شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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A study on the potential protective effect of indole-3-carbinol against rotenone-induced Parkinson's disease in rats

A Thesis presented by

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Signature

ABSTRACT

Abstract

Parkinson's disease (PD) is the second most common progressive neurodegenerative disorder. Despite mounting studies have been conducted, there is no effective therapy able to halt its ascertainment. Indole-3-carbinol (I3C) is a naturally occurring compound obtained by thioglucosidase-mediated autolysis of glucobrassicin in cruciferous vegetables. This study sought to investigate the neuroprotective effect of I3C against rotenone-induced Parkinson's disease and address the potential mechanisms. PD was induced by subcutaneous administration of rotenone (2 mg/kg) for 28 days. First, we assessed the effects of three doses of I3C (25, 50, and 100 mg/kg) by catalepsy test (bar test), spontaneous Locomotor activity, Rotarod test, weight change, tyrosine hydroxylase expression, α-Synuclein expression, striatal dopamine content and histological examination. The highest dose of I3C (100 mg/kg) was the most effective to prevent rotenone-mediated motor dysfunctions and amend striatal DA decrease, weight loss, neurodegeneration, TH expression reduction, and α-Synuclein expression rise in midbrain and striatum. Then, further mechanistic investigation revealed that the neuroprotective effect of I3C was attributed to its anti-inflammatory and anti-apoptotic effects and the activation of SIRT1/AMPK pathway. Altogether, these results proposed that I3C could attenuate PD induced by rotenone.

Keywords: Parkinson's disease, Rotenone, Indole-3-carbinol (I3C), Apoptosis, Inflammation, Sirtuin 1 (SIRT1), AMPK.

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