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# Radiolabeling of Ibandronate with $^{188}$Re and its quality control as a bone-seeking radiopharmaceutical

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## Abstract

Skeletal metastases are prevalent complications related to patients with solid tumor cancer. Till now several bone-seeking radiopharmaceuticals have been developed for bone metastases. Interesting features of bisphosphonates attracted attentions to them in the field of radiopharmaceutical therapy and studies on new generation of them have been doing too. The aim of this study was to produce and quality control of a radiopharmaceutical made with ibandronate as the third generation of bisphosphonates. For this purpose, Ibandronate was labeled with beta-emitting radionuclide of rhenium-188. Radionuclide purity was investigated using gamma spectrometry and radiochemical purity by thin layer chromatography. Finally, the biodistribution of this radiopharmaceutical was evaluated in mice. The results showed that the radiochemical purity of this compound is about 97%. the highest uptake (ID/g) was related to bone and the amount of this uptake was 7.11% at 12 hours after injection. The kidneys and stomach were the two organs that had the most activity after bone. Considering the possibility of producing the 188Re-IBA radiopharmaceutical, as well as the proper distribution of this radiopharmaceutical in target and non-target organs, it can be concluded that the ibandronate as the third generation of bisphosphonates this radiopharmaceutical can be useful in the bone metastases treatment.

**Keywords:** quality control, radiopharmaceutical, biodistribution, Re-IBA.

For full article, refer to the Persian section.