

Accumulation and metabolism of [^{125}I] HIPDM in the rat pancreas

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Our previous studies have shown a high accumulation of [^{125}I]N,N,N'-trimethyl-N'-(2-hydroxy-3-methyl-5-iodobenzyl)-1,3-propanediamine (HIPDM) in the human pancreas. In this study, the pancreatic accumulation and metabolism of [^{125}I]HIPDM were studied in rats to determine the factors influencing its uptake by this organ. In biodistribution studies, [^{125}I]HIPDM showed a high uptake by the pancreas similar to that by the brain and lungs, both organs with a low tissue pH. TLC analysis of pancreatic homogenate after the injection of [^{125}I]HIPDM showed that it was metabolically stable in this organ. Moreover, in the pancreatic homogenate, the bulk of the radioactivity was recovered from the microsomal fraction, and the radioactivity bound to microsomal particles showed release that was dependent on the Ca^{2+} or Mg^{2+} concentration in the incubation medium. These results suggest that the initial pancreatic uptake of [^{125}I]HIPDM may be a function of blood flow and governed by the pH gradient hypothesis, while subsequent retention may occur secondary to ionic binding within the pancreas.

Key words: [^{125}I]HIPDM, pancreas, pH gradient hypothesis, metabolism, cellular polyanions