

Production, Quality Control, and Biodistribution Assessment of ^{111}In -BPAMD as a New Bone Imaging Agent

Authors : H. Yousefnia, A. Aghanejad, A. Mirzaei, R. Enayati, A. R. Jalilian, S. Zolghadri

Abstract : Bone metastases occur in many cases at an early stage of the tumour disease; however, their symptoms are recognized rather late. The aim of this study was the preparation and quality control of ^{111}In -BPAMD for diagnostic purposes. ^{111}In was produced at the Agricultural, Medical, and Industrial Research School (AMIRS) by means of 30 MeV cyclotron via $^{nat}\text{Cd}(p,x)^{111}\text{In}$ reaction. Complexion of In-111 with BPAMD was carried out by using acidic solution of $^{111}\text{InCl}_3$ and BPAMD in absolute water. The effect of various parameters such as temperature, ligand concentration, pH, and time on the radiolabeled yield was studied. ^{111}In -BPAMD was prepared successfully with the radiochemical purity of 95% at the optimized condition (100 μg of BPAMD, pH=5, and at 90°C for 1 h) which was measured by ITLC method. The final solution was injected to wild-type mice and biodistribution was determined up to 72 h. SPECT images were acquired after 2 and 24 h post injection. Both the biodistribution studies and SPECT imaging indicated high bone uptake while accumulation in other organs was approximately negligible. The results show that ^{111}In -BPAMD can be used as an excellent tracer for diagnosis of bone metastases by SPECT imaging.

Keywords : biodistribution, BPAMD, ^{111}In , SPECT

Conference Title : ICRR 2014 : International Conference on Radiopharmacy and Radiopharmaceuticals

Conference Location : Paris, France

Conference Dates : December 30-31, 2014