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Prospective carriers of 223-Ra for targeted alpha particle therapy.

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Targeted alpha particle therapy (TAT) is very powerfull tool against cancer, since DNA double-strand breaks caused by alpha radiation induce cells death.
Main advantage of radionuclides decaying by alpha particle cascade in a short-lived chain is the deposition of high energy in very small volume (approx. 27 MeV in the case of 223-Ra).
However main disadvantage of such in vivo generator is the release of daughter hot atoms from all chemical bonds. Energy of chemical bond is just several few eV compared to recoil energy of daughter atom that typically ranges to about 100 keV.
We report here on basic aspects that have to be addressed in TAT systems and describe our experimens with prospective carriers of 223-Ra intended for bone therapy. Preparation, labelling yelds and in vitro stabilities are given.

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