The characteristics of FDG and ^{11}C Methionine uptake by proliferating tumor cells in vivo

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Abstract

The tumor seeking agent most widely used in positron emission tomography (PET) are ^{18}F-fluorodeoxyglucose (FDG) and ^{11}C methionine (Met). FDG is transported, phosphorylated and metabolically trapped in tumor cells as a glucose substitute. Met enters tumor cells via the amino acid transporter according to accelerated protein and RNA synthesis in malignant tumors. The purpose was to investigate the dependency of FDG and Met accumulation on cell cycle phase in HeLa cells. Synchronization of HeLa cells was accomplished by high concentration of thymidine. FDG was higher in early S phase and G2/M phase than G1 phase, although Met was higher in G2/M phase. The results suggest that the uptake of FDG and Met are cell cycle dependent, are associated with the proliferative activity of the tumor.