Supporting Information

Biomineralization-Inspired Synthesis of Amorphous Manganese Phosphates for GLUT5-Targeted Drug-Free Catalytic Therapy of Osteosarcoma

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Supporting Figures

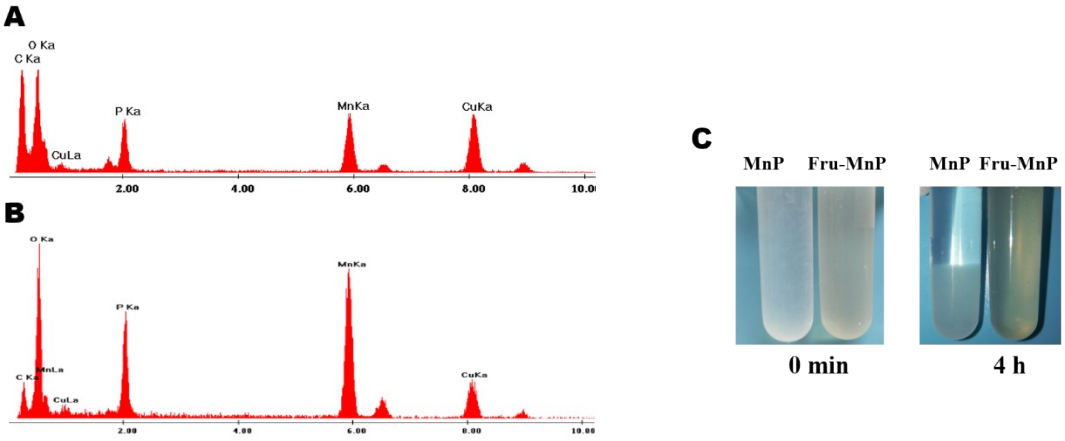

Fig. S1. EDS results of Fru-MnP (A) and MnP (B); water solubility of MnP and Fru-MnP (C)

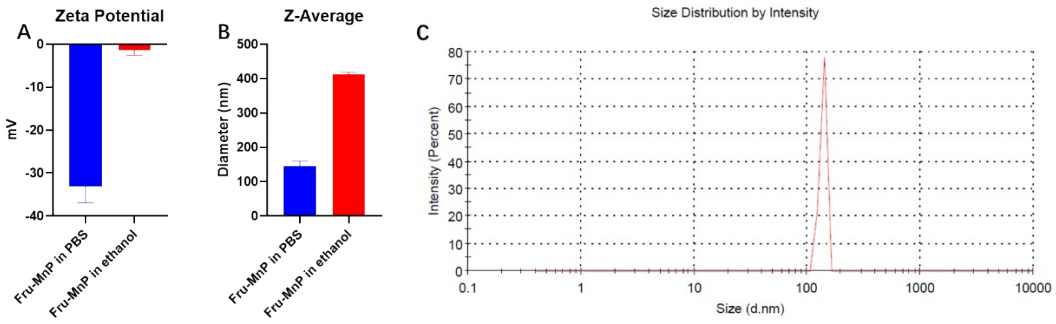

Fig. S2. Zeta potential (A) and particle size (B) of Fru-MnP in PBS or ethanol, and size distribution of Fru-MnP in PBS

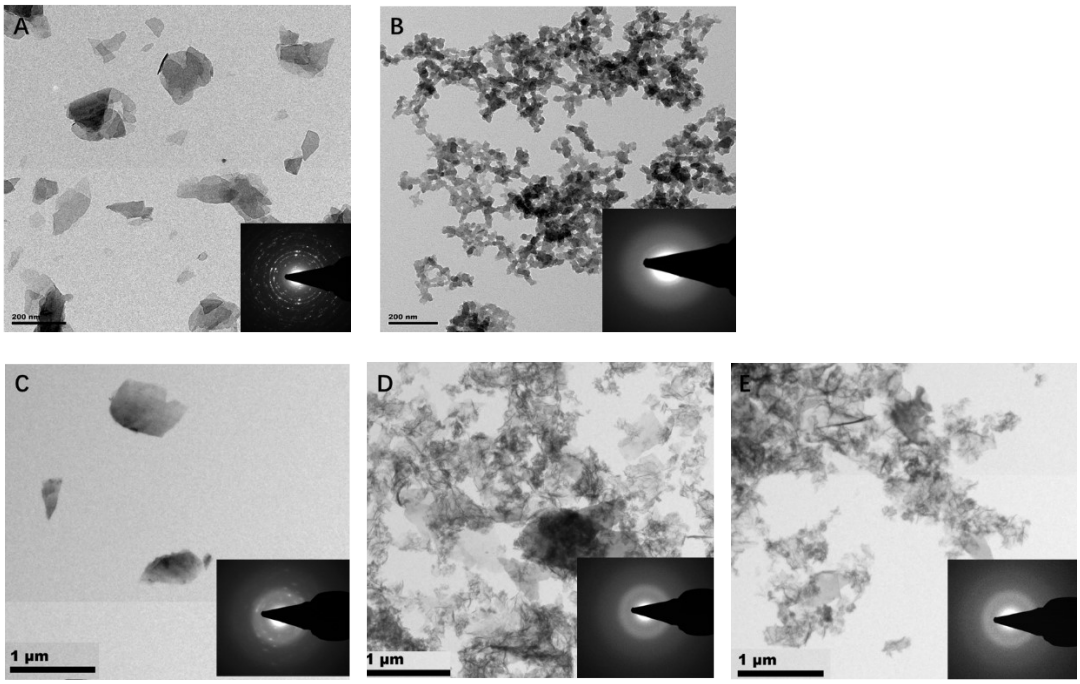

Fig. S3 TEM microscopy images and SEAD pattern of MnP (A) and Fru-MnP in PBS (B), and Fru-MnP in PBS at different pH for 120 h (C: pH=5.4, D: pH=6.5, E: pH=7.4).

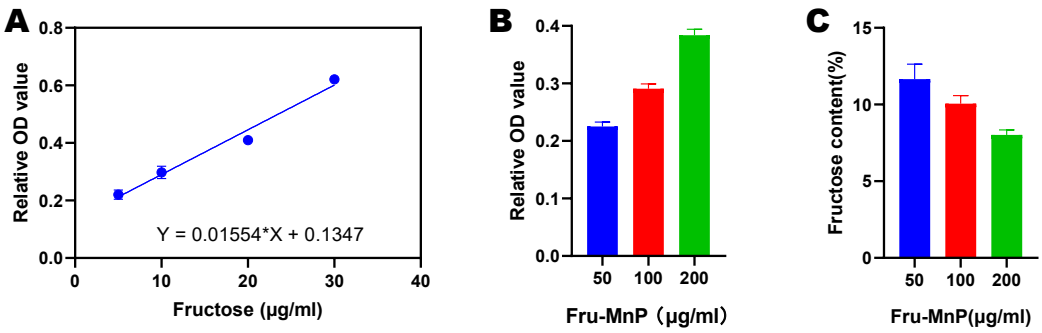

Fig. S4. Fructose content in Fru-MnP. (a) Linear analysis between OD value and fructose concentration. (b) OD values of fructose in Fru-MnP with different concentration. (c) Percentage of fructose content in Fru-MnP.

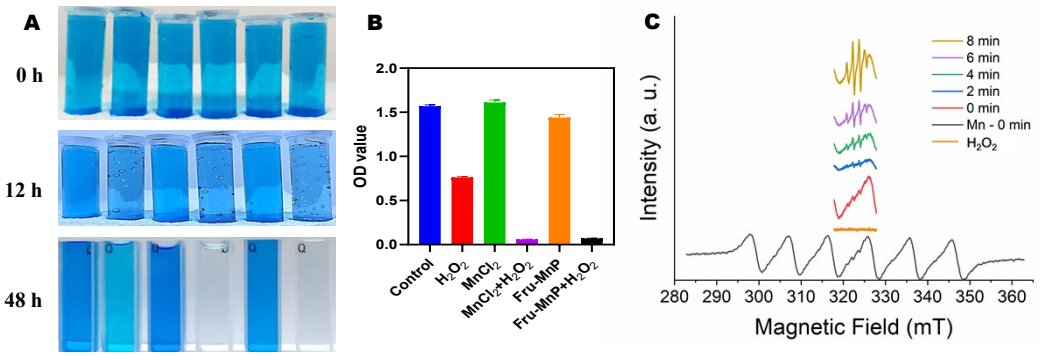

Fig. S5. (a) The O2 concentration changes (bubble) and MB concentration changes after addition of catalyst (control group, H_2O_2,), $MnCl_2$, $MnCl_2$+H_2O_2, Fru-MnP, Fru-MnP +H_2O_2). (b) OD values of MB solution at 48h. (c) EPR spectra of ·OH trapped by DMPO in Fru-MnP.

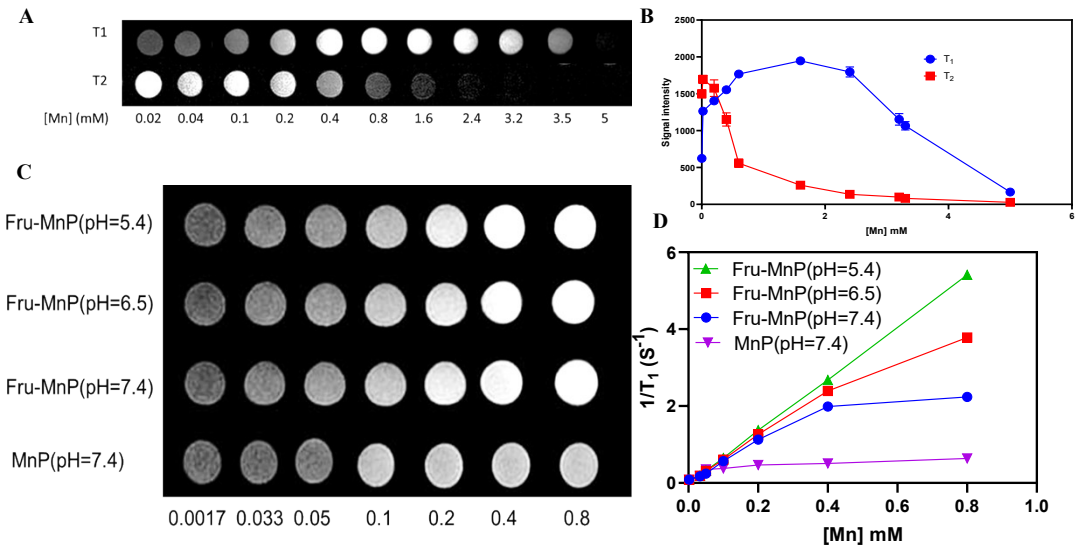

Fig. S6. (a-b) T1 and T2-weighted MR images of Fru-MnP solutions at different Mn concentration recorded using 3T MR scanner. (c) T1-weighted MR images of Fru-MnP solutions at different pH values recorded using 3T MR scanner, and the T1-weighted signal images of MnP solution at pH=7.4. (d) the corresponding relaxivity (unit: mM^{-1} s^{-1}) of Fru-MnP nanoparticles after co-incubation with different pH buffer solution at 37 °C for 24 h.

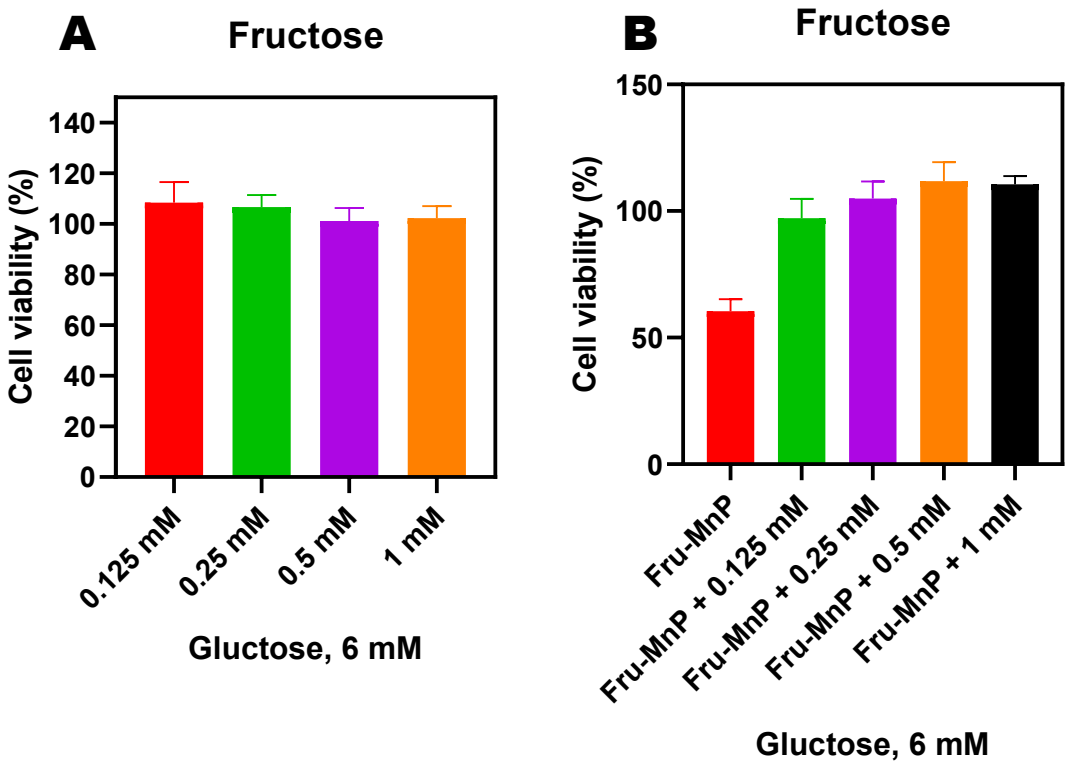

Fig. S7 (a) The cell viability of 143b when adding fructose into high glucose DMEM. (b) The cell viability of 143b when co-culturing with Fru-MnP, or with Fru-MnP mixed with different concentration of fructose.

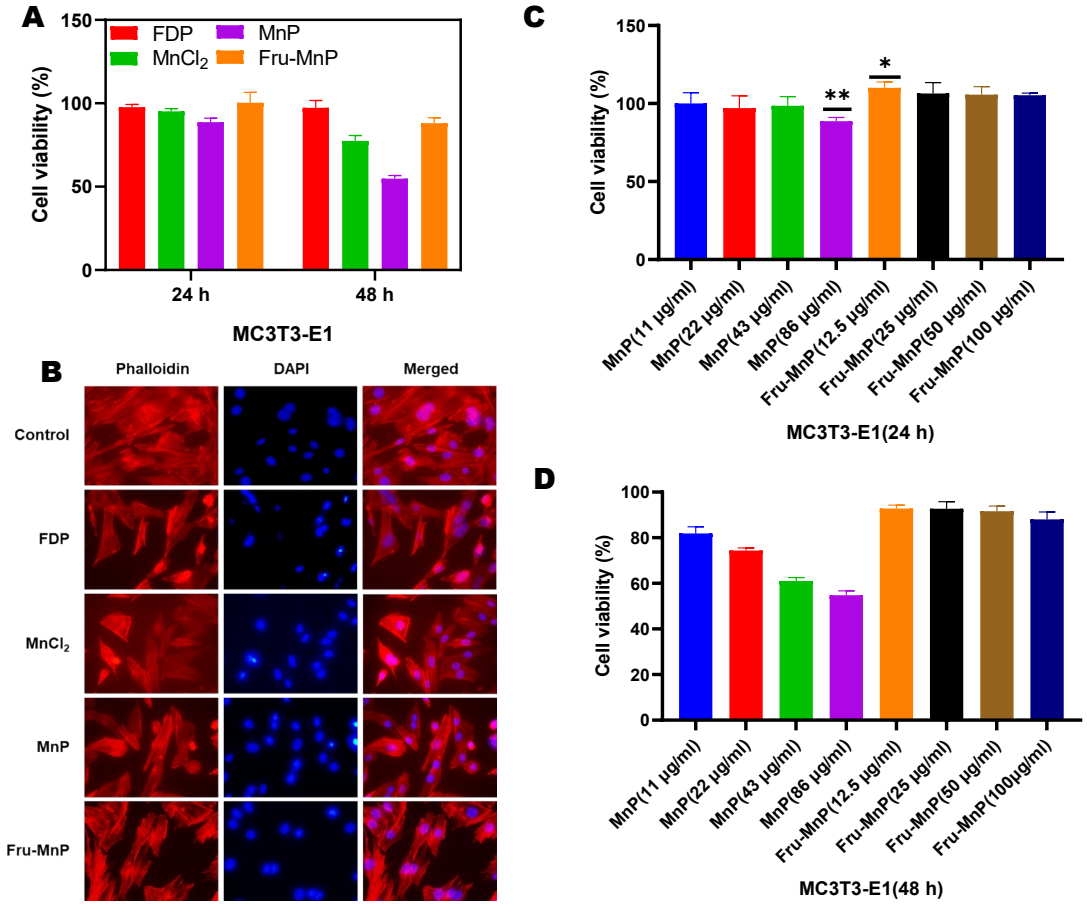

Fig. S8 (a) The cell viability of MC3T3-E1 co-cultured with FDP, $MnCl_2$, MnP and Fru-MnP. (b) Fluorescent images for the morphology (cytoskeleton) change of MC3T3-E1 cells co-cultured with FDP, $MnCl_2$, MnP and Fru-MnP for 48h. (c-d) The cell viability of MC3T3-E1 co-cultured with MnP or Fru-MnP with same Mn concentration.

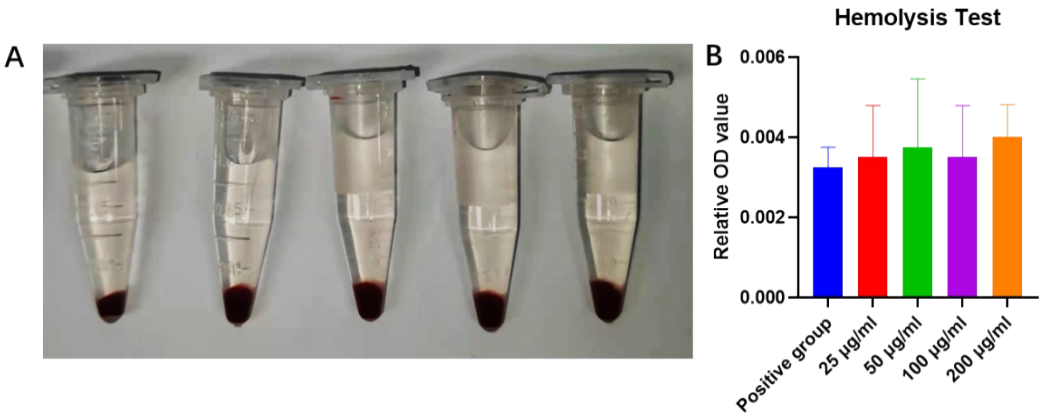

Figure S9, Hemolysis test of Fru-MnP (A, Positive group, and group 25, 50, 100 and 200 μg/ml), and relative OD value (B, relative Fru-MnP OD value= Fru-MnP in RBC/saline OD value – Fru-MnP in saline OD value, relative positive group OD value= RBC in saline OD value – saline value).