Effect of glutamate receptor antagonists on place aversion induced by naloxone in single-dose morphine-treated rats


ABSTRACT: Our objectives were to determine whether the glutamatergic system is involved in the motivational component of morphine withdrawal in acutely dependent rats and such an involvement is associated with dopaminergic neurotransmission. We examined the effects of various kinds of glutamate receptor antagonists on conditioned place aversion (CPA) induced by naloxone-precipitated withdrawal from a single morphine exposure 24 h before. Furthermore, the influence of pretreatment with the dopamine receptor antagonist haloperidol on those effects of glutamate receptor antagonists was also investigated. CPA was attenuated in a dose-dependent manner by all glutamate receptor antagonists examined, such as NMDA receptor antagonists, AMPA receptor antagonist, and metabotropic receptor antagonist. These results suggest that the glutamatergic system involving multiple classes of receptors plays a role in the motivational component of withdrawal from acute morphine dependence, and the function of the glutamatergic system would be closely associated with dopaminergic neurotransmission.
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