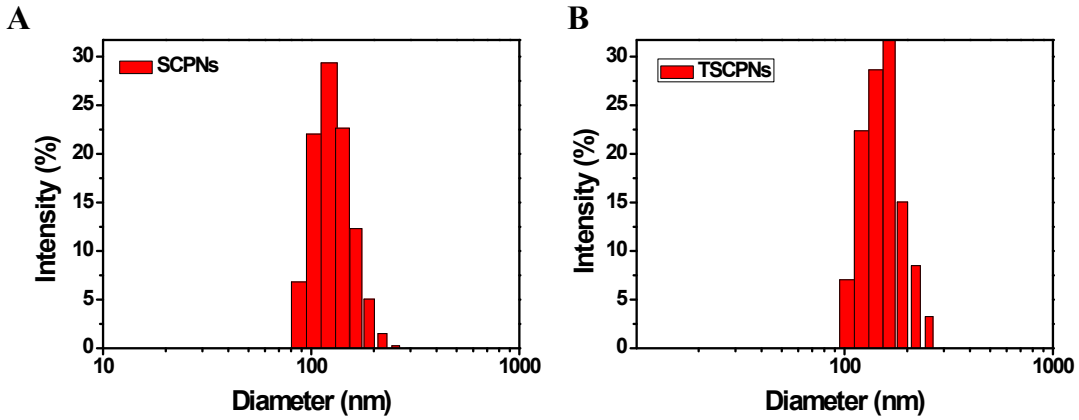

Fig. S4 The hydrodynamic size distribution of A)SCPNs and B)TSCPNs.

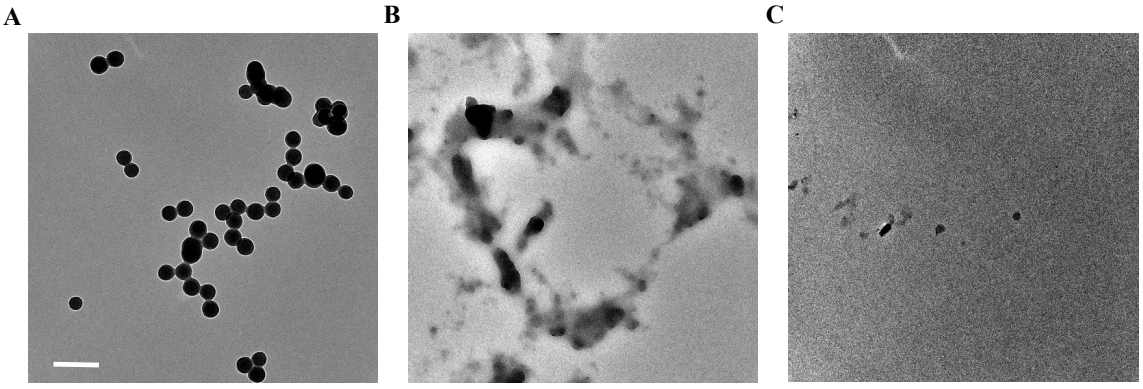

Fig. S5 The dissociation behavior of the TSCPNs after incubating in 10 mM GSH solution for A) 0h, B) 1h, C) 3h observed by TEM.

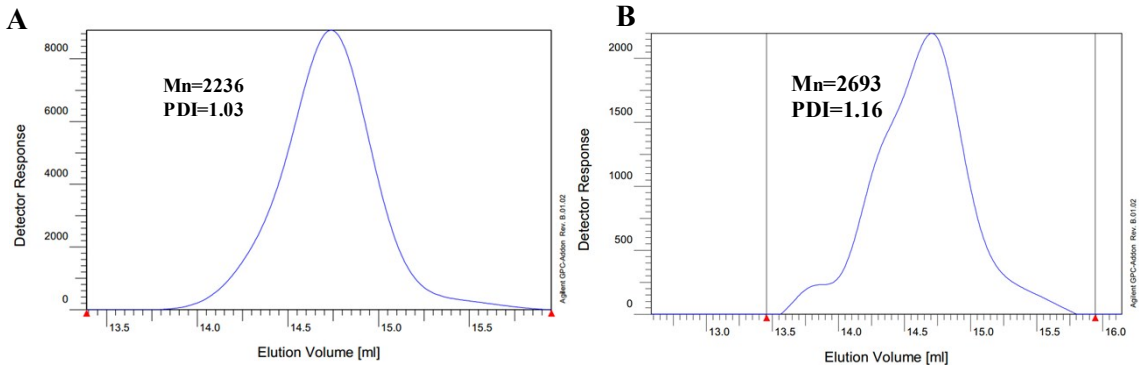

Fig. S6 The GPC profiles of the TPGS1000 before A) and after B) conjugating with cRGD peptide. GPC results proved that the TPGS-cRGD conjugate was eluted earlier than the unconjugated TPGS1000, which demonstrated that cRGD was conjugated to TPGS1000. The slight increase of molecular weight and PDI was due to the high molecular weight cRGD conjugation fraction in the whole composition.

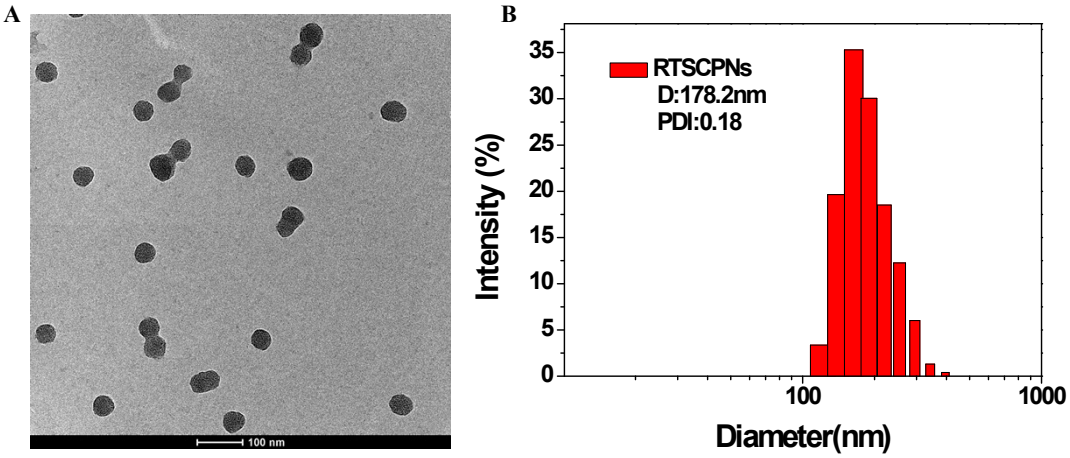

Fig. S7 TEM image and hydrodynamic size distribution of RTSCPNs.

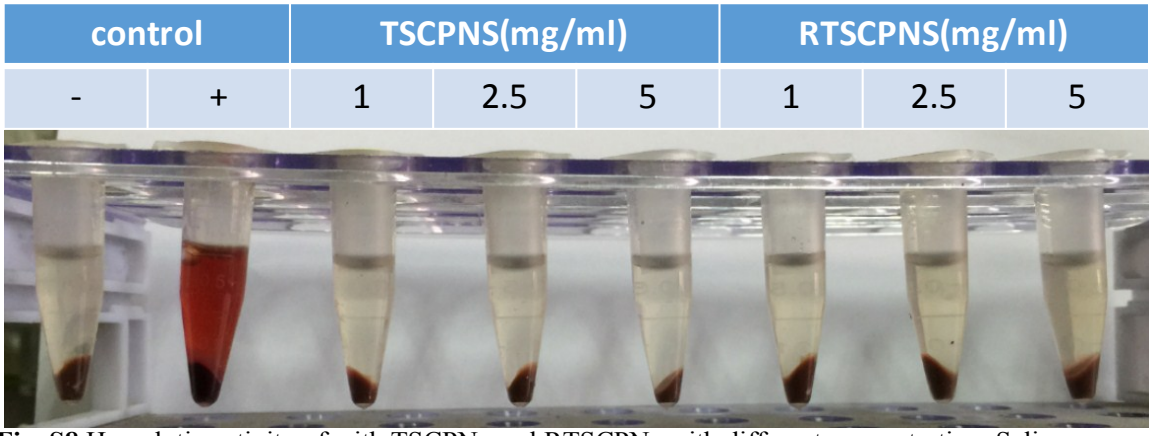

Fig. S8 Hemolytic activity of with TSCPNs and RTSCPNs with different concentration. Saline was used as a negative control and pure water was used as a positive control.

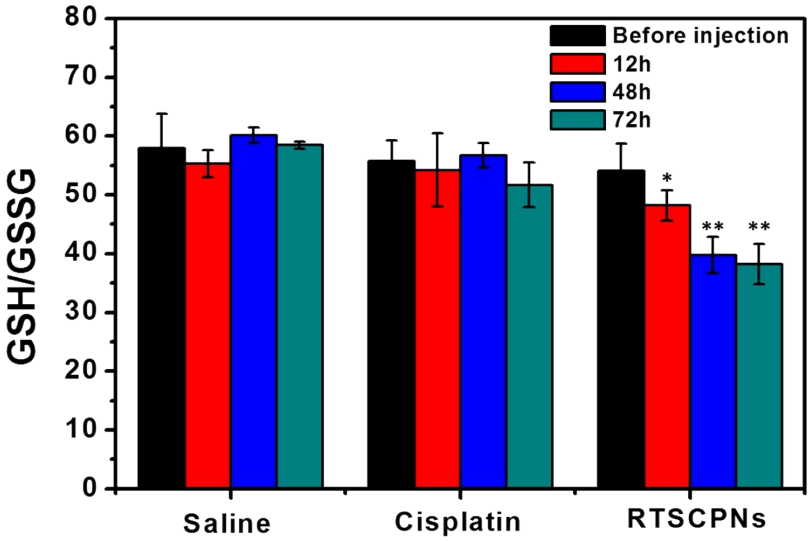

Fig. S9 Ratio of GSH to GSSG in the tumor tissues of the mice exposed to the saline, cisplatin and RTSCPNs (n = 6). Dose: 12 mg/kg Pt every other day. *P < 0.05, **P < 0.01.

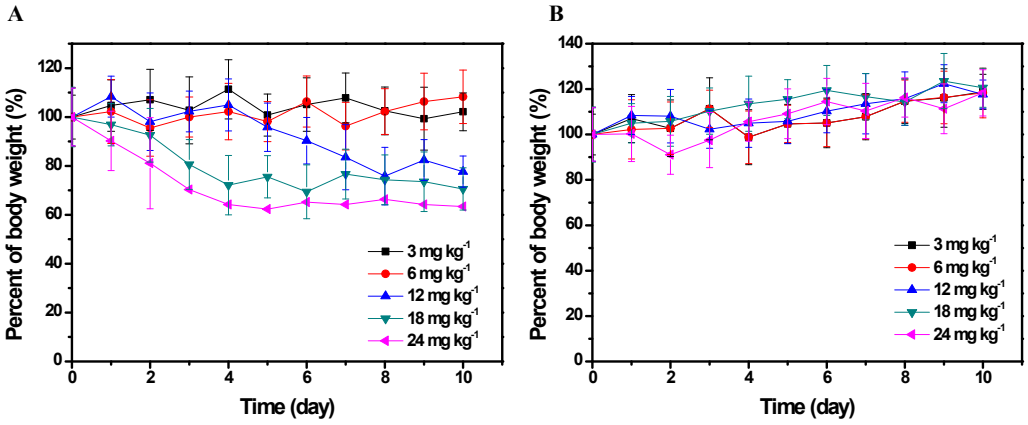

Fig. S10 The percent of body weight change of ICR mice treated with A) free cisplatin and B) RTSCPNs with different doses.

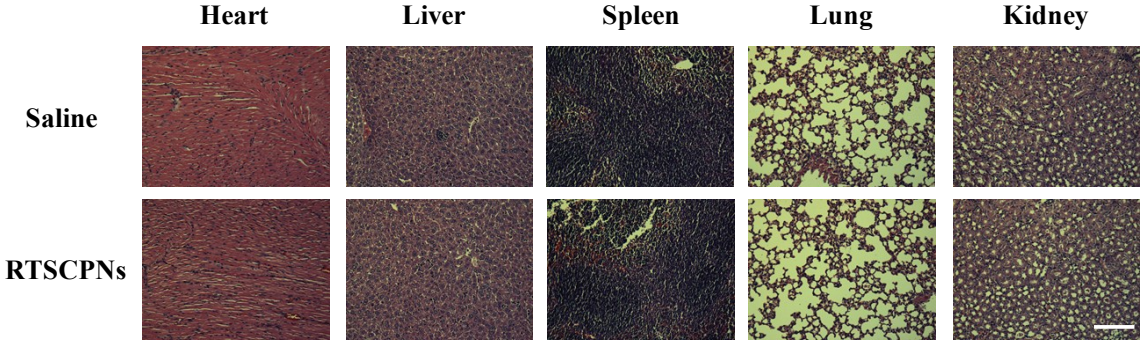

Fig. S11 H&E staining assays of heart, liver, spleen, lung and kidney collected at the end of tumor growth inhibition studies (scale bar is 50 μm for all images).

Table S1 Element analysis of dimethacrylate-Pt(IV) prodrug

Element content	C	H	O	Pt
Theoretical value	20.4	3.4	13.6	41.5
Measured value	21.0	3.7	13.8	40.9

Table S2 Platinum content of cisplatin, SCPNs and TSCPNs measured by ICP-AES.

Sample code	Cisplatin	SCPNs	TSCPNs
Platinum content (%)	64.58	38.75	28.21

Table S3 Antitumor potential (IC_{50} ± SD in μM) of cisplatin, GSH+cisplatin, GSSG+cisplatin and TSCPNs after 24 h or 48 h of incubation.[a]

Sample code	Cisplatin	Cisplatin+GSH	Cisplatin+GSSG	TSCPNs
IC50 ± SD in μM	12.56±0.64	/	13.87±0.18	4.09±0.15

[a]Determined by CCK-8 assay.