Ganoderma lucidum: A promising anti-inflammatory medicinal plant

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ABSTRACT

Inflammation is a complex process and part of the host immune defense against invading microorganism or trauma. Over production of some pro-inflammatory mediators can lead to chronic diseases of the inflammatory origin. Medicinal Plants which are used as anti-inflammatory agents, mainly act affecting various stages of the process of inflammation. In general they can inhibit formation of a wide of mediators such as cytokines by immune cells to prevent the inflammatory reaction cascade from starting. The use of most of the medicinal plants in treatment of chronic disease of the inflammatory origin is based on clinical and pharmacological trials. Meanwhile, the use of most of them is based on their longstanding traditional use in folk medicine. In this review, we report some of anti-inflammatory effects of G. lucidum as an ancient Chinese herbal medicine.

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Ganoderma lucidum seems to be useful as an anti-inflammatory medicinal plant. Therefore, more preclinical and clinical studies are recommended to elucidate its beneficial and risk effects in different conditions.

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Introduction

Inflammation is an unpleasant process familiar to everyone. It occurs in response to a wide range of sunburn, wounds, trauma, infection and auto immune conditions. Inflammation is characterized by four physical clear signs of warmth, redness, pain and swelling (1-3). Indeed, an immunological mechanism which plays an important role in the pathogenesis of diseases of the inflammatory origin, is related to activation and interactions of different immune cells, resulting to over production of mediators (4). Therefore, the main gold in treatment with medicinal plant is looking for those of them with inhibitory effect on the production of pro-inflammatory mediators by immune cells.

Many plants have been known with inhibitory effects on inflammation and anti-arthritic properties. In general, medicinal plants as whole reduces much of inflammation (5,6). Ganoderma lucidum (G. lucidum), a traditional Chinese medicinal herb, has been studied in many area during last two decades. Different compounds of G. lucidum extracts exert variable immunological effects. Selenium nano-particles decorated by sulfated Ganoderma lucidum polysaccharides has been shown to inhibit LPS-stimulated nitric oxide (NO) production by macrophages and down regulated mRNA gene expressions of pro-inflammatory cytokines including inducible NO synthase (iNOS), interleukin-1(II-1) and TNF-a in a dose dependent manner. On the other hand, the anti-inflammatory cytokine IL-10 has been markedly increased under Selenium nano-particles treatment (7,8).

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In this regard some scientist believed that polysaccharides compounds of G. lucidum is responsible for anti-inflammatory and anti-tumor activities (9). There is also reports showing that polysaccharide from G. lucidum can increase the release of tumor necrosis factor and interferon (IFN) from macrophages and lymphocytes (10). Another compound named water-insoluble B 1,3 D-glucan extracted from the fruit body of G. lucidum has been shown to significantly down regulate the inducible nitric oxide synthetase and TNF-α mRNA gene expression (11).

In addition to anti-inflammatory effects G. lucidum, there are some reports demonstrating its adjuvant effects. Chan et al. (12) reported that G. lucidum enhanced maturation of DC by upregulating CD40, CD80, and CD86 markers. Lin et al. (13), also showed that costimulatory molecules CD40, CD54, CD80, and CD86 of human dendritic cells increased in response to G. lucidum. In support of above mentioned adjuvant effect of G. lucidum, Ahmadi and Riazipour (14), demonstrated the up expression of CD40/CD86 on peripheral blood monocytes.

In conclusion, G. lucidum seems to be useful as an anti-inflammatory medicinal plant. Therefore, more preclinical and clinical studies are recommended to more elucidate its beneficial and risk effects in different conditions.

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References