Electronic Supplementary Material (ESI) for Nanoscale.

Supporting information

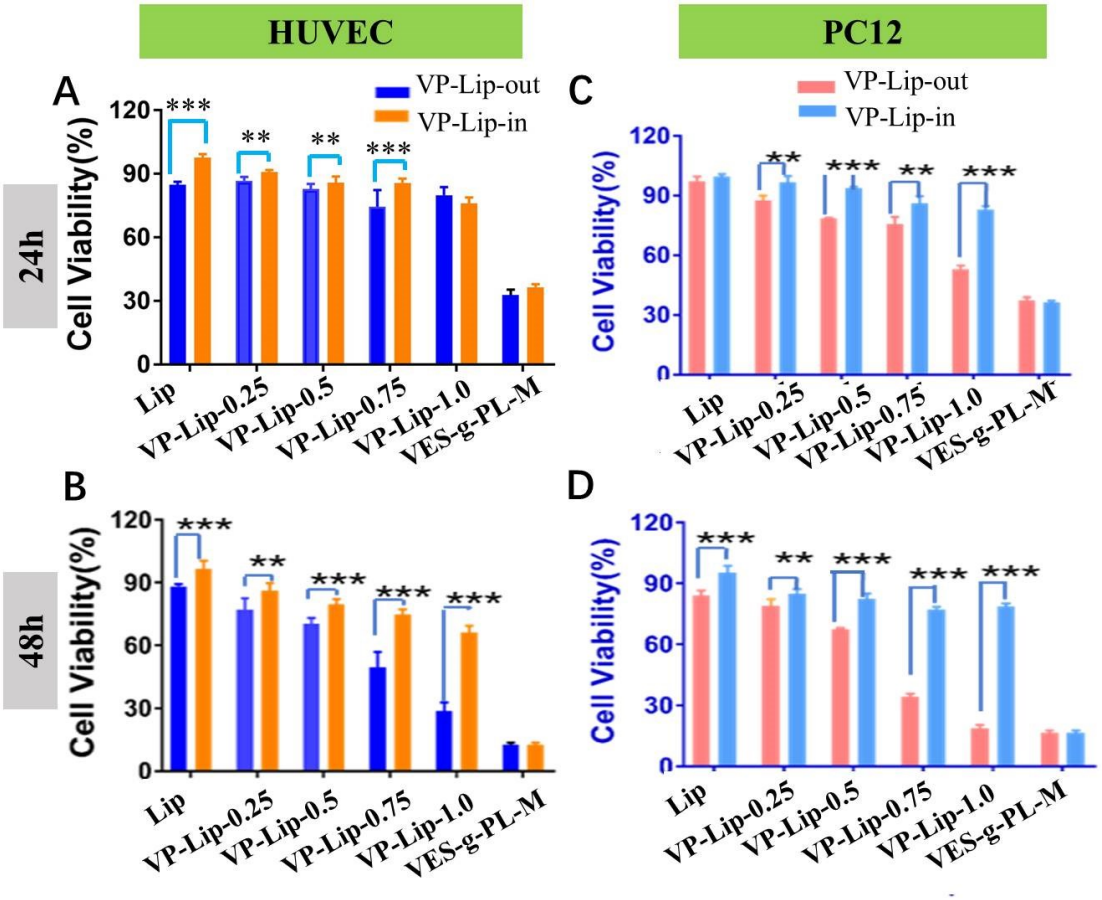

Fig S1 Cytotoxicity of two types of liposomes (0.5mg/mL) with different concentration of VES-g-PL micelle (VP-Lip, the marked number indicated the final concentration of VES-g-PL in liposome was 0.25, 0.5, 0.75 and 1.0μg/mL, respectively) against HUVEC cells (A and B) and PC12 cells (C and D) after incubation of 24h or 48h.

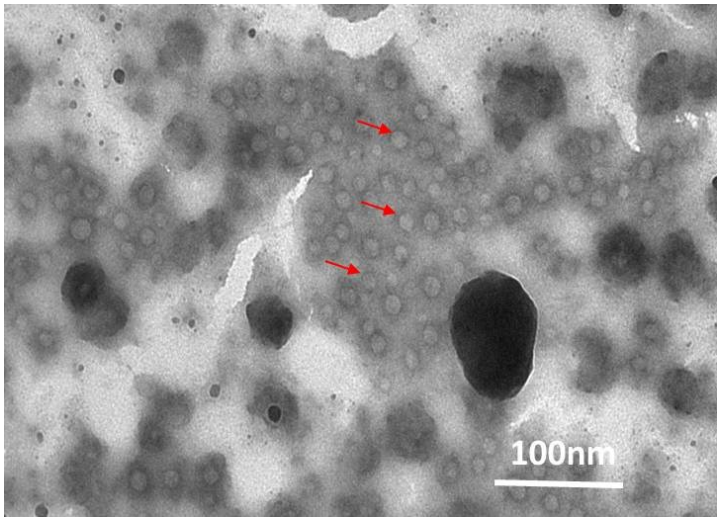

Fig S2 TEM Images of pDNA-loaded VES-g-PL micelles (T@VP)

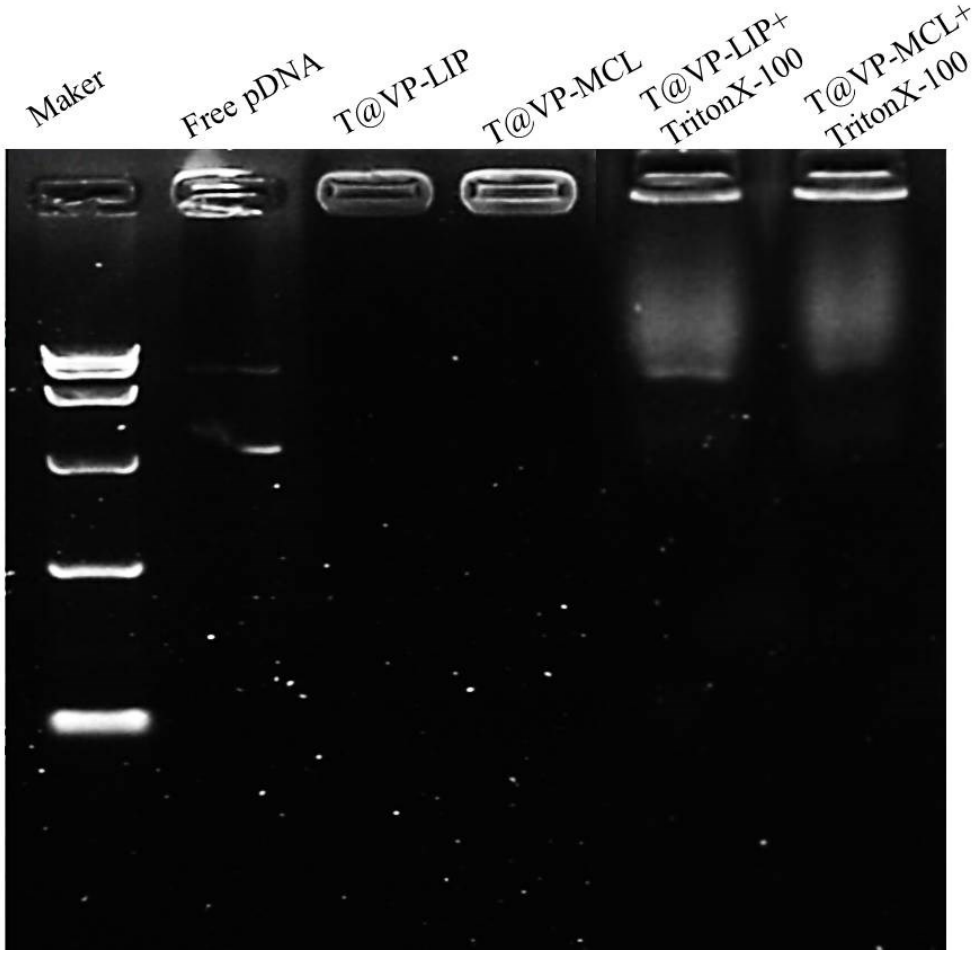

Fig S3 Agarose gel electrophoresis retardation assay of T@VP-LIP and T@VP-MCL treated with Triton X-100.

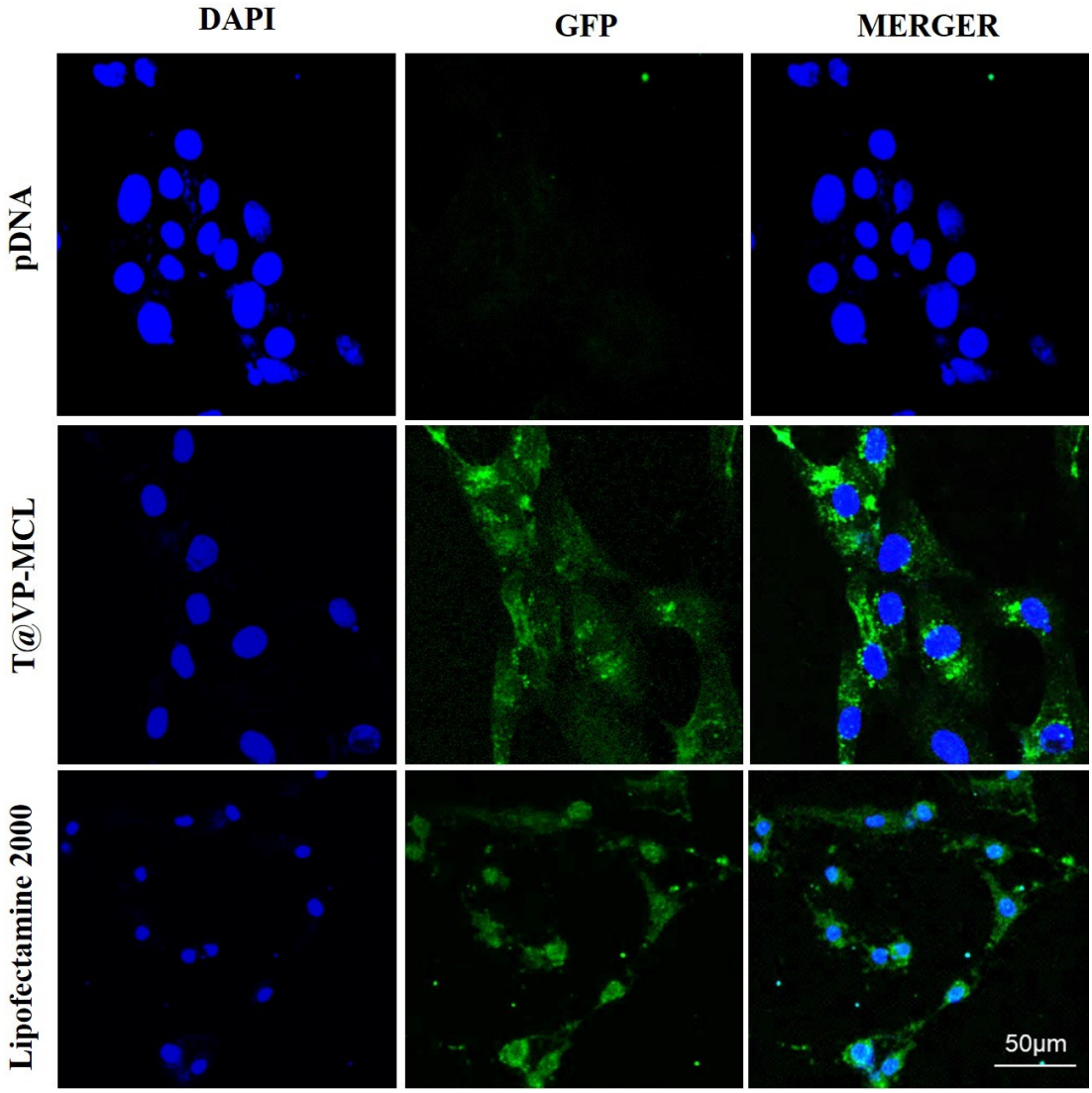

Fig S4 Transfection of pDNA in C6 glioma cells after incubation with different formulations containing pDNA (4μg/mL) for 8h at 37℃.

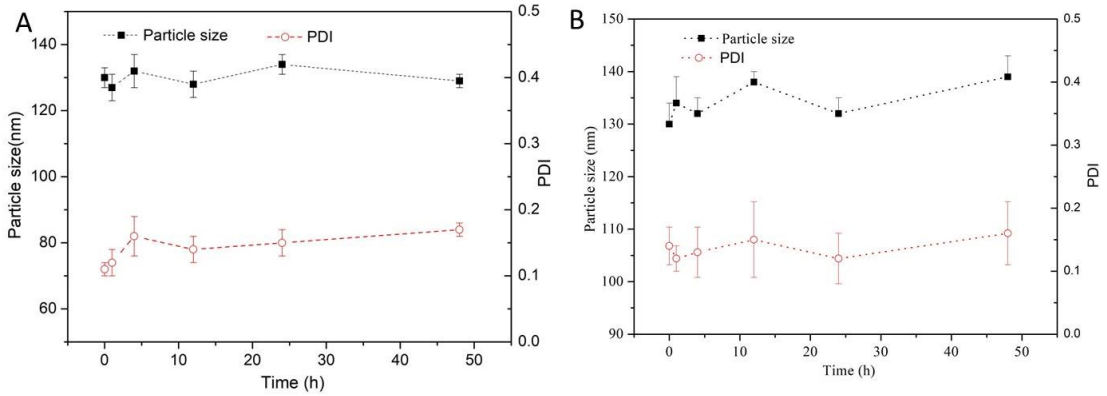

Fig S5 Particle size and particle size distribution of T@VP-MCL at different time after incubating with pH7.4PBS containing 10% human serum albumin (A) or pH6.5 PBS at 37℃.

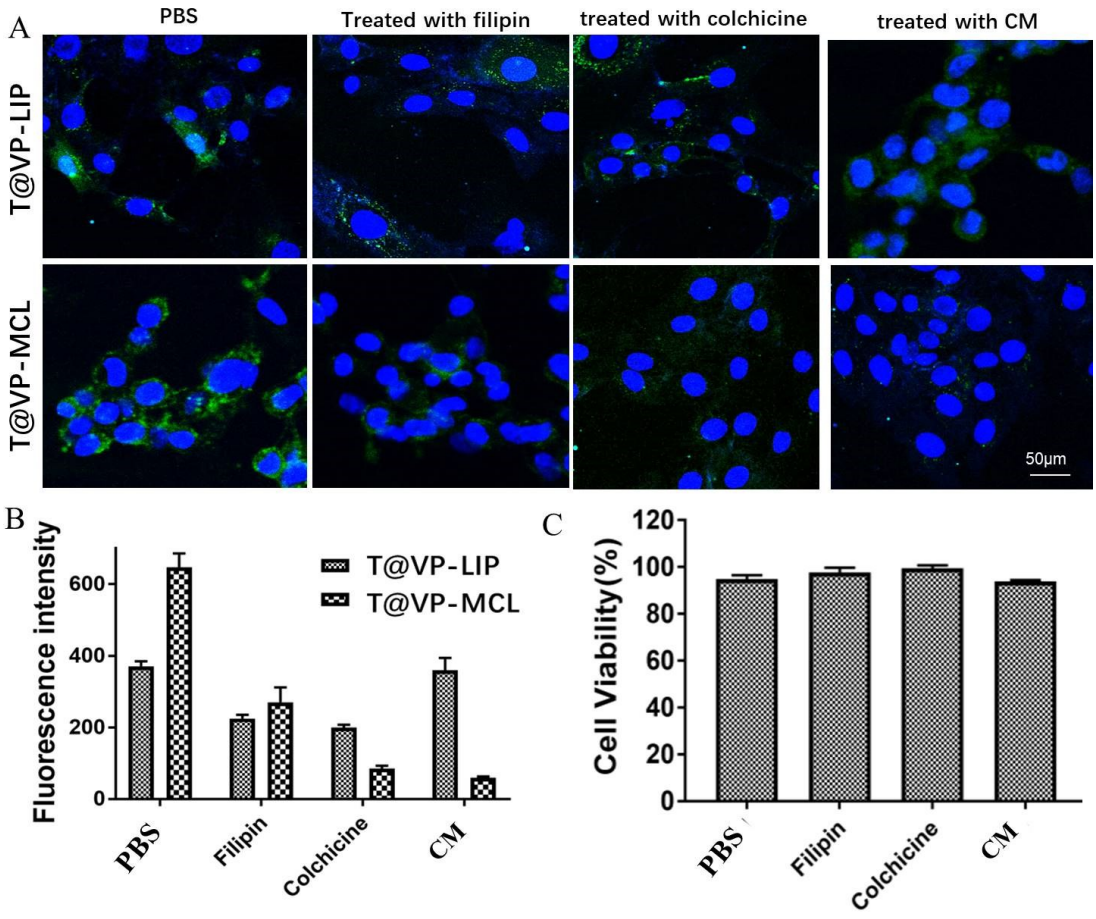

Fig S6 The mechanism of T@VP-MCL toward C6 cells: (A) Cellular uptake of T@VP-LIP and T@VP-MCL by C6 cells in presence of different inhibitors were evaluated by examining GFP fluorescent after 8h of incubation; (B) the quantitative statistics of fluorescence intensity and (C) MTT assay of different inhibitors toward C6 cells.

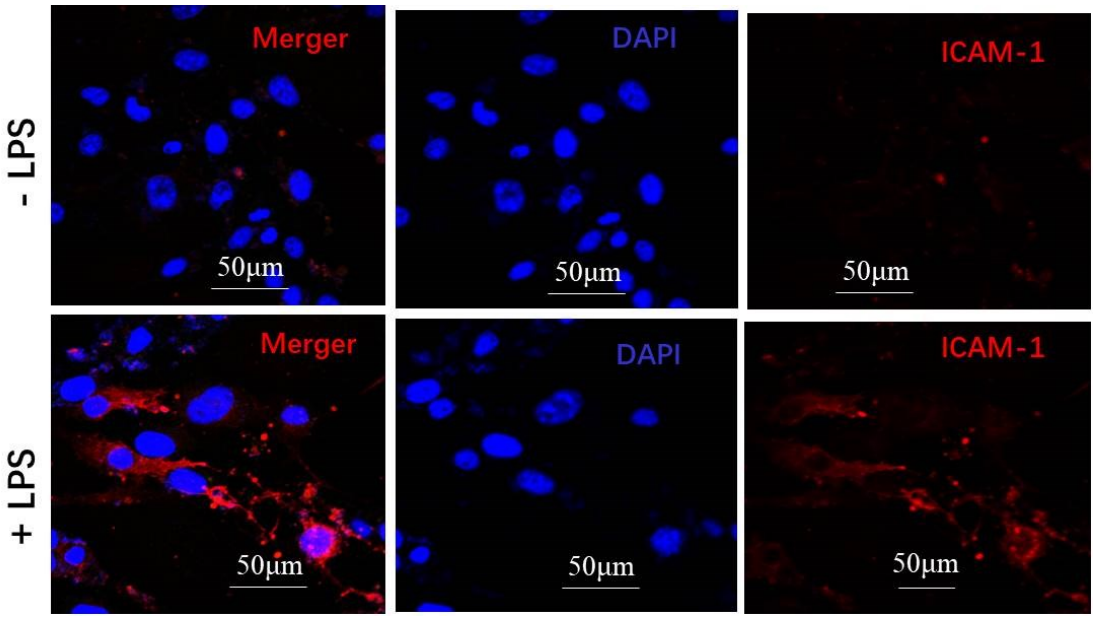

Fig S7 Expression of ICAM-1 on RBMEC cells in presence of the stimuli of inflammatory factor, LPS (10ng/mL) for 12 h or not.

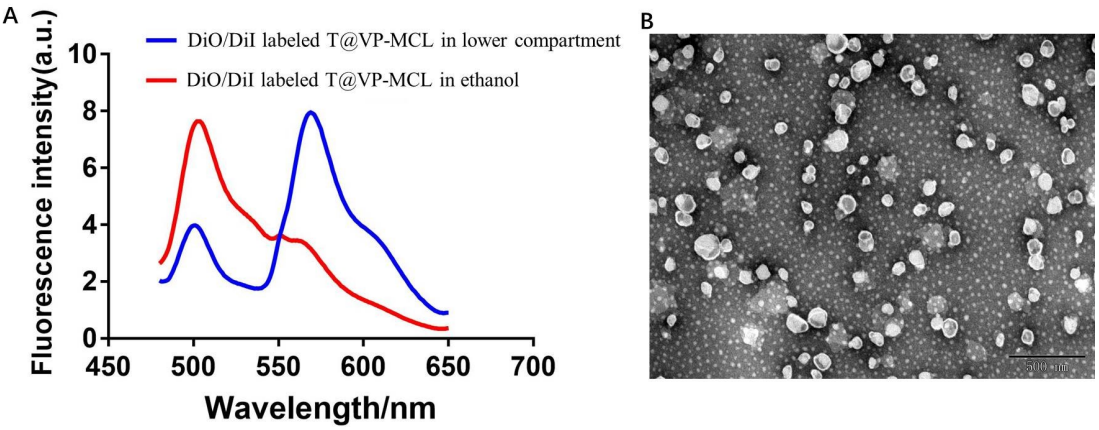

Fig S8 The intact T@VP-MCL traversing across BBB model: (A) the fluorescence spectra of DiO/DiI labeled T@VP-MCL in lower compartment after 8h of incubation or DiO/DiI labeled T@VP-MCL diluted with ethanol; (B) TEM image of DiO/DiI labeled T@VP-MCL in lower compartment after 8h of incubation (scale bar:500μm).

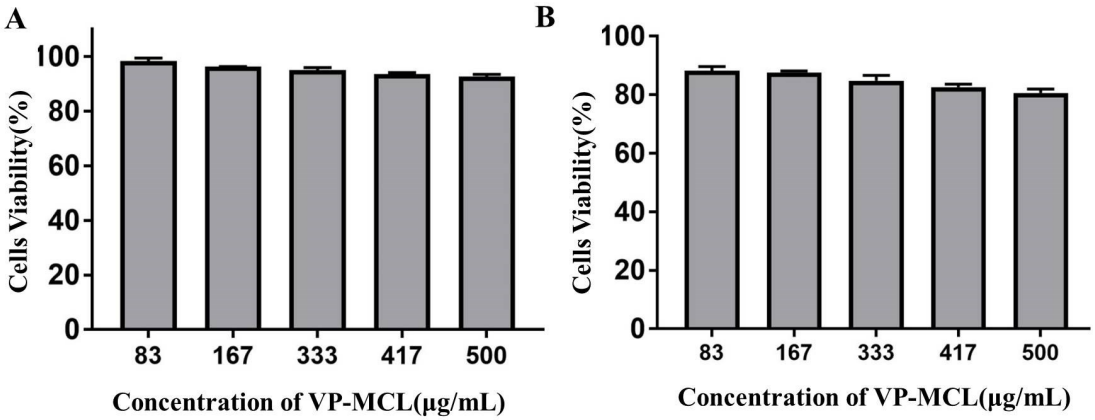

Fig S9 Cytotoxity of the blank vehicles (VP-MCL) against C6 cells after 24h (A) and 48h (B) of treatment.

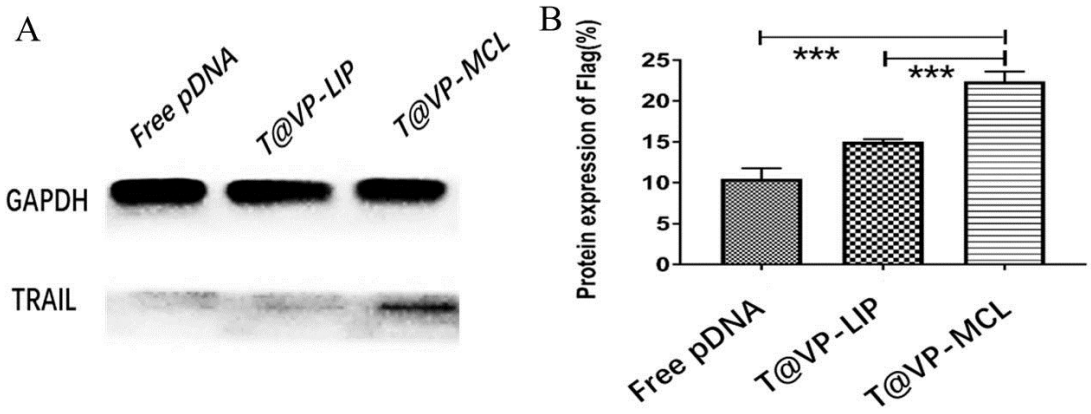

Fig S10 (A) Western blot analysis of TRAIL expression in C6 cells transfected with free pDNA, T@VP-LIP and T@VP-MCL; (B) the quantitative statistics results according to A ($^{***}P<0.05$, n=3).

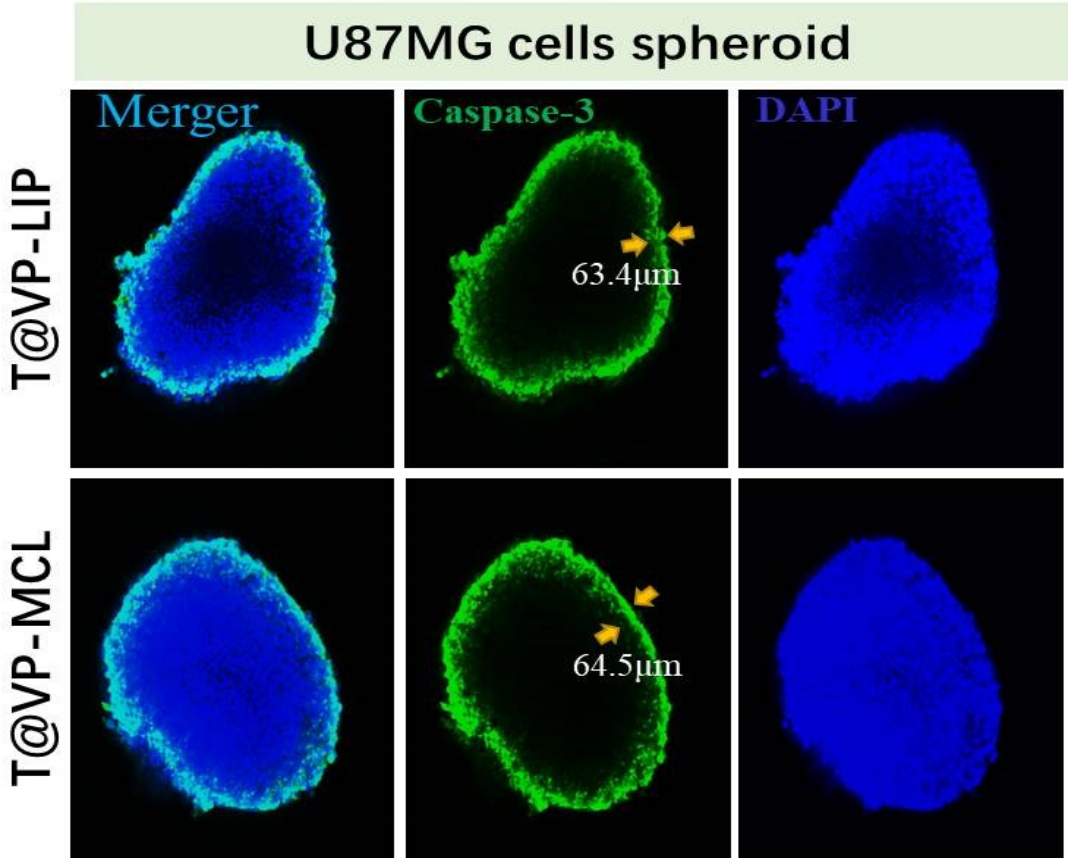

Fig S11 the cell apoptosis of U87MG cells spheroids after different treatment by detecting the immunofluorescence of caspase-3(The arrow indicated the depth of cell apoptosis).

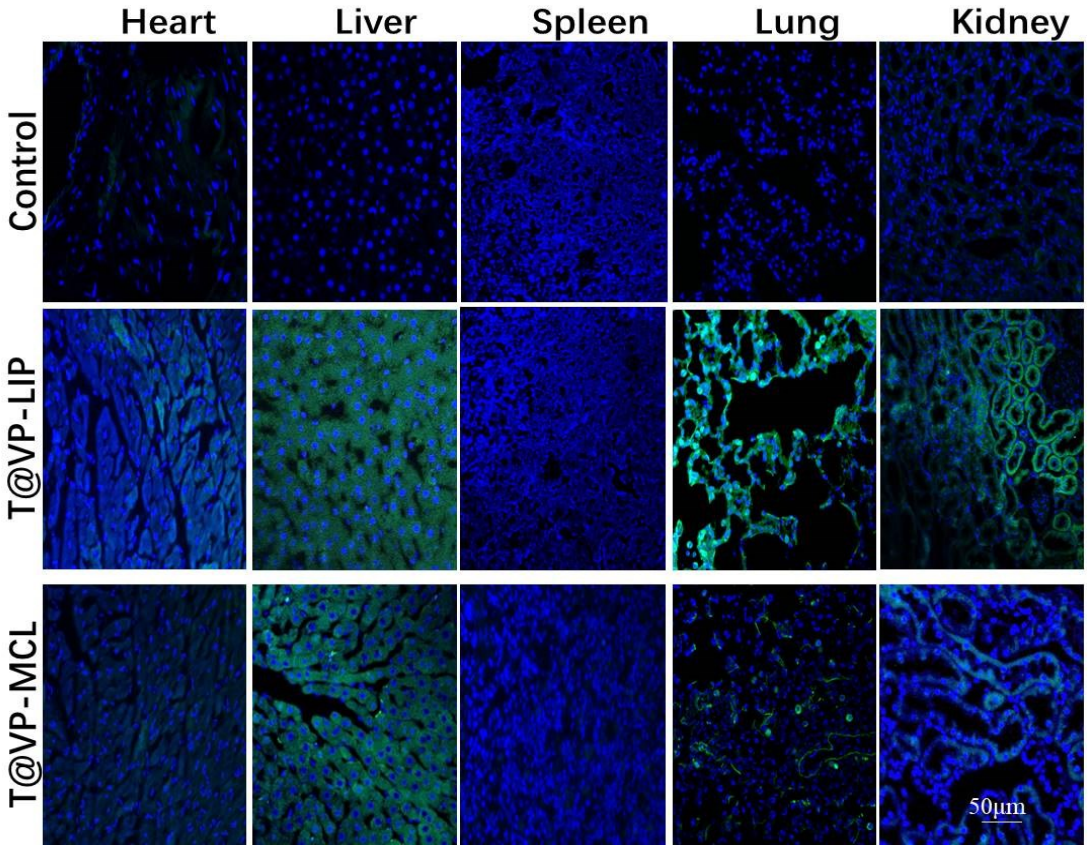

Fig S12 The expression of GFP in major organs at 48h after treatment with various formulations. (Magnification ×20)

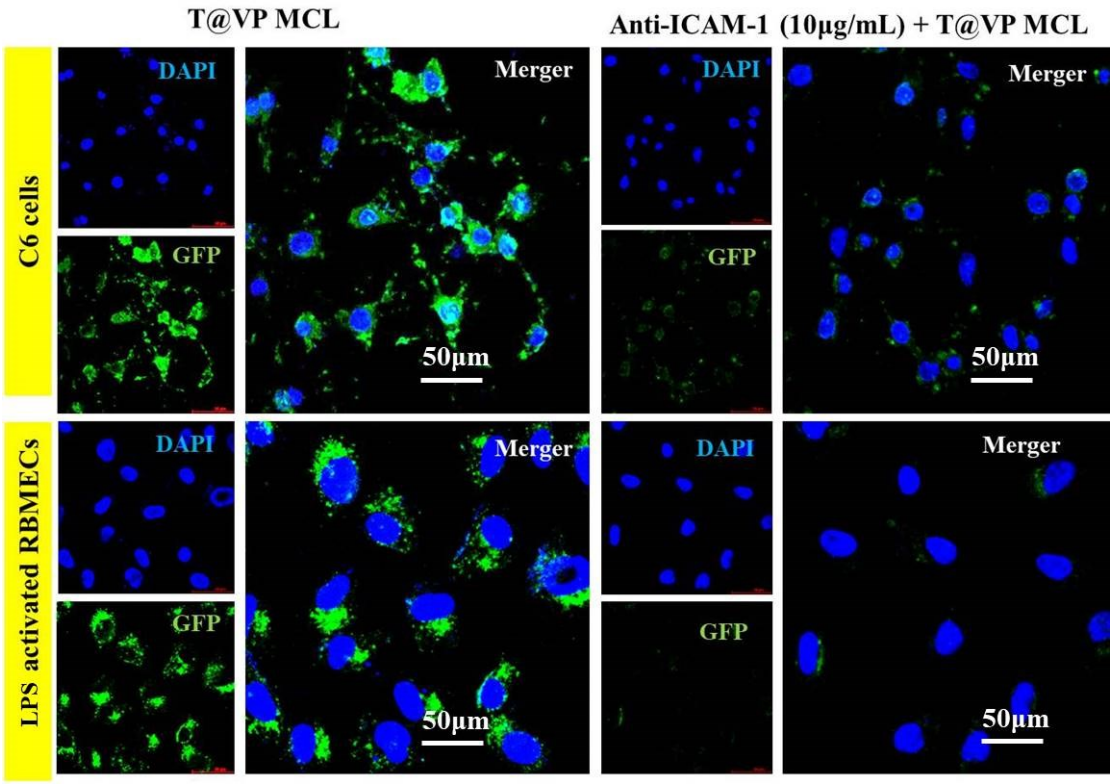

Fig S13 The specific interaction between T@VP-MCL and ICAM-1 receptors on C6 glioma cells or the inflammatory RBMECs: the decreased expression of GFP inside C6 cells or the inflammatory RBMECs was also observed when these cells were blocked by anti-ICAM-1 followed by transfection with T@VP-MCL (Scale: 50μm).