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

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Abstract

The benzylic ketone analogs 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 uM while MA exhibited an IC_{50} of 11.7 ± 1.0 uM; 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 uM and MDMA had an IC_{50} of 2.1 ± 0.3 uM. The difference in potency 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' ablility to inhibit serotonin uptake and that phenyl ring substitutions can enhance potency.