The purpose of the study is to evaluate the clinical utility of 5 Tc-99m labeled hepatobiliary scanning agents, to examine the hepatobiliary transport of rat with and without BSP and to mention the clinical utilizations.

The hepatobiliary transport was diagnosed fastest in diethyl IDA and followed PI, HIDA, PipIDA, (p-butyl)IDA). Urinary excretion was least in (p-butyl)IDA with average 5.54% per day in normal case. Next was diethyl IDA with average 18%

The computer analysis of the data could make color functional image of peak time, peak count, K, K'. The difference between cases was easily demonstrated.

The hepatobiliary image of HIDA showed poor in Roter's syndrome, trapped in the liver in Dubin-Johnson syndrome and almost normal in Gilbert's disease.

In the animal blood clearance study, the load of BSP in control rat affected the clearance of (p-butyl)IDA, diethyl IDA, HIDA and PI suggesting the existence of competitive inhibitory pathway.

To conclude, diethyl IDA was recommended to be the first choice for non-jaundiced hepatobiliary diseases and (p-butyl)IDA for jaundiced cases.

This study reports the evaluation of the various Tc-99m-labelled hepatobiliary scanning agents in 61 cases with liver diseases. In 5 cases of healthy control, appearance time of radioactivity in common bile duct were 15-30 min with diethylIDA, 15-30 min PI, 20-30 min with HIDA, 20-30 min with parabuty1-IDA(BIDA) respectively. The urinary excretion rate showed most small amount(5-10%) in 4 radiopharmaceuticals. In 6 cases with intrahepatic choledocholithiasis, useful information concered passage of bile duct namely abnormal pooling in the intrahepatic bile duct were obtained with sequencial hepatobiliary scintigraphes. In such cases with abnormal pooling in the intrahepatic bile duct, serum bilirubin levels showed less than 2.0 mg/dl with normal or slightly elevated serum transaminase activities, high values of serum ALP, G-GTP and LAP activities were obtained in whole clinical cases. Estimation of liver function showed slightly positive moderately positive reaction. In 5 cases with high levels of serum bilirubin, Tc-99m-BIDA hepatobiliary scintigraphy showed well demonstration of hepatic image and compared to other agent and provide a high degree of accuracy in differential diagnosis of jaundice.

Hepatobiliary imaging is commonly performed with I-131-BSP and I-131-Rose Bengal. Recently, Tc-99m labeled agents can be used for assessment of hepatobiliary status. Evaluation and comparison of Tc-99m labeled 4 different agents such as PI, HIDA, ethyl-HIDA, and butyl-IDA, were studied. Tc-99m labeled agents were commercially obtained, and each subjects, 2 normal volunteers and 71 patients with jaundice, received 4 ml i. v. by bolus injection. The instrument was a gamma camera with a computer and dynamic imager on-line system. Time activity curves and images were determined from the stored data. (A) Following results was obtained in 2 normal volunteers; (1) Blood clearance at 30 min were as follows; PI 104, HIDA 84, butyl-HIDA 74 and ethyl-HIDA 3.3. (2) Maximum liver uptake was found at 10-11 min by PI, 14 min by HIDA and ethyl-HIDA, 20 min by butyl-HIDA, 20 min by butyl-HIDA. (3) Images of gallbladder detected at 10 min by PI and ethyl-HIDA, and 20 min by HIDA and butyl-HIDA. (4) Renal images was shows clearly by PI and ethyl-HIDA, very smaller amount by HIDA, and no significant by butyl-HIDA. (B) Results of clinical application of these agents in 71 patients with jaundice was shows that it is useful agents for the assessment of hepatobiliary clinical status.

The purpose of this study is the clinical evaluation of the hepatobiliary trac scan with Tc-99m PI in the intrahepatic bile duct stones. Scintigraphic studies were performed in 64 subjects, including 25 with intrahepatic bile duct stones. The studies were examined about the findings that were obtained by one or several routine studies. These findings were compared with the scintigraphic findings. The scintigraphic findings contained the delay on the peak time of the hepatic accumulation of Tc-99m PI, irregular distribution of the hepatic activity, the picture of the dilatation in the hepatic bile duct and/or choledochus, the pooling figure suggesting the disorder of bile flow in the intrahepatic bile duct and a delayed duodenal visualization. In the cases of intrahepatic bile duct stones, these scintigraphic findings were observed over 80 to 90 percent more and also revealed previously the pathologic conditions in the biliary system. This study shows that the hepatobiliary trac scan is very useful to examine the pathologic conditions in the biliary system in the intrahepatic bile duct stones, especially as to the follow-up studies in the cases of the intrahepatic bile duct stones after operated.