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Ga-67 BINDING SUBSTANCES IN TUMOR TISSUES.
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Ga-67 citrate was injected to the mouse implanted with Ehrlich tumor. This animal was sacrificed at 24 hours after injection and tumor tissue was excised. This tissue was rinsed in 0.01M tris-0.15M KCl and then homogenized. Nuclear fraction was removed from the homogenate by centrifugation. This homogenate from which nuclear fraction was removed, was incubated with pronase P in pH 8.0 solution at 37°C for 24 hours. After digestion, the reaction mixture was gelfiltered on Sephadex G-50 and G-100. Eluate samples were collected in an automatic fraction collector and assayed for Ga-67, acidic mucopolysaccharide and protein. On the other hand, after digestion with pronase P, the reaction mixture was incubated with RNase and DNase. After that, the reaction mixture was gelfiltered on Sephadex G-50 and assayed for Ga-67, acidic mucopolysaccharide and protein. In these experiments, the most part of Ga-67 was eluted with acidic mucopolysaccharide. And it was cleared that Ga-67 was bound to acidic mucopolysaccharides. From the above-mentioned facts, it is presumed that Ga-67 is bound to the acidic mucopolysaccharides in the tumor tissues.

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In-111 AND Yb-169 BINDING SUBSTANCES IN TUMOR TISSUES.
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In-111 citrate and Yb-169 citrate were injected to the mouse implanted with Ehrlich tumor. This animal was sacrificed at 24 hours after injection and tumor tissue was excised. This tissue was rinsed in 0.01M tris-0.15M KCl and then homogenized. Nuclear fraction was removed from the homogenate by centrifugation. This homogenate from which nuclear fraction was removed, was incubated with pronase P in pH 8.0 solution at 37°C for 24 hours. After digestion, the reaction mixture was gelfiltered on Sephadex G-50 and G-100. Eluate samples were collected in an automatic fraction collector and assayed for In-111, Yb-169, acidic mucopolysaccharide and protein. On the other hand, after digestion with pronase P, the reaction mixture was incubated with RNase and DNase. After that, the reaction mixture was gelfiltered on Sephadex G-50 and assayed for In-111, Yb-169, acidic mucopolysaccharide and protein. In these experiments, the most part of In-111 and Yb-169 was eluted with acidic mucopolysaccharide. And it was cleared that In-111 and Yb-169 were bound to acidic mucopolysaccharides. From the above-mentioned facts, it is presumed that In-111 and Yb-169 were bound to the acidic mucopolysaccharides in the tumor tissues.

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CHEMICAL PROPERTIES AND TUMOR AFFINITY OF SEPARATED ISOMERS OF COBALT BLEOMYCIN.
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Stoichiometric preparation of co-bleomycin causes two chemically different complexes. Four kinds of chelates(A2-I, A2-II, B2-I and B2-II) are easily separated by silica gel thin layer chromatography. Circular dichroism study of these chelates indicated that two types of complexes are conformational isomers. This chemical difference is assumed to cause the difference in biologic behavior. Biodistribution study of each type of complex, using tumor-bearing mice, showed higher tumor to blood ratios and tumor to muscle ratios as compared with the clinical grade co-bleomycin mixture. But the difference between the two types was not as large as expected. The similarity in biologic behavior suggests that the groups on the bleomycin molecule, which are concerned with chelate formation, do not take part in its binding to DNA.

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EFFECT OF WHOLE-BODY IRRADIATION ON GALLIUM-67 UPTAKE IN MOUSE TISSUE.
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The mechanism of decreased Ga-67 citrate retention and serum binding after whole-body irradiation is unknown. To investigate this mechanism and to determine the efforts of prior irradiation on tumor uptake of Ga-67, mice bearing a subcutaneous Ehrlich tumor were exposed to whole-body Co-60 irradiation of 1000rads.

Each animal received 5μCi of Ga-67 citrate intravenously 3 and 24 hours after irradiation. Control animals received Ga-67 but were not irradiated. Animals were killed at 48 hours and the uptakes in the tumor and other tissues were determined. A blood sample was also obtained to determined the serum iron, unsaturated iron-binding capacity(UIBC). The serum iron was decreased and the tumor and other tissue uptake of Ga-67 were increased at 3 hours after irradiation, whereas the serum iron was increased and the tumor and other tissue uptake of Ga-67 were decreased at 24 hours after irradiation. The urinary excretion of Ga-67 were increased, whereas the faecal excretion of Ga-67 were decreased at 24 hours after irradiation.

The results of this study suggest that the variation of Ga-67 retention and tumor uptake seen after whole body irradiation are related to the alteration of the saturation oi transferrin by decreased or increased levels of circulating iron.