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Inorganic Theranostic Agents as the Tumor Microenvironment-Mediated Nanoplatform for Tumour-Specific Therapy

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Abstract

In this talk, I will focus on the latest progresses of our group on a variety of inorganic theranostic agents as the tumor microenvironment-mediated nanoplatform for the tumour-specific therapy. First, I will offer a thorough description of chemodynamic therapy (CDT), which is defined as the disproportionation of hydrogen peroxide (H_2O_2) through an intratumoral Fenton reaction. Such an endogenous chemical energy to generate cytotoxic·OH could substantially surmount the limitations of penetration and nonspecificity. Then, I will introduce the specific cancer-starving therapy. We provides a compelling proof-of-concept for the use of PVP-modified Mg_2Si nanoparticles as potential candidates for use as a tumor-targeted deoxygenating agent. This cancer-starvation therapy avoids the poisoning of normal/cancer cells by toxic drugs, and largely reduces the toxic side effects to normal cells and tissues, featuring high therapeutic biosafety.

Keywords: Microenvironment-mediated theranostic agents; Chemodynamic therapy; Cancer-starvation therapy