

Metal-Organic Nanomaterials-Mediated Tumor Microenvironment Regulation for Improving Tumor Therapy

Osteosarcoma is the most common primary malignant bone tumor with the pathological essence of osteolysis, seriously reduces the quality of life. To improve the treatment of osteosarcoma, current strategies focus on inhibiting osteolysis and cancer cell growth through combination therapy. Herein, we firstly developed a new “carrier free” core-shell metal-drug nanoparticles to enhance the treatment of orthotopic osteosarcoma through inhibiting osteoclast activity and sensitizing radiotherapy. The core was formed by self-assembly of ferric ions with zoledronate (ZOL). In addition, the inbuilt ZOL and surface modified hyaluronic acid could make the nanoparticles escape skeleton absorption and increase the concentration of zoledronate at the tumor site. The results corroborated the feasibility of HA@FeZOL mediated synergistic therapy against orthotopic osteosarcoma through sensitized radiotherapy and osteolysis inhibition. Therefore, this facile nanoplatform provide a new combinatorial strategy for treating osteosarcoma and open a window for application of metal-drug nanoparticles.

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