Positron emission tomography with 4-[\(^{18}\text{F}\)]fluoro-L-m-tyrosine in MPTP-induced hemiparkinsonian monkeys

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PET imaging studies with 4-[\(^{18}\text{F}\)]fluoro-L-m-tyrosine (FMT) in normal macaca monkeys showed selective accumulations of radioactivity in the striatum with time. In monkeys rendered hemiparkinsonian by intracarotid infusion of 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP), FMT uptake was eliminated in the lesioned striatum. FMT-PET studies were able to detect dopaminergic terminals in both normal and hemiparkinsonian monkeys, and clearly showed a reduction in aromatic L-amino acid decarboxylase (AAAD) activities in the MPTP-lesioned striatum. These results show that FMT is promising as a PET tracer for the evaluation of central dopaminergic systems in parkinsonism.

Key words: PET, Parkinson's disease, fluoro-L-m-tyrosine, MPTP, primates