Effects of d-amphetamine administration on the release of endogenous excitatory amino acids in the rat nucleus accumbens

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1. 1. The effects of acute D-amphetamine administration to rats on the release of endogenous excitatory amino acids from nucleus accumbens slices were studied. 2. 2. D-amphetamine (5 mg/kg and 10 mg/kg; i.p.) significantly increased the spontaneous release of aspartate and glutamate from nucleus accumbens slices. 3. 3. In contrast, D-amphetamine either produced no change or rather decreased K+ (40 mM)-evoked and N-methyl-D-aspartate (100 ?M)-evoked release of aspartate and glutamate from the slices, respectively. 4. 4. When D-amphetamine treated rats were pretreated with haloperidol, the effects of D-amphetamine on the spontaneous release of excitatory amino acids were not produced, whereas its effects on N-methyl-D-aspartate-evoked release remained unchanged. 5. 5. These data suggest that amphetamine produces changes in excitatory amino acid-mediated transmission in the nucleus accumbens, that may play a role in amphetamine-induced behavioral or psychotomimetic effects.