CLINICAL EVALUATION OF Tc-99m-N-Pyridoxyl-5-methyl-Tryptophan as Hepatobiliary Tract Imaging Agent. Y. Kuniyasu, S. Miyazaki, K. Nakatsui, N. Nito, M. Makakubo, H. Itoh, Y. Kawada, H. Kakehi, S. Mimoto, and M. Yasuda. Division of Nuclear Medicine, Dept. of Radiology, Teikyo University Hospital.

Scintigraphic imaging of the hepatobiliary system has been significantly improved with the development of many 99m-labeled compounds. In vitro and in vivo studies of new hepatobiliary scanning agent, Tc-99m-Sn-pyridoxyl tryptophan has been investigated on its physiological and kinetic aspects in normal cases. In vitro stability and radio-chemical purity were checked with paper chromatography. A single peak on Pc analysis showed its high stability and radiochemical purity 24 hours after production. The time course study on organ distribution of Tc-99m-PMT in mice, showed rapid hepatobiliary transport and low urinary excretion, compared with Tc-99m-pyridoxyl-dine isoleucine (Tc-99m-Pi). Two groups, 46 patients with many kinds of hepatobiliary diseases and 9 control patients, including 7 volunteers, were studied. The peak time of hepatogram in control patients were 9 ± 0.05 min, and Tl/2 was 3 ± 0.05 min. The urinary excretion of Tc-99m-PMT was 5.40 ± 0.7% of total activity 60 min after administration. These values were compared with them of 9 volunteers studied with Tc-99m-Pi.

Thus, Tc-99m-PMT has been concluded as a potential hepatobiliary radiopharmaceutical with rapid hepatobiliary transport and low urinary excretion.


The authors studied the effectiveness of 99mTc-N-pyridoxyl-5-methyl tryptophan (99mTc-PMT) for dynamic imaging and function on 40 patients with various hepatobiliary diseases and on healthy individuals. In healthy subjects, 99mTc-PMT is rapidly removed from the blood by the parenchymal cells of the liver and is excreted through the urinary system. The imaging of liver, bile ducts, gallbladder and intestines with 99mTc-PMT was satisfactory. There was no renal visualization. In the case of serial images of healthy individuals, the gallbladder, intrahepatic bile duct and small intestine were visualized after 18.8 ± 7.2, 8.8 ± 1.4, and 16.7 ± 6.3 minutes, respectively; the mean peak time on the hepatogram was 8.0 ± 5.3 minutes.

At 70 minutes after the intravenous administration of 99mTc-PMT, 2.52 ± 1.48% of the injected dose was excreted into the urine of the healthy individuals. The urinary excretion of 99mTc-PMT by the patients with hepatobiliary diseases, was not increased. At 5 minutes after injection, the values for the patients who had cholelithiasis, liver cirrhosis and hematoma, Blood retention at 20 minutes after the injection was related to serum GGT and serum-total bilirubin.