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PREPARATION OF 153Sm-EDTMP AND BIODISTRIBUTION IN RATS. M.F de Barboza, H. Gasiglia, E. Muramoto, G.Achando, R.Herrerias, N.S.de Pereira and J.Mengatti. Instituto de Pesquisas Energéticas e Nucleares IPEN-CNEN/SP Brazil.

153Sm-ethylenediaminetetramethylenephosphonate (EDTMP) has proven effective as radiotherapeutic agent in the treatment of metastatic bone cancer pain. The Sm-153 was obtained by neutron irradiation in IEA-R1 reactor of IPEN-CNEN/SP using a thermal flux 1 X 10 ^{13} n/cm^2 sec. during 8 hours; natural Sm_2O_3 was dissolved in 1 N HNO_3 to 10 mg/ml v/v, from this stock solution 1-3 mg of $Sm(NO_3)_3$ was placed into a quartz vial and dryness. Following the irradiation, the target was opened and then dissolved in 0.1N HCl at 1 mg/ml. 153Sm-Cl_3 (3 - 6 mCi/ml) was added into a lyophilized kit containing 50 mg EDTMP , pH = 10.5. The final volume was ajusted with 0.1N HCl and/or 0.05 M phosphate buffer with a final pH = 7.5 - 8.0. The molar ratio EDTMP/Sm from 0.7 to 26.5 was evaluated. Radiochemical purity was assayed by paper chromatographic system (8 x 1 cm) in differents solvents: a) pyridine:EtOH:H_2O (1:2:4), b) NH_4OH:EtOH:H_2O (0.1:2:4) and c) NH_4OH:MeOH:H_2O (0.2:2:4). Complexation yields were 95.50 and 98.20% at molar ratio 23 and 26.5 respectively. Biodistribution was performed in Wistar rats weighing 250 - 350 g, at 2, 6, 24 and 72 hours after intravenous dose (100uCi/0.1ml). A higher uptake in skeletal system was observed (45% dose), with 0.04% dose/g by the liver and rapid blood clearance. The selective uptake of 153Sm-EDTMP in femur lesion was confirmed using a drill hole thécnique in pre-treated rats.