IV. Kidney

Quality Control and Stability Studies of ^{169}Yb-DTPA, and Its Application Determination of Glomerular Filtration Rate in Rabbits

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^{169}Yb-DTPA, which was developed by Dr. H. N. Wagner, et al., was used for many purposes such as brain scann, cisternography and determination of glomerular filtration rate. In the study presented here, ^{169}Yb-DTPA, which was prepared by Dr. Wagner's method, was confirmed to be a very stable compounds by paperchromatography and thin layer chromatography, in which acetone-H_2O (1:1) was used as developer. Rf value of ^{169}Yb-DTPA with this developer was between 0.7-0.8, while $^{169}YbCl_3$ remained at origin. Any radiochemical impurities were not detected by these methods after repeated autoclaving of the substance and storage for about two months.

To confirm its applicability to determination of glomerular filtration rate, ^{169}Yb-DTPA and ^{131}I-iothalamate were injected simultaneously into a rabbit and concentrains of each compound in plasma and urine were determined by utilizing the differences of gamma energies of both nuclides by a pulse height analyzer. GFR values obtained from UV/P with both compounds showed good correlation and its correlation factor calculated from 17 determinations was 0.991. Furthermore GFR values calculated from the blood clearance curve method showed good agreement. These findings indicate that ^{169}Yb-DTPA is a satisfactory substitute for ^{131}I-iothalamate clearance.

The Measurement of Glomerular Filtration Rate with Yb-169 DTPA

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We performded the simultaneous GFR clearance method, using ^{169}Yb-DTPA and sodium thiosulfate.

RI clearance, one of various technique of renal function test using radioisotopes, was reported.

Now, the purity of agent and its urinary metabolites of rats were examined by radiothin layer chromatography using a mixture of acetone and water (1:1). The solvent system