عنوان مقاله:

Application of Manganese Oxide (MnO) nanoparticles in multimodal molecular imaging and cancer therapy: A review

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نویسندگان:

Mehdi Khalilnejad - *Department of Medical Physic, School of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran*

Tohid Mortezazadeh - *Department of Medical Physic, School of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran*

Ramin Ghasemi Shayan - *Department of Radiology, Faculty of Paramedicine, Tabriz University of Medical Sciences, Tabriz, Iran*

خلاصه مقاله:

Contrast agents (CAs) play a critical role in high-resolution magnetic resonance imaging (MRI) applications to enhance the low intrinsic sensitivity of MRI. Manganese oxide nanoparticles (MnO) have gotten developing consideration as substitute spin–lattice (T١) MRI CAs as a result of the Gd-based CAs which are related with renal fibrosis as well as the inherent dark imaging characteristics of superparamagnetic iron oxide NPs. In this review, previous developments in the usage of MnO nanoparticles as MRI CAs for cancer theranostic applications such as developments in toxicological properties, distribution and tumor microenvironment (TME)-responsive biomaterials were reviewed. A literature search was accomplished to discover distributed research that elaborates the use of MnO in multimodal imaging and therapy. In the current study, the electronic search including PubMed/Medline, Embase, ProQuest, Scopus, Cochrane and Google Scholar was performed dependent on Mesh key words. CAs can significantly improve the imaging contrast among the lesions and normal tissues. In this study we generally concentrate on typical advancements of MnO nanoparticles about properties, bimodal or multimodal imaging, and therapy. Numerous researches have demonstrated MnO-based nanostructure produce considerable biocompatibility with the lack of cytotoxicity. Therefore, remarkable features improved photothermal therapy, chemotherapy and .Chemodynamic therapy

کلمات کلیدی:

magnetic resonance imaging, MnO nanoparticles, Multimodal imaging, Nanomaterial