Effects of ganopoly (a Ganoderma lucidum polysaccharide extract) on the immune functions in advanced-stage cancer patients.

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Abstract

Preclinical studies have established that the Ganoderma lucidum polysaccharide (GLPS) fractions have potent anti-tumor activity, which has been associated with the immunostimulating effects of GLPS. However, it is unclear whether GLPS has immuno-modulating effects in humans in vivo. This study aimed to investigate the effects of Ganopoly, the polysaccharides fractions extracted from G. lucidum, on the immune function of advanced-stage cancer patients. Thirty-four advanced-stage cancer patients were entered onto this study, and treated with 1800 mg Ganopoly, three times daily orally before meals for 12 weeks. Immune parameters (cytokines, T cell subsets, mitotic response to phytohemagglutinin (PHA) and natural killer activity) were compared between baseline and after 12-week treatment. Thirty patients are assessable for their immune functions. Treatment of Ganopoly for 12 weeks resulted in a significant (P < 0.05) increase in the mean plasma concentrations of interleukin (IL-2), IL-6, and interferon (IFN)-gamma, whereas the levels of IL-1 and tumor necrosis factor (TNF-alpha) were significantly (P < 0.05) decreased. A marked variability among patients with advanced-stage cancer was observed in the numbers of each lymphocyte subset at baseline. The mean absolute number of CD56+ cells was significantly (P < 0.05) increased after 12-week treatment of Ganopoly, whereas the numbers of CD3+, CD4+, and CD8+ were just marginally increased compared to baseline levels, with the CD4:CD8 T cell ratios unchanged. PHA responses after 12-week treatment with Ganopoly were enhanced in most patients, when compared to pretreatment baselines (P < 0.05). In addition, Ganopoly treatment resulted in a significant increase (P < 0.05) in the mean NK activity compared to baselines (34.5 +/- 11.8% vs 26.6 +/- 8.3%). The present study indicates that Ganopoly enhanced the immune responses in patients with advanced-stage cancer. Clinical evaluations of response and toxicity are ongoing.

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