In vitro and in vivo anti-tumor effects of Astragalus membranaceus.


Source

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Abstract

Astragalus membranaceus, a commonly used Chinese medicinal plant, has been shown to be capable of restoring the impaired T cell functions in cancer patients. In this study, the in vitro and in vivo anti-tumor effects of A. membranaceus were investigated. Five bioactive fractions were isolated from the root of A. membranaceus, the fraction designated as AI was found to be the most potent among the five fractions with respect to its mitogenicity on murine splenocytes. Besides investigating the cytostatic effect of AI, its activities on macrophage function, tumor necrosis factor production, induction of lymphokine-activated killer cell and tumor cell differentiation were also examined. The macrophage-like tumors and the myeloid tumors were found to be more sensitive to the cytostatic activity of AI, whereas the fibroblast-like tumors and the mouse Ehrlich ascites tumor appeared to be relatively resistant. Moreover, AI could effectively suppress the in vivo growth of syngeneic tumor in mice. Results showed that murine macrophage pretreated with AI had increased in vitro and in vivo cytostatic activities towards MBL-2 tumor. AI could also act as a priming agent for tumor necrosis factor production in tumor-bearing mice. Preincubation of mouse splenocytes with AI could induce in vitro lymphokine-activated killer-like activity towards WEHI-164 cell. Furthermore, AI was able to induce monocytic differentiation of both human and murine cells in vitro. AI administered in vivo could even partially restore the depressed mitogenic response in tumor-bearing mice. Collectively, the results showed that A.
membranaceus could exhibit both in vitro and in vivo anti-tumor effects, which might be achieved through activating the anti-tumor immune mechanism of the host.

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