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Puerarin prevents inflammation and apoptosis in the neurocytes of a murine Parkinson's disease model

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ABSTRACT. The aim of this study was to investigate Parkinson's disease (PD) using a murine model of PD. Specifically, we aimed to explore the mechanism by which puerarin prevents inflammation and apoptosis in neurocytes. Eighty healthy male C57/BL6 mice were randomly selected and divided into four groups (N = 20 each): control group; PD group; PD+puerarin group; and puerarin group. At the end of the treatment period, the animals' brains were removed after perfusion and decollation. The protein expression levels of tyrosine hydroxylase (TH) in the murine brains were assessed by immunohistochemistry and the protein expression levels of TH, glial fibrillary acidic protein (GFAP), inducible nitric oxide synthase (iNOS), cleaved Caspase-3, and Bax in the substantia nigra and corpus striatum of the animals were assessed

by western blotting. The spontaneous activity of the PD mice was found to be significantly higher after puerarin treatment and the distance traveled by mice in an open field assessment was 1700 cm further in puerarin-treated PD mice than in PD mice. Immunohistochemistry and western blotting analyses indicated that the expression of TH was significantly higher (2.63-fold) in puerarin-treated PD mice than in untreated PD mice and that the expression of GFAP in PD mice was significantly reduced (~45%) by puerarin treatment. These findings lead us to conclude that puerarin significantly alleviates 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine-induced injury in dopaminergic neurons. Puerarin mediates anti-apoptotic and anti-inflammatory activities and plays a neuroprotective role.

Key words: Puerarin; Animal models; Inflammation; Neuroprotection