Honokiol Exerts Antidepressant Effects in Rats Exposed to Chronic Unpredictable Mild Stress by Regulating Brain Derived Neurotrophic Factor Level and Hypothalamus-Pituitary-Adrenal Axis Activity.

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Abstract
Honokiol (HNK), the main active component of Magnolia officinalis, has shown a variety of pharmacological activities. In the present study, we measured the antidepressant-like effects of HNK in a rat model of chronic unpredictable mild stress (CUMS) and explored its possible mechanisms. The antidepressant-like effects of HNK were assessed in rats by an open field test (OFT), sucrose preference test (SPT) and forced swimming test (FST). Then, serum levels of corticotrophin-releasing hormone (CRH), adrenocorticotropic hormone (ACTH) and corticosterone (CORT) and hippocampal brain-derived neurotrophic factor (BDNF) and glucocorticoid receptor α (GRα) levels were assessed to explore the possible mechanisms. We identified that HNK treatment (2, 4, and 8 mg/kg) alleviated the CUMS-induced behavioural deficits. Treatment with HNK also normalized the CUMS-induced hyperactivity of the limbic hypothalamic-pituitary-adrenal (HPA) axis, as indicated by reduced CRH, ACTH and CORT serum levels. In addition, HNK increased the expression of GRα (mRNA and protein) and BDNF (mRNA and protein) in the hippocampus. These data confirmed the antidepressant-like effects of HNK, which may be related to its normalizing the function of the HPA axis and increasing the BDNF level in the hippocampus.

KEYWORDS: Antidepressant; Brain-derived neurotrophic factor (BDNF); Chronic unpredictable mild stress (CUMS); Honokiol; Hypothalamic–pituitary–adrenal (HPA) axis

PMID: 29855846 DOI: 10.1007/s11064-018-2566-z

[Indexed for MEDLINE]
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