

RADIOPHARMACEUTICAL DOSE DISTRIBUTION IN DIFFERENT ORGANS AND TISSUES FOR Lu-177 WITH DIFFERENT CARRIER

Hesham MH Zakaly^{1,3}, Mostafa. Y. A. Mostafa^{1,4}, M Zhukovsky²

¹⁾ Ural Federal University, Yekaterinburg, Russia

²⁾ Institute of Industrial ecology UB RAS, Ekaterinburg, Russia

³⁾ Al-Azhar University, Assuit Branch, Physics Department, Assuit, Egypt

⁴⁾ Minia University, faculty of Science, Department of Physics, El-Minia, Egypt

*E-mail: h.m.zakaly@gmail.com

¹⁷⁷Lu refers to rare earth elements from a group of lanthanides. Relative to its short time span, ¹⁷⁷Lu has virtually pervaded all areas of in vivo radionuclide therapy and becomes one of important keys for therapeutic radionuclides of choice for targeted radionuclide therapy. The rising interest in the use of ¹⁷⁷Lu in targeted molecular therapies has primarily developed from recent unmatched advances in molecular and cell biology, which include the use of peptides targeted to cell surface receptors, which are overexpressed on the surface of tumour cells. Therefore, the use of ¹⁷⁷Lu-labelled radiopharmaceuticals have been the major factors evoking excitement among researchers and capturing the imagination of the clinical community thanks to advances in molecular and cellular biology. In this work, radiopharmaceutical comparison for ¹⁷⁷Lu absorbed dose in health human organs and tissues is presented. The comparison between unlabelled ¹⁷⁷Lu (ionic form) and labelled with ¹⁷⁷Lu-MDP (methylenediphosphonate) and ¹⁷⁷Lu-MAb (monoclonal antibodies). The biokinetic model in each case are described and presented. The absorbed dose in health human organs and tissues are simulated with two recommended programs WinAct and IDAC 2.1 (Internal Dose Assessment by Computer) software¹. The distribution of absorbed dose in the main organs nearly the same with different in the value for the ionic form and ¹⁷⁷Lu-MDP. The absorption in the case of ionic form is high (Fig.1). the distribution is completely change while ¹⁷⁷Lu-Mab is used. The most absorbed dose fraction goes to spleen and liver unlike bone surface absorb nearly 50 % of dose.

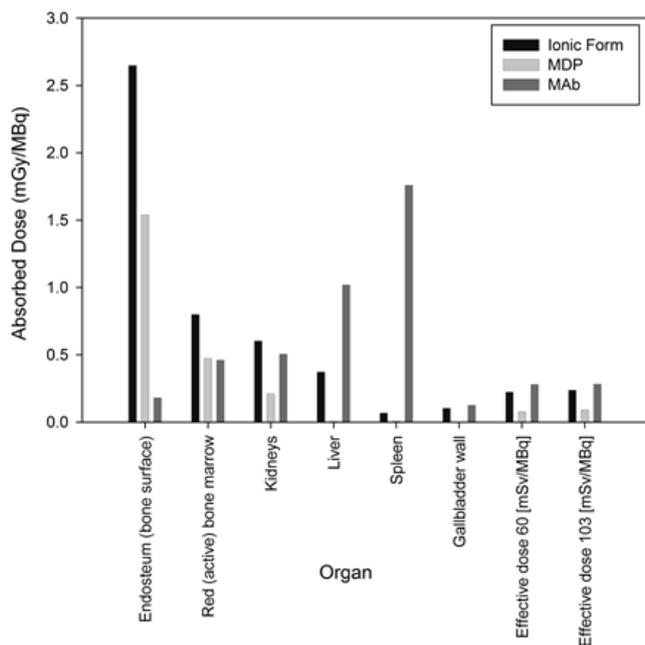


Fig. 1. Main organs absorbed dose

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1. Mostafa. Y.A.M et al., Radiological Physics and Technology, in press (2019).