E) Radiopharmaceuticals

On the role of iron-ascorbic-acid complex in labelling human serum albumin with ^{99m}Tc

A. Yokoyama, G. Kominami, S. Harada and H. Tanaka

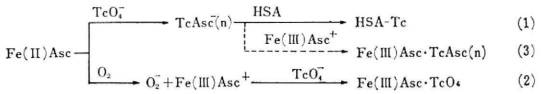
Faculty of Pharmaceutical Sciences Kyoto University, Kyoto

Many studies on labelling HSA with ^{99m}Tc by the use of Fe^{3+} and ascorbic acid (H_2Asc) have been reported, all of which described that the high labelling efficiency was achieved when the labelling procedure was made under developement of purple color in the solution. We have reported previously that the purple color is based on the formation of Fe (III) Asc^+ complex.

This research deals with a role of Fe-Asc complex in labelling HSA with $^{99m}TcO_4^-$.

Being presumed the following reactions as the mechanism of labelling, all experimental results could be well explained.

Fe(II) Asc is regarded as the species which acts as a suitable reducing agent of TcO_4^-. Moreover, it is easily anticipated that the presence of O_2 and Fe(III)Asc^+ may de unfavorable for labelling HSA. In the reduction of TcO_4^-, O_2 competes with TcO_4^-, and the formation of Fe (III)Asc TcO_4^- results the decrease in amount of free TcO_4. An extremely high efficiency was achieved, when the labelling was carried out under N_2 in the presence of Desferal which scavenges Fe^{3+} through the formation of stable chelate. This result possibly supports the abovementioned labelling reactions and at the same time, this is regarded as a new devised method of labelling which is expected to be effectively applied for the preparation of various Tc labelled compounds.



A simple, rapid and efficient preparation of ^{99m}Tc-compounds by electrolysis (I) ^{99m}Tc-Albumin, ^{99m}Tc-Millimicrosphere

T. Sakoh, I. Ikeda, Y. Sugisawa, K. Kurata and S. Kato

Dainabot Radioisotope Laboratory

Several kinds of reductants have been used for labeling of various compounds with ^{99m}Tc. Recently, Benjamin has reported the method of labeling by electrolysis. Although his method is very useful in comparison with the other conventional methods, there are still several points to be investigated. Then, we have further developed this method and devised a simplified apparatus for electrolysis which includes a timer and a stirrer so that we can easily get the constant current for electrolysis.

For the preparation of ^{99m}Tc-Albumin, Pt-Zr