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Binding cells of ^{125}I-iodoamphetamine in rat liver

Taizo HIJIOKA,*1,*4 Toru KASHIWAGI,*2 Toshifumi ITO,*1 Masahiro HORIMOTO,*1 Sadaharu IIO,*1
Hiroyuki FUKUI,*3 Norio HAYASHI,*1 Sunao KAWANO,*1
Hideyuki FUSAMOTO*1 and Takenobu KAMADA*1

*1*First Department of Medicine, Osaka University Medical School,* *2*Department of Medicine, Osaka Koseinenkin Hospital,* *3*Department of Medicine, Yao City Hospital, and* *4*Department of Gastroenterology and Clinical Research Institute, Osaka Minami National Hospital*

We recently reported that transrectal or intestinal portal scintigraphy with ^{123}I-iodoamphetamine (IMP) could be a useful method for the non-invasive and quantitative evaluation of the portosystemic shunt in portal hypertension, but what cells in the liver trap IMP has not been clarified. This study was aimed at elucidating whether IMP was extracted by parenchymal cells, sinusoidal endothelial cells, Kupffer cells or fat storing cells. Each type of liver cell was isolated from rats and cultured. The cells were incubated with ^{125}I-IMP and the radioactivity of the lysate was determined. Nonspecific binding was assessed in the presence of an excess of unlabeled IMP, and specific binding was determined by subtracting the nonspecific from total binding. Specific binding observed in parenchymal cells, endothelial cells and Kupffer cells was 70.2 ± 0.4, 4.2 ± 1.4 and 2.3 ± 0.8 pmol/well, respectively, but no specific binding was observed in fat storing cells. The binding in parenchymal cells was much higher than that in endothelial cells or Kupffer cells ($p < 0.005$). In addition, the binding to parenchymal cells reached equilibrium within 20 min and was not saturable over the concentration range tested (0.5–10 μM). These findings indicate that IMP is mostly extracted by parenchymal cells in the liver.

Key words: ^{125}I-iodoamphetamine, ^{123}I-iodoamphetamine, binding assay, liver, hepatocyte