

gallbladder was clearly visualized within 5 min of injection.

The chemical and biological behavior of the  $^{99m}\text{Tc}$ -complexes showed no change for 60 days after the preparation of the kit reagent and for 48 hr. after technetium labeling.

Sn-pyridoxylidene-valine and -isoleucine kit reagents were found to be nontoxic in four animal species (mice, rats, guinea pigs, rabbits) even at the

level of 500–1,000 times the proposed human dose.

The preliminary MIRD calculation was performed using animal distribution data to estimate the human internal exposure.

All results strongly indicated that  $^{99m}\text{Tc}(\text{Sn})$ -pyridoxylidene-valine and -isoleucine are promising low toxic agents for application in the diagnosis of human hepatobiliary disorders.

### Studies on Variance of Labelling Yields of $^{99m}\text{Tc}$ Compounds

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A term of validity of labelling yields and pH influence concerning  $^{99m}\text{Tc}$  Pyrophosphate (PP) and Phytate (PY) were examined by radiopaper-chromatography. Also  $^{99m}\text{Tc}$  labeling to Hippuran, o-Iodohippuran (OIH) and p-Amino-hippuran (PAH) were examined.

Technetium labelled PP and PY were charged on a paperchromatography with 85% methanol, and measured by gamma counter with spectrometer. As a result of paperchromatography, labelled Tc-compounds were remained at the level of origin, but free  $\text{TcO}_4^-$  had an Rf value with 0.67.

Hippuran, OIH and PAH were labelled by using  $\text{TcO}_4^-$  with  $\text{SnCl}_2$  method.

Some examination of labelled compound were practiced by male rats with the Wister species of

9 weeks. Rats were injected intravenously with 0.2 ml of Tc-compounds solution. After injection each one, three, six and ten minute later, rats were killed and were dissected for the uptake studies to each organs. Uptake of organs were compared with blood activity as a 100.0.

PY was labelled by  $^{99m}\text{Tc}$  after 25th, 39th, 53rd and 67th days and these dates were all after the term of validity. They had no change of labeling yield compared with the one in assay date.

Furthermore, after labelling in 6 and 12 hours, labelling yields was obtained no change.

Uptake of  $^{99m}\text{Tc}$  labelled compounds indicated that PAH was taken up by the kidney better than Hippuran and OIH.

### $^{99m}\text{Tc}$ -labeling of Red Blood Cells; in Vivo Method with Stannous Pyrophosphate

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The in vivo labeling of red blood cells with Tc- $^{99m}$  was studied in 36 cases. The labeling is easily performed with the pre-injection of cold stannous pyrophosphate (Sn-PYP) followed by  $^{99m}\text{Tc}$ -pertechnetate. This time we have intended to decide the optimum dose of Sn-PYP and the appropriate lag time between Sn-PYP injection and pertechnetate injection. The patients were injected with a various amount of Sn-PYP complex, which

ranged from 0.10 mg/kg to 0.56 mg/kg (a vial of bone scanning kit containing 4mg of Tin and 20 mg of pyrophosphate). After an interval of 5 minutes (5 cases), 10 minutes (3 cases), 20 minutes (2 cases), 30 minutes (20 cases) and 60 minutes (6 cases),  $^{99m}\text{Tc}$ -pertechnetate of 10–15 mCi was injected, and the red cell labeling yield to each lag time was estimated.

The labeling yield of RBC increased with time