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Radioactive Metal Complexes of Ethylenediamine-*N, N*-diacetic Acid. Biodistribution of Radioactivity in Mice Bearing Tumors*

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We reported previously that 99m Tc radioactivity was concentrated in tumor tissues in experimental animals a few hours after the administration of the complex of ethylenediamine-*N,N*-diacetic acid (EDDA) with 99m Tc. The tumor tissues were clearly visualized in scintigrams. As a part of the studies on the mechanism of the 99m Tc localization in tumor tissues, biodistributions of the EDDA complexes with other radioactive metals as well as 3 H-labeled EDDA were studied.

Complexes of EDDA with 51 Cr, 57 Co, 59 Fe, 64 Cu, and 67 Ga were prepared by mixing aqueous solutions of inorganic salts of the radioactive metals with EDDA in saline. μ -oxo 57 Co EDDA was prepared by treatment of 57 Co EDDA with hydrogen peroxide.

Solutions of the radioactive inorganic salts, the radioactive complexes of EDDA, and 3 H-labeled EDDA were injected intravenously to mice bearing Ehrlich tumor. Distribution of the radioactivity in blood, organs, and tumor tissues were measured at selected times.

57 Co EDDA and μ -oxo 57 Co EDDA were concentrated in the tumor tissues, whereas other radioactive compounds were not. The tumor tissues were clearly visualized in scintigrams after the administration of the 57 Co complexes to the mice.

Since no stable isotope of Tc exists, chemical and biological studies of this element meet with many difficulties. The present finding should provide a new approach towards the mechanistic studies of 99m Tc complexes.

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