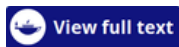


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# Neuroprotective role of coconut oil for the prevention and treatment of Parkinson's disease: potential mechanisms of action

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## Abstract

Neurodegenerative disease (ND) is a clinical condition in which neurons degenerate with a consequent loss of functions in the affected brain region. Parkinson's disease (PD) is the second most progressive ND after Alzheimer's disease (AD), which affects the motor system and is characterized by the loss of dopaminergic neurons from the nigrostriatal pathway in the midbrain, leading to bradykinesia, rigidity, resting tremor, postural instability and non-motor symptoms such as cognitive declines, psychiatric disturbances, autonomic failures, sleep difficulties, and pain syndrome. Coconut oil (CO) is an edible oil obtained from the meat of *Cocos nucifera* fruit that belongs to the palm family and contains 92% saturated fatty acids. CO has been shown to mediate oxidative stress, neuroinflammation, mitochondrial dysfunction, apoptosis and excitotoxicity-induced effects in PD in various *in vitro* and *in vivo* models as a multi-target bioagent. CO intake through diet has also been linked to a decreased incidence of PD in people. During digestion, CO is broken down into smaller molecules, like ketone bodies (KBs). The KBs then penetrate the blood-brain barrier (BBB) and are used as a source of energy its ability to cross BBB made this an important class of natural remedies for the treatment of ND. The current review describes the probable neuroprotective potential pathways of CO in PD, either prophylactic or therapeutic. In addition, we briefly addressed the important pathogenic pathways that might be considered to investigate the possible use of CO in neurodegeneration such as AD and PD.

**Keywords:** Neurodegeneration; Parkinson's disease; blood-brain barrier; coconut oil; treatment.

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