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Neuroprotective effects of honokiol: from chemistry to medicine.

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Abstract

The incidence of neurological disorders is growing in developed countries together with increased lifespan. Nowadays, there are still no effective treatments for neurodegenerative pathologies, which make necessary to search for new therapeutic agents. Natural products, most of them used in traditional medicine, are considered promising alternatives for the treatment of neurodegenerative diseases. Honokiol is a natural bioactive phenylpropanoid compound, belonging to the class of neolignan, found in notable amounts in the bark of Magnolia tree, and has been reported to exert diverse pharmacological properties including neuroprotective activities. Honokiol can permeate the blood brain barrier and the blood-cerebrospinal fluid to increase its bioavailability in neurological tissues. Diverse studies have provided evidence on the neuroprotective effect of honokiol in the central nervous system, due to its potent antioxidant activity, and amelioration of the excitotoxicity mainly related to the blockade of glutamate receptors and reduction in neuroinflammation. In addition, recent studies suggest that honokiol can attenuate neurotoxicity exerted by abnormally aggregated A β in Alzheimer's disease. The present work summarizes what is currently known concerning the neuroprotective effects of honokiol and its potential molecular mechanisms of action, which make it considered as a promising agent in the treatment and management of neurodegenerative diseases.

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KEYWORDS: Alzheimer's disease; excitotoxicity; lignan; neuroprotection; polyphenols

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