

tion. First, when the target in vycor glass tube of vacuum is heated from the outside and is melted, ^{123}I sublimed onto wall of vycor glass.

After phosphoric acid is added to the tube ^{123}I is distilled in steam, the distilled solution is collected in diluted Na_2SO_3 solution, pH is adjusted and injectionable ^{123}I is obtained by sterile filtration. For this series of procedure, we obtained better result by using the glass circuit of closed system which was manufactured for trial. The time of chemical separation was about 1 hr. and the rate of yield was about 70%. The contamination of ^{124}I (half-life 2.1 hrs.) was not avoided because of

reaction of ^{121}Sb (^3He , 3n) ^{121}I .

As ^{121}Te which is daughter nuclide of ^{121}I is radioactive, too, we had start to carry out chemical separation after considerable decay of ^{121}I . Now, only ^{123}I of about 10 mCi is obtained finally by one-time irradiation but if sufficient opportunity of irradiation can be obtained constantly, we are able to increase the yield of one-time irradiation.

The reaction of ^{127}I (P, 6n) $^{123}\text{Xe} \rightarrow ^{123}\text{I}$ for special object in the future will be used, but we think that the production of ^{123}I from Sb is important, too.

On the Different Biological Behavior of Tc-99m-Penicillamine Compounds in Different Animals (Mouse, Rat and Rabbit)

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In the labeling reaction of $^{99\text{m}}\text{Tc}$ -penicillamine, several complexes were detected as reported elsewhere. However, after a detailed study of different parameters, a labeling method for each of those complexes was established. They were analyzed by column chromatography, thinlayer chromatography and electrophoresis. The organ distribution and the biliary excretion of the labeled compound administered intravenously were evaluated in mice, rats, and rabbits.

Whenever highly hydrolyzed compounds were administered, the radioactivity in the kidney, liver and stomach was higher than the observed in the Complex I (the nonhydrolyzed complex) and the Complex II (the low hydrolyzed complex). This difference might be due to the low stability of that

compound, which easily suffers displacement toward $^{99\text{m}}\text{TcO}_4^-$ and $^{99\text{m}}\text{TcO}_2$ and accumulates in various organs. This fact possibly makes this compound useless for the diagnosis.

Another interesting phenomenon observed was the different behavior of the Complex I and II when administered to different animal species. In mice and rats, the administration of Complex I and II showed almost no accumulation in the organs except in the gallbladder and the urinary bladder, after 1 hr. But, in the rabbits, although the behavior of the Complex I was similar to the above mentioned, when the Complex II was administered, radioactivity in the liver, kidney, blood and an appreciable increment in the stomach were detected mainly after 6 hr. This result in rabbits suggests

that, although a large portion of the Complex II is excreted into the bile, another portion is decomposed into $^{99m}\text{TcO}_2$ and $^{99m}\text{TcO}_4^-$ through a similar mechanism as observed with the highly hydrolyzed compounds. This phenomenon can show the lower

stability of the Complex II, which can be easily understood from the chemical state.

Thus, the present result suggests that the Complex I is rather a better agent for a cholecintigraphy than the Complex II.

The Labeling Reaction of Tc-99m-Bleomycin: a Monomer and a Polymer Complex Formation

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In the course of studying the labeling reaction of bleomycin (BLM) with ^{99m}Tc , using SnCl_2 method, different labeled compounds were detected. Small differences on the labeling condition greatly affected the labeled product.

A tetravalent $^{99m}\text{TcO}^{2+}$ is estimated as coordinated with the ligand in the monomer complex, but a hydrolyzed ^{99m}Tc is coordinated in the polymer complex. The variable amount of $^{99m}\text{TcO}_4^-$ or $^{99m}\text{TcO}_2$ detected in the analysis of the labeling product appeared as to be dependent on the pH of the reaction, the concentrations of BLM and SnCl_2 , along with its chemical state. After studying the different parameters affecting the labeling product and their biological behavior in mice, a monomer complex was selected, as a possible more reproducible complex to be used in the detection of tumor.

The monomer complex is easily prepared by a

rapid addition of the reducing agent, a 1×10^{-9} M of SnCl_2 freshly prepared, to a mixture of $^{99m}\text{TcO}_4^-$ and a 1×10^{-5} M of BLM dissolved in 0.2 M of acetate buffer (pH 6). The addition of this minute amount of the stannous ion was the important step of this preparation. Stannous ion easily undergoes hydrolysis, so when handling such a low concentration of this agent even under N_2 atmosphere, some change can occur and the reaction can proceed forward to a polymer complex. This polymer complex easily suffers hydrolysis, oxidation or decomposition, and $^{99m}\text{TcO}_4^-$ or $^{99m}\text{TcO}_2$ could be detected in vivo or in vitro studies. But, on the other hand, the monomer complex was able to be prepared by avoiding the hydrolysis phenomenon, and once formed, it was a chemically stable complex, even in the in vivo study a great stability was observed.