

## Sequential Abdominal Scan by the Use of $^{131}\text{I}$ -BSP

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It had been hard to make a stable compound of radioiodine tagged BSP. The new radiopharmaceutical of  $^{131}\text{I}$ -BSP was tested in our laboratory, which was prepared by DINA-BOTT Laboratory based on the modified Tubis and Swanis' method.

*Stability of  $^{131}\text{I}$  binding.* Radiochromatographical analysis showed not a bit of liberated  $^{131}\text{I}$  in this radiopharmaceutical, held under 5 degree C for 4 weeks following the assay date. Also in the bile of dogs, to whom this material was injected intravenously, liberation of  $^{131}\text{I}$  was not observed and Rf of  $^{131}\text{I}$ -BSP secreted in the bile was different from Rf of  $^{131}\text{I}$ -BSP in vitro. Therefore stability of  $^{131}\text{I}$  binding for this radiopharmaceutical could be satisfactory either in vitro or in vivo, and it might be suggested that the administered  $^{131}\text{I}$ -BSP should be metabolized in the liver by some certain mechanism.

*Organ distribution.* Following the intravenous injection of  $^{131}\text{I}$ -BSP into adult rats, each 3 animals were sacrificed 2, 6, 12, 24 hours and 8 days later. The radioactivity of dissected organs were counted and their % dose was calculated. The radioactivity of the liver decreased down to 20% dose within 2 hours after BSP administration and thereafter the BSP excretion from the liver tended to be minimal, while the peak of the radioactivity in the intestine was shown from 2 to 10 hours after administration. Percent dose in the other organs were minimal throughout this period.

*Clinical application.* (I) *Clearance half time.* About 350  $\mu\text{Ci}$  of  $^{131}\text{I}$ -BSP, 2 to 9 mg dose, was injected intravenously into 7 normal subject, 7 cases of medical or surgical

jaundice and 3 cases of nonicteric hepatobiliary diseases. In the normal group the clearance half time was average 5 min. On the contrary the marked or significant delay of the clearance was shown in the heavy or minimal jaundice and nonicteric hepatobiliary diseases. (II) *Sequential abdominal scan.* Fifteen min, 1, 3, 5, 12, 24 hrs and so on following the BSP administration, the abdominal scanning was performed serially on each patients. In the normal cases, 15 min after injection a delineated hepatic figure with low body background was demonstrated, an hour later the figure of gall bladder appeared and the initial BSP excretion into the small intestine was shown, and thereafter the density of the hepatic area became markedly decrease. In the cases of heavy jaundice both the surgical and medical one showed the cardiac pool scan in the early stage and even in the late stage no BSP excretion into the intestine was figured out. In some cases of heavy hepatic cell damages, also the figure of kidneys was to be traced. In the cases of moderate jaundice there are some differences in the serial abdominal scan between surgical and medical jaundice. In the former the figure of the main biliary ducts as well as the gallbladder was shown within a day after administration and the significantly delayed excretion of BSP into the intestine was marked. In the latter no significant concentration of BSP in the bile ducts was seen, while the BSP excretion into the intestine was shown although its intestinal accumulation seemed to be somewhat slower than the normal control group.