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RADIOACTIVE IMPURITIES IN Mo-99-Tc-99m GENERATOR ELUATE. R. Amano, S. Sanada, A. Ando, H. Mori, T. Maeda and K. Hisada. School of Paramedicine and School of Medicine, Kanazawa University. Kanazawa.

Radioactive impurities in Tc-99m pertechnetate eluate were determined by γ-ray spectrometry with a Ge(Li) detector and α-ray spectrometry with a Si(Au) detector. I-131, Ru-103 and Ba-140 were present as contaminants in generator eluate. Pu-239 was not detected in significant amounts in the eluate. The amounts of Sr-90 were estimated by using of the data of Ba-140. The absorbed dose caused by each contaminant radionuclide was calculated according to MIRD procedures.

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TEST PRODUCTION OF I-123 VIA Te-124(p,2n)I-123 REACTION. Y.Tanaka, H.Matsushima, N.Ueda, Y.Mori, S.Nakamoto and M.Hazue. Technical Dept. NIHON MEDI-PHYSICS CO., LTD. Takarazuka, Hyogo.

Nuclear reactions such as Te-122(d,n)I-123, Te-123(p,n)I-123, Te-124(p,2n)I-123 and Sb-121(α,n)I-123 are available for the production of I-123, and each has its own individual merit as to the specifications for the cyclotron, economic conditions and chemical processing. In our company I-123 is produced by the reaction Te-122(d,n)I-123.

Expectable merits for the production of I-123 via the (p,2n) reaction are higher production yield and improvement of radionuclidic purity and reduced absorbed dose.

Test production of I-123 was performed by bombarding a target of 95% enriched Te-124 powder, pressed on an Al target, with 1-3μA of 26MeV protons for approximately 10 min, on our CS-30 AVF cyclotron. The chemical processing was the same as that used for the (d,n) reaction. The production yield and radionuclidic impurity of I-123 were measured by Ge(Li) detector analysis. In comparison with the (d,n) reaction, we found (1) the production yield was increased by a factor of 10, (2) the only nuclidic impurity was I-124, which was less than 2.5% of I-123 activity at calibration time and (3) the MIRD calculation indicated that the exposures to thyroid and total body were reduced to 68% and 81%, respectively.

Based on these results, we conclude that I-123 produced via the (p,2n) reaction would be suitable for clinical application.

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LIMULUS TEST: MODIFICATION OF THE METHOD AND APPLICATION FOR RADIOPHARMACEUTICALS. Y.Sugimura, M.Kojima, N. Toyota and M. Hazue. Technical Dept. NIHON MEDI-PHYSICS CO., LTD. Takarazuka, Hyogo.

The objective of our current research was to apply the Limulus test for quality control detection of bacterial endotoxins in *in vivo* radiopharmaceuticals. We have found some disadvantages in the conventional procedure for testing and made some modifications during our present study.

The stock solution of endotoxin (positive control) showed a significant depression of activity in a few days when dissolved with physiological saline (the conventional method), whereas we could maintain the activity for more than two months dissolving with a Tris-HCl buffer solution (pH 7.2).

In stead of pH adjustment of test samples, the Limulus lysate was dissolved with one of four Tris-HCl buffer solutions of different pH, and then mixed with a sample. This procedure enabled us to maintain a favorable pH range (6.5-7.5) without any further dilution of the sample.

Our Ga-67 citrate demonstrated an inhibitory effect on the gelation reaction because of the chelation of Ca^{2+} and/or Mg^{2+} which is indispensable for the gel formation. This problem was succesfully eliminated by adding Ca^{2+} into the system to compensate for the chelation.

In order to reduce radiation exposure to the operator, a lead lined box was made as a sample container, effectively reducing the dose rate at the surface of the incubator