Short communication

Effect of cocaine on responsiveness of \( \alpha_1 \)-adrenergic receptors in rat cerebral cortex: modulation by GABA-mimetic drugs

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Abstract:
We investigated the effects of single doses of cocaine (10 mg/kg, ip) and the \( \gamma \)-aminobutyric acid (GABA)-mimetics tiagabine (10 mg/kg, ip) and vigabatrin (150 mg/kg, ip) injected separately or concomitantly with cocaine, on the responsiveness of cerebral cortical \( \alpha_1 \)-adrenergic receptors. The accumulation of noradrenaline-stimulated inositol phosphates was estimated \textit{in vitro} at 2 and 24 h after the drug injection. Cocaine significantly enhanced \( \alpha_1 \)-adrenergic receptor responsiveness to noradrenaline. Neither tiagabine nor vigabatrin influenced the accumulation of inositol phosphates. Finally, the cocaine-evoked augmentation of \( \alpha_1 \)-adrenoceptor responsiveness was counteracted by tiagabine but not by vigabatrin. This effect may represent a characteristic feature of tiagabine, not necessarily shared by other GABA-mimetic drugs.

Key words:
\( \alpha_1 \)-adrenergic receptor, inositol phosphate, rat cerebral cortex, cocaine, tiagabine, vigabatrin