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Effect of Different Drugs Influencing Monoamine Neurotransmission on Haloperidol-Induced Catalepsy in Mice

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Abstract: Aim: Catalepsy occurs following high dopamine D2 receptor blockade by the typical antipsychotic drug haloperidol. The present study investigated the effect of different drugs affecting monoamine neurotransmission in this animal model of Parkinson's disease in mice. Materials and Methods: Drugs were intraperitoneally administered with haloperidol 30 min prior to testing. Catalepsy was measured using the bar test. Results: Catalepsy duration was reduced by the non-selective noradrenaline and serotonin reuptake inhibitors imipramine and amitriptyline (21.1% and 22.3% reduction by 20 mg/kg imipramine and amitriptyline, respectively). Catalepsy duration was increased by the selective serotonin reuptake inhibitors (SSRIs) fluoxetine, fluvoxamine, and citalopram and by the serotonin receptor antagonist and reuptake inhibitor nefazodone (maximal increases of 112.4%, 38.5%, 30.8% and 112.4%, respectively). In contrast, the duration of catalepsy was decreased by the serotonin and dopamine reuptake inhibitor sertraline (56.8%, 52.6%, 35.7%); by sibutramine, a serotonin, dopamine and noradrenaline reuptake inhibitor (56.8%, 52.6%, 35.7%); and by Hypericum perforatum (31.9%, 33.2%, 39.6%) at 5, 10, 20 mg/kg, respectively. Conclusions: Taken together, data in the present study suggest that drugs which have been reported to increase brain extracellular dopamine levels are likely to benefit motor symptoms in patients with Parkinson's disease.

Key Words: Catalepsy, haloperidol, antidepressants, mice

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