



Renal targeted oxygen nanocarrier for enhanced chemoresistance renal carcinoma cancer

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ABSTRACT: Renal cell carcinoma (RCC) which is one of solid tumors with intrinsic hypoxia feature is resistant to most chemotherapy and considered to be the most lethal urological cancer. Enhancing expression of efflux pump P-glycoprotein (P-gp) which could recognize various chemotherapeutic drugs associated with chemoresistance in renal carcinoma cancer under hypoxia. To overcome this problem and for efficient chemotherapy, a renal targeted oxygen nanocarrier (CHVNs) is constructed with a polymer crosslinked hemoglobin (HB) and vincristine (VCR) core, coated with chitosan to target renal, utilize Hb to transport oxygen and alleviate hypoxia and inhibit P-gp and enhance efficacy of VCR. iron center of porphyrin induces ferroptosis as supplementary treatment to chemotherap. Results showed that after a course of CHVNs, hypoxia of RCC was alleviated and P-gp was inhibited, and showed ferroptosis characteristics with a high level of lipid peroxidation. The anti-cancer effect of CHVNs was more effective than VCR. This study provided a novel renal targeted oxygen nanocarrier with multi-function to overcome chemoresistance in RCC

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