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RADIONUCLIDE ^{111}In – ^{111m}Cd GENERATOR

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A new method for obtaining ^{111m}Cd using ^{111}In as its generator is described. ^{111}In was produced at the U-200 accelerator (FLNR) using the reaction Ag^{109} (α, 2n) ^{111}In at the beam energy of 30 MeV. The ^{111}In isolation from the Ag target and Cd was based on its co-precipitation with $La(OH)_3$. The following ^{111}In separation from La(III) has been performed by ion-exchange chromatography [1].

^{111}In – ^{111m}Cd generator system was based on di-(2-ethylhexyl) orthophosphoric acid (HDEHP). ^{111m}Cd preparation with high specific activity ($\approx 10^3$ Ci/g) and high chemical yield (>95%) was obtained.

The value of electron absorption by the isomeric state of ^{111m}Cd (396 keV) has been estimated by means of measuring ^{111}In decay. The calculated ratio was $(6.01 \pm 0.32) \cdot 10^{-5}$.

The preparation contained a negligible amounts of the parent radionuclide ^{111}In (<0.6%) and it was highly stable during 10 days of operation.

Reference:

1. D.V. Filossofov, N.A. Lebedev, A.F. Novgorodov, G.D. Bontchev, G.Y. Starodub, 2001. Appl. Radiat. Isot. **55**(4), 293-295.