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Jia-Jian-Di-Huang-Yin-Zi decoction reduces apoptosis induced by both mitochondrial and endoplasmic reticulum caspase12 pathways in the mouse model of Parkinson's disease

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Abstract

Ethnopharmacological relevance: As a classical prescription of traditional Chinese medicine (TCM), Jia-Jian-Di-Huang-Yin-Zi decoction (JJDHYZ) has been used to treat the symptoms of neurological disorders with a long history.

Aim of the study: To evaluate the effects and possible mechanisms of JJDHYZ on a 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP)-induced subacute mouse model of Parkinson's disease.

Materials and methods: Adult male C57BL/6 mice were randomly divided into five groups: control, MPTP, JJDHYZ low dosage (JJDHYZ-L, 8.5 g/kg/day), medium dosage (JJDHYZ-M, 17 g/kg/day) and high dosage (JJDHYZ-H, 34 g/kg/day). Behavioral tests, immunohistochemistry, immunofluorescence, and high-performance liquid chromatography (HPLC) were conducted to evaluate the neuroprotective effects of JJDHYZ. The mechanism was further explored using TdT-mediated dUTP nick end labeling staining and transmission electron microscopy. The protein expression of Bax, Bcl-2, cytochrome c, full-length caspase9, cleaved caspase9, cleaved caspase3, caspase12 and C/EBP homologous protein was assessed. The toxicity on hepatocytes and renal cells was detected using the enzyme-linked immunosorbent assay kits.

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