PERGOLIDE ATTENUATES MEMORY DEFICIENCIES AND OXIDATIVE STRESS INDUCED BY A 6-HYDROXYDOPAMINE MODEL OF PARKINSON'S DISEASE

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Introduction: One of the most widely used animal models of Parkinson's disease (PD) involve injecting of 6-OHDA directly into the substantia nigra (SN) and results in cognitive deficiencies and increase oxidative stress. Dopaminergic drugs may exert brain antioxidant activity which could explain their protective actions.

The aim of this study was to examine the effects of pergolide on behavioral deficits and brain oxidative stress induced by 6-OHDA in this rat model of PD.

Methods: 8µg 6-OHDA dissolved in 4µl saline was administrated. Two weeks after operation, all surviving animals showing no neurological abnormalities were admitted to pergolide treatment (0.3 mg/kg/day i.p.). Radial-8-arm-maze and Y-maze tasks were used. We also assessed the levels of some enzymatic antioxidant defences like superoxide dismutase (SOD) and glutathione peroxidase (GPX), as well as lipid oxidation makers like MDA (malondialdehyde), from the temporal lobe.

Results: We observed a significant facilitation of pergolide in Y-maze-task and a decrease in the number of working and reference memory errors from the radial-arm-maze, suggesting significant positive effects on spatial memory.

Additionally, an increase in the specific activity of SOD and GPX was noticed in pergolide-treated rats, compared to control group. Moreover, Pearson's test revealed a significant positive correlation between spontaneous alternation in Y-maze and SOD specific activity.

Conclusion: Taken together, our data suggest that pergolide may counteract both behavioral and biochemical changes induced by 6-OHDA in a rat model of PD. Our study also suggests that these positive behavioral responses could be correlated with some antioxidant actions of pergolide.