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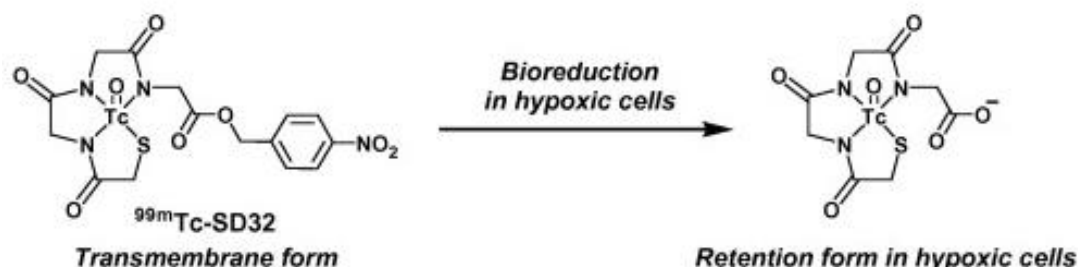
Lectura recomendada

Synthesis and evaluation of a novel ^{99m}Tc -labeled bioreductive probe for tumor hypoxia imaging

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Bioorganic & Medicinal Chemistry Letters
Volume 21, Issue 24, 15 December 2011, Pages 7359-7362

Tumor hypoxia is closely associated with the malignant progression and/or the high metastatic ability of tumors and often induces resistance to chemo- and/or radiotherapy. Thus, the detection and evaluation of hypoxia is important for the optimization of cancer therapy. We designed a novel ^{99m}Tc -labeled probe for tumor hypoxia imaging that utilizes bioreductive reactions in hypoxic cells. This probe, which contains a 4-nitrobenzyl ester group, is reduced in hypoxic cells to produce a corresponding carboxylate anion that cannot penetrate cell membranes because of its hydrophilicity and negative charge; therefore, it is expected to be trapped inside hypoxic cells. Based on this unique strategy, we synthesized the Technetium-99m (^{99m}Tc)-labeled probe ^{99m}Tc -SD32. The uptake of ^{99m}Tc -SD32 in tumor cells was investigated under normoxic and hypoxic conditions. ^{99m}Tc -SD32 showed sufficient accumulation and good retention in hypoxic cells. In addition, we demonstrated that ^{99m}Tc -SD32 was subjected to bioreduction in hypoxic cells and was trapped as the corresponding carboxylate anion. These results indicated that ^{99m}Tc -SD32 would be a promising agent for in vivo hypoxia imaging.





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