

## Effects of cocaine on [<sup>11</sup>C]norepinephrine and [<sup>11</sup>C]β-CIT uptake in the primate peripheral organs measured by PET

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The toxic properties of cocaine are related to both the central and peripheral effects. To identify possible lethal mechanisms and the accumulation of cocaine in various organs, the effects of cocaine on [<sup>11</sup>C]norepinephrine and cocaine congener [<sup>11</sup>C]β-CIT uptake in Cynomolgus monkeys were measured by positron emission tomography (PET). Cocaine (5 mg/kg) noticeably inhibited [<sup>11</sup>C]norepinephrine uptake in the heart. The uptake of [<sup>11</sup>C]β-CIT in the heart and lung was reduced by pretreatment with cocaine. There was a significant uptake in the liver which was increased following cocaine pretreatment. The results of this study confirm that cocaine blocks the neuronal uptake of norepinephrine in sympathetic nerve terminals in the myocardium. The effect of cocaine on [<sup>11</sup>C]β-CIT uptake indicates that the binding sites in the heart and lung are saturable, while the uptake mechanism in the liver is different from those of the heart and lung.

**Key words:** [<sup>11</sup>C]β-CIT, [<sup>11</sup>C]norepinephrine, PET, cocaine, peripheral organs