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Preventive and therapeutic potential of protocatechuic acid in Parkinson's disease mice induced by MPTP

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The aim of this study was to investigate the preventive and therapeutic potentials of Protocatechuic Acid (PCA) and also to explore the possible mechanisms by which it works to Parkinson's disease (PD). C57BL/6 mice were used as experimental animals and were injected with MPTP (25 mg/kg/d) for seven consecutive days to induce PD mice. PCA (10 mg/kg/d) or Madopar (125 mg/kg/d) was administrated separately before or after MPTP injection to PD mice for 10 days including 7 days treated with MPTP. After discontinuing these treatments, behavioural tests were conducted, and midbrain sections including Substantia Nigra Pars Compacta (SNc) area were immune-stained with Tyrosine Hydroxylase (TH) and detected apoptosis through TUNEL assay. Moreover, the expressions of Bcl2-associated X protein (Bax), B-cell lymphoma 2 protein (Bcl-2), cleaved caspase-3 and cleaved caspase-8 in the midbrain of mice were detected by western blot method. The results showed that PCA treatment significantly relieved the motor symptoms of PD mice induced by MPTP and increased the number of TH-positive neurons in the SNc of the brain compared to MPTP treatment mice. The neuronal apoptosis induced by MPTP was attenuated coupled with increased Bcl-2 expression, decreased Bax/Bcl-2 ratio and reduced activation of caspase-3 and caspase-8. In conclusion, PCA might have preventive effect and therapeutic potential to PD. These results propose PCA as promising agent in the prevention and treatment of PD.

Biography

Xiuli Zhang is a Professor at Binzhou Medical University, China.

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