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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  $^{99m}\text{Tc}$  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  $^{99m}\text{Tc}$ . The tumor tissues were clearly visualized in scintigrams. As a part of the studies on the mechanism of the  $^{99m}\text{Tc}$  localization in tumor tissues, biodistributions of the EDDA complexes with other radioactive metals as well as  $^3\text{H}$ -labeled EDDA were studied.

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

Solutions of the radioactive inorganic salts, the radioactive complexes of EDDA, and  $^3\text{H}$ -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.

$^{57}\text{Co}$  EDDA and  $\mu$ -oxo  $^{57}\text{Co}$  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  $^{57}\text{Co}$  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  $^{99m}\text{Tc}$  complexes.

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