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Potential role of crocin against parkinson's disease rat model: Targeting MTOR pathway

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The complexity of Parkinson's disease (PD) pathogenesis is attributed to multiple pathways involved in the neurodegeneration process among these pathways, are the phosphoinositide 3-kinase (PI3K), protein kinase B (Akt), and the mammalian target of rapamycin (mTOR). It has been found that crocin has many beneficial protective effects against neurodegenerative diseases due to its anti-apoptotic, anti-inflammatory, and antioxidant activities. However, to the authors' best knowledge, the exact molecular pathways implicated in crocin's neuroprotective effects have not been fully elucidated. To address this question, this mechanistic study tried to investigate the effect of crocin, through the precise role of mTOR signaling pathway, against rotenone (ROT)-induced PD in rats. Sixty rats were randomly divided into 4 groups, each containing 15 rats that served as control, positive control (crocin), ROT-treated group and ROT-treated group plus crocin. By the end of the model, pre-treatment with crocin showed improvement in catalepsy, as compared with ROT-treated group. In the open field test (OFT), pre-treatment with crocin enhanced number of squares crossed and activity index, with decreased inactive sitting time. Amelioration in striatal dopamine (DA) as well as pro-apoptotic marker, caspase-9, was also observed with enhancement in anti-apoptotic marker, B-cell lymphoma 2 (Bcl-2). Overall, crocin was able to protect against apoptosis and, in turn, neurodegeneration process, manifested in enhanced DA levels and amelioration of motor dysfunction in PD animal model.

Biography

Rania Mohamed Kamel Hassan Mohamed Salama has completed her PhD at Ain Shams University and he is currently pursuing his Postdoctoral studies. She is an Assistant Professor of Pharmacology and Toxicology and Assistant Professor in Pharmacy Practice and Clinical Pharmacy Department in Faculty of Pharmacy at Misr International University. She has published three papers in international journals and has been serving as a Reviewer in reputable international journals.

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