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Hericium erinaceus ethanol extract and ergosterol exert anti-inflammatory activities by neutralizing lipopolysaccharide-induced pro-inflammatory cytokine production in human monocytes

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Abstract

Edible mushrooms are known to exert anti-inflammatory effects. In this study, the effects of ethanol extracts from edible mushrooms, such as Hericium erinaceus, and other edible mushrooms on inflammatory responses were investigated. Experiments were conducted using the inflammatory responses of human monocytes induced by lipopolysaccharide (LPS), a bacterial component, that provokes inflammation. Notably, we demonstrated that LPS mixed with ethanol and hot water extracts derived from edible mushrooms attenuated the production of inflammatory cytokines, such as interleukin (IL)-1β, -6, and -8, induced by LPS in human monocytic cell cultures. Moreover, we found that the ethanol extract of H. erinaceus contained ergosterol, which attenuated IL-8 production in LPS-stimulated cells. Subsequent component analysis of the ethanol extract of H. erinaceus revealed that ergosterol binds to lipid A to attenuate LPS-induced inflammation. Together, our findings suggest that ergosterol in ethanol extracts from edible mushrooms can prevent the induction of inflammation by binding to LPS.

Keywords: Anti-inflammatory activity; Edible mushroom; Ethanol extract; Hericium erinaceus; Lipopolysaccharide.

Supplementary concepts

Hericium erinaceus

Related information

PubChem Compound (MeSH Keyword)

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