

A Comparison of Uptake of ^{67}Ga -Citrate and ^{57}Co -Bleomycin in Tumor Using a Semiconductor Detector

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The purpose of this communication is to report the comparison of uptake in tumor-bearing mice and clinical cases of ^{67}Ga -citrate and ^{57}Co -bleomycin. The method used in this study is a new method using a Ge (Li) semiconductor detector. This method made it possible to detect ^{67}Ga and ^{57}Co simultaneously and to estimate their relative uptakes, and thus minimize the differences due to individual variations in experimental animals.

The tumor uptake of ^{57}Co -bleomycin reached a maximum at 6 hours after injection, and then the activity decreased rapidly. The ^{67}Ga -citrate reached a maximum at 24 hours after injection and then the activity gradually decreased.

The accumulation of ^{57}Co -bleomycin in bone, muscle, intestine, liver, and kidney was always lower than that of ^{67}Ga -citrate.

From this results, it was postulated that ^{57}Co -bleomycin was more specific than ^{67}Ga -citrate for the detection of tumor.

The accumulation of ^{67}Ga -citrate was

always slight more than that of ^{57}Co -bleomycin.

Clinically, the scintigram obtained with ^{57}Co -bleomycin is superior to that of ^{67}Ga -citrate, because the uptakes of ^{57}Co -bleomycin in liver and bone was lower than that of ^{67}Ga -citrate.

The accumulation of ^{67}Ga -citrate in metastatic lymph node of patients with lung, breast cancer and reticulosarcoma was 4–20 times higher than that of ^{57}Co -bleomycin.

Especially, the accumulation of ^{67}Ga -citrate in reticulosarcoma was remarkably higher than that of ^{57}Co -bleomycin. The accumulation of ^{67}Ga -citrate in normal liver was 24 times higher than that of ^{57}Co -bleomycin. These results were quite similar that of animal experiments.

After treatment of radiation therapy of ^{60}Co (7,000 R), the accumulation of ^{67}Ga -citrate in lung cancer strongly decreased, whereas that of ^{57}Co -bleomycin not so much decreased.