

Effects of D-Amphetamine Administration on the Release of Endogenous Excitatory Amino Acids in the Rat Nucleus Accumbens

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Abstract

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. 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. In contrast, D-amphetamine either produced no change or rather decreased K⁺ (40 mM)-evoked and N-methyl-D-aspartate (100 μM)-evoked release of aspartate and glutamate from the slices, respectively.
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. 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.