We report the automated radiosynthesis of \(^{18}\text{F}\)flutemetamol on GE FASTlab. Florbetapir F18 (AV-45, Avid Radiopharmaceuticals) and Florbetaben (BAY 94-9172, Bayer Schering Pharma) on GE TRACERlab FX F-N. \(^{18}\text{F}\)Flutemetamol, Florbetapir F18 and Florbetaben are positron emission tomography (PET) tracers for imaging of amyloid plaques in the brain. \(^{18}\text{F}\)Flutemetamol is structurally related to \(^{11}\text{C}\)PiB and is in phase III clinical trials. The detection of amyloid plaques is known to have diagnostic and prognostic value in the management of Alzheimer’s disease.

Clinical doses of \(^{18}\text{F}\)flutemetamol are currently synthesised on FASTlab using cartridge based purification in decay corrected yields of 25-34% (15-20% end of synthesis). Radiochemistry precursors and cold standards were synthesised according literature procedures. Radiosynthesis of Florbetapir F18 followed a literature procedure. A total synthesis time of 121 minutes and decay-corrected yield of 25.8% (12% end of synthesis) were in good agreement with the literature report. Radiosynthesis of Florbetaben also followed a literature procedure and gave comparable yields.

Preparations of all three tracers were subjected to in vivo biodistribution and metabolism studies in rat. Peak brain uptake was comparable for the three tracers at 2-3% of injected dose at 2 minutes. For \(^{18}\text{F}\)flutemetamol, at 2 minutes post-injection, 98% of activity in the brain is attributable to parent. For Florbetapir F18, at the same timepoint 56% of activity in the brain is attributable to parent. In agreement with literature reports, rapid metabolism was observed for Florbetapir F18 (data in mouse published) and Florbetaben (blood sample data from human study published) in brain and plasma.