Automated [^{18}F]flumazenil synthesis in the F-100 FDG synthesizer

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Abstract

[^{18}F]flumazenil ([^{18}F]FMZ), fluorine-18 labelled radiotracer, is that it possesses longer half-life (110 min) than carbon-11 and allows the examination of more patients per tracer production and the possibility of longer acquisition protocols. We performed the radiosynthesis of [^{18}F]FMZ by modifying the commercial FDG synthesizer module (F-100, Sumitomo Heavy Industries, Ltd.). [^{18}F]FMZ was synthesized by nucleophlic labelling of a solution of nitromazenil, nitro-precursor, in 0.5–1 mL of DMF using K^{18}F/Kryptofix 2.2.2 complex avoiding a performed azeotropic drying procedure. After semi-preparative HPLC purification, the [^{18}F]FMZ was obtained in 15–20% radiochemical yields (decay not corrected), with more than 95% radiochemical purity.