Preparation and quality control of $[^{11}\text{C}]$raclopride for routine PET application

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Abstract

The purpose of this study is to optimize the synthesis $[^{11}\text{C}]$Raclopride, a radiopharmaceutical used in the imaging of brain dopamine D2 receptors with positron emission tomography (PET). The synthetic method is based on the loop labeling method with $[^{11}\text{C}]$methyltriflate. At ambient temperature $[^{11}\text{C}]$methyltriflate is passed through the loop loaded the precursor for 2 min. The reaction mixture of the loop was then purified with HPLC. For a 40 min irradiation with 30 $\mu$A proton beam, 20 mCi of $[^{11}\text{C}]$raclopride ready for injection with $>95\%$ radiochemical purity was prepared for 40 min from end of bombardment. The mean specific activity of $[^{11}\text{C}]$raclopride ready for injection was 37 GBq/$\mu$mol (1 Ci/$\mu$mol) at the end of synthesis.