Methcathinone (MCAT) and 2-methylamino-1-(3,4-methylenedioxy-phenyl)propan-1-one (MDMCAT) inhibit [^{3}H]serotonin uptake into human platelets.

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The benzylic ketone analog of the psychoactive phenylisopropylamine methamphetamine (MA), MCAT, and of 3,4-methylenedioxymethamphetamine (MDMA), MDMCAT, were synthesized and compared to the nonketo compounds for their abilities to inhibit reuptake transporter-mediated [^{3}H]serotonin accumulation into human platelets. MCAT inhibited [^{3}H]serotonin uptake into platelets with an IC_{50} of 33.7 ± 9.0 micromolar while MA exhibited an IC_{50} of 11.7 ± 1.0 micromolar; this difference was not significant. The methylenedioxy-substituted compounds were about 6-fold more potent ($p < 0.05$) than the unsubstituted compounds in this assay; MDMCAT displayed an IC_{50} of 5.8 ± 0.7 micromolar and MDMA had an IC_{50} of 2.1 ± 0.3 micromolar. The difference in potencies between MDMCAT and MDMA was significant at $p < 0.01$. These results indicate that beta-keto derivatization of psychoactive phenylalkylamines does not have a major impact on the drugs' ability to inhibit serotonin uptake and that substitutions on the phenyl ring can enhance potency.