

عنوان مقاله:

Effects of quercetin on spatial memory, hippocampal antioxidant defense and BDNF concentration in a rat model of Parkinson's disease: An electrophysiological study

محل انتشار:

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خلاصه مقاله:

Objective: Quercetin is one of the most popular flavonoid with protective effects against neural damages in Parkinson's disease (PD). We assessed the effect of quercetin administration on memory and motor function, hippocampal oxidative stress and brain-derived neurotrophic factor (BDNF) level in a 6-OHDA-induced Parkinson's rat model. **Material and Methods:** The animals were divided into the following five groups (n=8): control, sham-surgery (sham), lesion (PD), and lesion animals treated with quercetin at doses of 10 (Q10) and 25 (Q25) mg/kg. For induction of a model of PD, 6-OHDA was injected into the striatum of rats. The effects of quercetin were investigated on spatial memory, hippocampal BDNF and malondialdehyde (MDA) levels, and total antioxidant capacity (TAC). Spatial memory was assessed by Morris water maze test, and the neuronal firing frequency in hippocampal dentate gyrus (HDG) was evaluated by single-unit recordings. **Results:** Mean path length and latency time, rotational behavior and hippocampal

MDA concentration were significantly increased, while time spent in the goal quadrant, swimming speed, spike rate, and hippocampal levels of TAC and BDNF were significantly decreased in the PD group compared to the sham group ($p < 0.01$ to $p < 0.001$). Quercetin treatment significantly enhanced time spent in goal quadrant ($p < 0.05$), swimming speed ($p < 0.001$) and spike rate ($p < 0.01$), improved hippocampal TAC ($p < 0.05$ to $p < 0.001$) and BDNF ($p < 0.01$ to $p < 0.001$) level, and decreased mean path length ($p < 0.001$), latency time ($p < 0.05$ to $p < 0.001$), rotational behavior and hippocampal MDA concentration ($p < 0.05$). Conclusion: The cognitive-enhancing effect of quercetin might be due to its antioxidant effects .in the hippocampus

کلمات کلیدی:

Quercetin, Parkinson's disease, Spatial Memory, Oxidative stress

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