Neuroprotective effect of chrysin in a mouse model of Parkinson’s disease induced by 6-hydroxydopamine

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Introduction: Parkinson’s disease (PD) is characterized by progressive degeneration of dopaminergic neurons and dopamine (DA) depletion in the striatum. Chrysin is a naturally occurring flavone chemically extracted from the passion flowers Passiflora caerulea and Passiflora incarnata. This study was designed to investigate the potential neuroprotective effect of chrysin in a mouse model of PD induced by 6-hydroxydopamine (6-OHDA) in mice. Material and Methods: Experiments were performed using male C57B/6J mice (90 days old). The procedures of this study were conducted according to the guidelines of the Committee on Care and Use of Experimental Animals Resources (# 038/2012). Mice were randomly assigned into four groups (n=10 per group): (G1) vehicle/vehicle; (G2) vehicle/6-OHDA; (G3) chrysin/vehicle and (G4) chrysin/6-OHDA. Injection of 6-OHDA and vehicle [2µl (2µg/µl)] from stereotaxic surgery in striatum of mice. In this experimental design G1 and G2 receiving vehicle while G3 and G4 receiving 10mg/kg, per oral per 28 days (1x day). The activity of catalase (CAT), glutathione S-transferase (GST), glutathione peroxidase (GPx) and glutathione reductase (GR) were analyzed spectrophotometrically. By HPLC-ED was measured levels of DA, 3,4-dihydroxyphenylacetic acid (DOPAC) and homovanillic acid (HVA). The values were analyzed by two-way ANOVA and Newman-Keuls multiple comparison test, each value is expressed as the mean ± SD.

Results and Discussion: We also demonstrated that chrysin reverted the inhibition of the GPx activity and the increase in GR and GST activities. We can infer from the above study that chrysin inhibited the 6-OHDA-induced catecholamine neurotoxicity and maintain the concentration of DA and its metabolites at normality or close to normality. Conclusions: We suggest that chrysin attenuates oxidative stress and decreased levels of DA, DOPAC and HVA induced by 6-OHDA in mice supporting the hypothesis that chrysin can be used as a aid in the treatment of PD.

Palavra chave: 6-hydroxydopamine, Chrysin, Parkinson’s disease.
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