Fundamental Investigation on ^{99m}Tc-Phytate Kit and ^{99m}Tc-Pyrophosphate Kit

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We have been trying to realize a simplified kit by which one-step labeling of ^{99m}Tc-phytate and of ^{99m}Tc-pyrophosphate is possible, and composed for trial lyophilized kits where we used stannous chloride as reductant, and checked their qualities. Followings are our results :

Method

Contents of the kit

○ ^{99m}Tc-phytate kit

Stannous phytate vial (lyophilized)

(Sodium phytate
($SnCl_2$—$2H_2O$

○ ^{99m}Tc—pyrophosphate vial (lyophilized)

(Sodium pyrophosphate
($SnCl_2$—$2H_2O$

Labeling procedure is as follows : Remove the vial from a refrigerator and allow to stand the kit till the contents of which come up to room temperature and add 5 ml of ^{99m}Tc-sodium pertechnetate saline solution into the vial then shake it sufficiently. Check the purity and chemical qualities with both paper chromatography using 75% methanol as developing solvent and electrophoresis using cellulose acetate film. Check the biological behavior from the organ distribution in rats.

Results

○ ^{99m}Tc-phytate

The labelling yield of ^{99m}Tc to phytate by the kit was 95%.

The qualities of the contents were stable for more than three months in a refrigerator. The purity of ^{99m}Tc-phytate solution was kept more than 97% up to five hours after preparation. In organ distribution of rats 30 minutes after intravenous administration, more than 95% of dose was concentrated in liver and distribution of other organ such as stomach was less than 1%.

○ ^{99m}Tc-pyrophosphate

The purity of ^{99m}Tc-pyrophosphate solution of a kit was more than 95% and no colloidal substance by electrophoresis was detected. The qualities of the contents were stable for more than two months in a refrigerator. In rat about 30% of dose was observed to be excreted with urine. Accumulation ratio expressed in percentage of dose per gram of organ weight was decreased in the order of bone, kidney, liver and blood. Great difference in pattern of distribution wasn't observed till 5 hours after intravenous administration.

Fundamental Investigation on Comparison of ^{99m}Tc-MAA Kit, ^{99m}Tc-HSA Kit and ^{131}I-MAA, ^{131}I-HSA

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We have succeeded in composing the kits for ^{99m}Tc-MAA and ^{99m}Tc-HSA having the