Problems of [S-methyl-\textsuperscript{11}C]-L-methionine as a protein synthesis marker in the pancreas

Yasuhiisa Fujibayashi*, Keichi Kawai**, Yoshiharu Yonekura*, Kazuya Matsumoto* Junji Konishi* and Akira YokoYama*

*Faculty of Pharmaceutical Sciences and School of Medicine, Kyoto University, Kyoto, Japan
**Faculty of Pharmaceutical Sciences, Science University of Tokyo, Tokyo, Japan

To evaluate the possibility of [S-methyl-\textsuperscript{11}C]-L-methionine as a protein synthesis marker in the pancreas, the effect of various labeling positions in the accumulation and metabolism of \textsuperscript{14}C-labeled L-methionines (S-methyl-\textsuperscript{14}C, \textsuperscript{1}H\textsuperscript{3}\textsuperscript{14}C and \textsuperscript{4}\textsuperscript{14}C) was studied. In mouse biodistribution studies, the methionines showed differing patterns of labeling position-dependent pancreatic accumulation. In the case of [S-methyl-\textsuperscript{14}C]-L-methionine, protein-incorporation and methyl-transformation equally served as retention mechanisms in the pancreas, indicating [S-methyl-\textsuperscript{11}C]-L-methionine’s unsuitability as a pancreatic protein synthesis marker. For such purposes, [\textsuperscript{11}C]-L-methionine is considered more suitable.

Key words: [S-methyl-\textsuperscript{11}C]-L-methionine, \textsuperscript{14}C-methionines, labeling position, pancreas, protein synthesis, amino acid metabolism