^{99m}Tc-S-Colloid for Bone Marrow Scanning Agent

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The distribution of radioactive colloid to bone marrow reticuloendothelial system is affected by various factors, among which, we take out mainly a size of colloid particle and prepared ^{99m}Tc-sulfur colloid for bone marrow scanning.

Method:

Our preparation method of ^{99m}Tc-sulfur colloid for bone marrow scanning is characterized by low concentration of sodium thiosulfate of less than one-third of that of the conventional method in the presence of gelatin for obtaining smaller colloidal particles.

We administered this ^{99m}Tc-sulfur colloid, ^{198}Au colloid (particle size 5mμ and 20-50mμ) and other ^{99m}Tc-sulfur colloid intravenously to each group of five rabbits and measured the radioactivities of each organs and calculated the ratio between bone marrow and other organ per mg—tissue weight.

Result:

This ^{99m}Tc-sulfur colloid for bone marrow scanning has distributed more in the bone marrow than in the case of other colloidal compounds and its ratio of accumulation in the bone marrow is 1.2–2.2 times more than that in the liver per mg—tissue weight.

Dobson and Zilversmit, et al. reported that colloid of smaller particle size accumulated more in bone marrow than in liver, however such a case was not recognized in our data on the colloidal particle size 5mμ and 20–50mμ.

A Tumor-Specific Localizing Agents for Radioisotope Image —The Preparation of Labelled Bleomycin and Its Distribution in Tumor Bearing Mice—

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Bleomycin (BLM) is a glicopeptide known as a anticancer antibiotics. In chemically BLM binds to copper ions and also it is expected to bind other metal ions chelatechemically. In biologically it is reported to localize in effective tumor tissue.

We tried to labelled BLM with radioisotopes, ^{59}Fe, ^{65}Zn, ^{64}Cu, ^{59}Co and ^{67}Ga. ^{65}Zn, ^{64}Cu, ^{57}Co, binded easily in acidic aqueous solution. ^{59}Fe and ^{67}Ga did not bind so easily. Binding constants were measured with ionic exchanger. In this results BLM-^{65}Zn had the largest binding constant in these complexes.

Labelled BLM were detected by thinlayer chromatography, and free radioisotopes were

separated with gelfiltration.

These labelled BLM intraperitoneally injected to Ehrlichs tumor bearing ddn mice or MH134 tumor bearing C3H mice. Distribution of radioactivity were studied by CPM/mg in various organs and wholebody autoradiography.

In this results BLM-^{57}Co gave the most promising data in these complexes. At lhr. after injection of BLM-^{57}Co radioactivity was detected in tumor tissue the most except for a bladder. But by injection of ^{57}CoCl, there was no radioactivity in tumor tissue. (Wholebody autoradiography). At 2 hr. after injection of BLM-^{57}Co radioactivity localized in tumor tissue as well as liver and kidney.

In case of $^{57}CoCl_2$ radioactivity in tumor tissue was lower than that in liver and kidney. (CPM/mg in various organs and wholebody autoradiography).

Comparison between BLM-^{57}Co and citrate-^{67}Ga were studied using MH 134 tumor bearing C3H mice. At 24 hr. after injection of BLM-^{57}Co or citrate-^{67}Ga, radioactivity of BLM-^{57}Co accumulated about 2 times more than that of citrate-^{67}Ga, when these were compared with radioactivity in liver and kidney.