

Magnolia officinalis (Hou Po) bark extract stimulates the Nrf2-pathway in hepatocytes and protects against oxidative stress.

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Abstract

ETHNOPHARMACOLOGICAL RELEVANCE: The highly aromatic bark of *Magnolia officinalis* Rehder and EH Wilson, (magnolia bark) has been widely used in traditional Chinese medicine where it is known as Hou Po. Historically the bark of the tree has been used for treating variety of disorders the most common use of magnolia bark in traditional prescription has been to treat stress and anxiety disorders. Till date it is not clear regarding the fundamental cellular pathway it modulates. NRF2 signaling has emerged as the central pathway that protects cells from variety of stressors this led us to hypothesize that basis for magnolia bark's effects could be via activating NRF2 pathway.

MATERIALS AND METHODS: We utilized variety of biochemical procedures like luciferase reporter assay, enzyme induction, gene expression to determine NRF2 inducing activity by magnolia bark extract and its significance. Further we identified the phytochemicals inducing this activity using bio-directed fractionation procedure.

RESULTS: In this study, we demonstrate that magnolia bark extract activates Nrf2-dependent gene expression and protects against hydrogen peroxide mediated oxidative stress in hepatocytes. We further identified through HPLC fractionation and mass spectroscopy that magnolol, 4-methoxy honokiol and honokiol are the active phytochemicals inducing the Nrf2-mediated activity. This could be the molecular basis for its numerous beneficial activity.

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KEYWORDS: Antioxidant response elements (AREs); Magnolia (*Magnolia officinalis*) bark extract; Nuclear factor E2-related factor 2 (Nrf2); Oxidative stress; Phytochemicals; Quinone reductase

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