Summary

Synthesis of ^{18}F-FDG with FDG MicroLab^{TM} System: Basic Studies for Clinical Application

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We synthesized ^{18}F-FDG by using an automated synthetic apparatus "FDG MicroLab" (GE Medical Systems) which produces ^{18}F-FDG by a solid phase ^{18}F-fluorination. Its quality and reproducibility were evaluated in order to assess feasibility of the apparatus for routine clinical production of ^{18}F-FDG. For 5 consecutive ^{18}F-FDG synthesis, target irradiation was carried out at 15 μA for 60 min. ^{18}F-FDG was obtained in 50 min after EOB with an end-of-synthesis yield of 9.34$\pm$1.06 GBq. Radiochemical yield and radiochemical purity were 47$\pm$3% (decay corrected) and 98.0$\pm$0.5%, respectively. Other several quality control parameters tested conformed with "Standards of Compounds Labeled with Positron Nuclides" (*RADIOISOTOPES*, 44, 1995). Thus, the automated synthetic apparatus "FDG MicroLab" has proven to stably produce ^{18}F-FDG with high yield and high purity. The apparatus is feasible for routine clinical production of ^{18}F-FDG.

Key words: FDG MicroLab, ^{18}F-FDG, Quality, Positron emission tomography, Cyclotron.