STUDIES ON TUMOR SCANNING WITH RADIOLABELLED ANTITUMOR ANTIBODIES

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Anti-Ehrlich ascites tumor cell antiserum was produced in a rabbit. The IgG fraction was separated from the rabbit antiserum by DEAE cellulose column chromatography followed by the absorption with the whole serum, and the homogenates of the liver, spleen, kidney and lung of a mouse. The IgG was iodinated by chloramin T method (crude ^{125}I-IgG). The ^{125}I-IgG was further purified to a specific antibody by affinity binding with Ehrlich cells (specific ^{125}I-IgG). ^{125}I-Fab fragment was obtained by cleaving of the whole molecule of the specific ^{125}I-IgG.

In in vitro study, the binding of ^{125}I-Fab to Ehrlich tumor cells was found to be slightly higher than that of the specific ^{125}I-IgG, which was 30 times higher than that of the crude ^{125}I-IgG.

In tissue distribution study, no significant difference was seen in the accumulation of either ^{125}I-Fab, specific or crude ^{125}I-IgG in terms of % dose per gm. However, the disappearance rate from the circulation was most rapid in ^{125}I-Fab, then followed by the specific ^{125}I-IgG and the crude ^{125}I-IgG, thus making the tumor/blood ratio highest with the ^{125}I-Fab, then the specific ^{125}I-IgG and the crude ^{125}I-IgG in this order.

In conclusion, it is thought that ^{125}I-Fab may be a hopeful candidate as a tumor imaging agent.

PREPARATION, ISOLATION AND IDENTIFICATION OF BLEOMYCIN-Co-57 CHELATE WITH SPECIAL REFERENCE TO ITS CHELATE STRUCTURE

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To obtain information on bleomycin-Co-57 chelate, an attempt was carried out 1) to prepare cobalt chelate with a sufficient amount of stable Co, 2) to isolate chelate compounds with a high speed liquid chromatography, 3) to study the relative stability of these compounds in respect to pH and time and, 4) to study the conformation of Co chelated bleomycin, a NMR study was performed to find the change of signals occurring in chelation. Commercial bleomycin mixture contains A2(67%), B2 (25%) and A1(8%). The chelated bleomycin mixture with stable cobalt yielded six compounds separated by TLC, giving rise to double spots to each of A2, B2, and A1, namely, A2-I, A2-II, B2-I, B2-II, A1-I and A1-II respectively. A separation by high speed liquid chromatography with micro-bondapack C-18 eluted with 0.05 M ammonium acetate and acetonitrile gave better separation than TLC. A determination of mole ratio of cobalt vs bleomycin was carried out after mixing of each component with an excess cobalt at pH 6-6.5 and after separation with high speed liquid chromatography. Atomic absorption and UV absorption revealed one mole cobalt bound with one mole bleomycin in A2 and B2 chelate. However, A1 yielded unstable chelate. These ratios are not changed with concentration of bleomycin in the presence of excess cobalt. However, those of freshly prepared chelates changed with progress of time, giving rise to the increase of the first component in A2 as well as B2, i.e., A2-I and B2-I, with the corresponding decrease of the second peak. Because the width of the first peak increased, it was thought that the second was not converted to the first. It may be converted to different components, zor it was decomposed. The NMR study of bleomycin A2-cobalt chelate revealed a low field shift of the signals of methyl protons in pyrimidine ring and two protons in imidazole ring. Other patterns of signals remained identical. Further study on chelate conformation by NMR and optical circular dichoroism is in progress.