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THE INFLUENCE OF  $^{123}\text{I}$  PURITY ON IMAGE QUALITY. T. Ohmiya, T. Matsumoto, T. Iinuma and Y. Tateno. National Institute of Radiological Sciences.

In order to clarify the influence of radioactive impurities included in  $^{123}\text{I}$  in the market on  $^{123}\text{I}$  images, we conducted phantom tests. We prepared both high purity  $^{123}\text{I}$  produced by Cyclotron installed in our institute and purchased  $^{123}\text{I}$  and took the images of lead bar phantom using them. The high resolution and high sensitivity collimator for low energy (150keV) and the collimator for 67GA (200keV) were used to compare the image quality. Purchased  $^{123}\text{I}$  image using low energy collimator was not clear. Through LSF measurement, Compton scattering (rays) from impure nuclide was considered to have degraded the image. On the other hand, the image using pure  $^{123}\text{I}$  was quite distinct, but it was worse the image which uses 200keV collimator.

It was presumed (according to LSF measurement), that the detection of the main Gamma-ray of  $^{123}\text{I}$  159keV, which obliquely came into the holes of collimator, caused such a result.

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THE ELECTRON SPECTRUM MEASUREMENTS OF THE MEDICAL USE RADIO NUCLIDES BY LIQUID SCINTILLATION COUNTER.

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The liquid scintillation counter (LSC) will be able to detect the Conversion electrons, Auger electrons and Compton electrons, these electrons measured by LSC with 2000ch MCA.

The radio nuclides measured Tc-99m, Cr-51, Ga-67, Tl-201 etc.

These spectrum are consist of the two peaks, first sharp peak observed 4 - 8 keV energy level, second mild peak observed 20 - 100 keV energy level. but second peak is not seen Cr-51.

These spectrum data are characteristic of the each radio nuclide.

These spectrum data are compared with MIRDA decay datas (computed datas).

Upper 15keV level data are almost same to the MIRDA datas, but lower 4 keV level data are decrease to the MIRDA datas. This decrease due to the counting efficiencies on the LSC.

This study used LSC spectrum are well measured to the Internal conversion, Auger and Compton electrons.

The gamma counter will be detect only the gamma ray and x-ray, other hand LSC only electrons, the counting ratio of the both system are Tc-99m; 0.30, Cr-51; 4.84, Ga-67; 1.07, I-123; 0.72, Tl-201; 1.04, I-131; 1.09.

Cr-51, Ga-67, Tl-201, I-131 are higher than gamma counter, these nuclides data are indicate to use very low level radioactive measurements (ex, maximum permissible concentration level)

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A TRIAL TO REDUCE SURPLUS EXPOSURE DOSE.

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Principle of radiation protection consists of three factors i.e. distance, time and shielding. However, in usual procedure, handling of Tc-99m generator makes difficult to reduce exposure dose to operators during operation of milking, labeling etc. We utilized a method to reduce exposure dose by application of sampling measurement of eluted Tc-99m. Divided milking method was also adopted to elute proper dose for daily use. The exposure dose has been reduced about 50% on second finger of right hand.