Accepted for oral presentation in the SNM 58th Annual Meeting 2011 San Antonio, Texas/US

A rapid and simple automated synthesis of ^{18}F-MISO

Koziorowski, Jacek[1]; Fedorova, Olga[2]; Stålmo, Kenneth[1]

1. Nucl. Med., Herlev University Hospital, Herlev, Denmark.
2. Institute for Human Brain, St. Petersburg, Russian Federation.

Objectives : To meet the ever increasing clinical demands for rapid, reliable and cGMP compliant syntheses of routine tracers we have developed a synthesis for ^{18}F-MISO using a commercial Synthera multipurpose synthesis box with a total synthesis time, including quality control, of <40 minutes with a yield of >50% (not decay corrected).
Methods : The original synthesis, as published by M. Berridge and J-L Lim was modified to be compatiblewith a one-pot reaction and the disposable plastic cassette (IFP) and optimized for short reaction times.
Results : Using just 5mg of the precursor and a total synthesis time of 35 minutes yields of >50% (n=6,notdecay corrected) ^{18}F-MISO were obtained. Quality control performed by HPLC, took 4 minutes and showed a radiochemical purity of >95%.
Conclusions : By only three minor changes in the FDG program and the use of solid phase extraction cartridges the commercial FDG box produced ^{18}F-MISO suitable for injection in high yield (>50% EOS, >64%decay corrected) and clinically relevant doses (100 - 1000mCi) within 40 minutes.

Yield from three syntheses

6,1	3,7	61
32,5	16,7	51
52,1	26,7	51

From left to right: starting act. (GBq), product act. (GBq), yield (%)