Asparago e câncer: aumenta a apoptose, promove a parada do ciclo celular das células neoplásicas ao lado de melhorar a imunidade celular

Asparanin A induces G(2)/M cell cycle arrest and apoptosis in human hepatocellular carcinoma HepG2 cells.


Department of Physiology, China Pharmaceutical University, Nanjing, People’s Republic of China.

We recently established that asparanin A, a steroidal saponin extracted from Asparagus officinalis L., is an active cytotoxic component. The molecular mechanisms by which asparanin A exerts its cytotoxic activity are currently unknown. In this study, we show that asparanin A induces G(2)/M phase arrest and apoptosis in human hepatocellular carcinoma HepG2 cells. Following treatment of HepG2 cells with asparanin A, cell cycle-related proteins such as cyclin A, Cdk1 and Cdk4 were down-regulated, while p21(WAF1/Cip1) and p-Cdk1 (Thr14/Tyr15) were up-regulated. Additionally, we observed poly (ADP-ribose) polymerase (PARP) cleavage and activation of caspase-3, caspase-8 and caspase-9. The expression ratio of Bax/Bcl-2 was increased in the treated cells, where Bax was also up-regulated. We also found that the expression of p53, a modulator of p21(WAF1/Cip1) and Bax, was not affected in asparanin A-treated cells. Collectively, our findings demonstrate that asparanin A induces cell cycle arrest and triggers apoptosis via a p53-dependent manner in HepG2 cells. These data indicate that asparanin A shows promise as a preventive and/or therapeutic agent against human hepatoma.

PMID: 19254688

Immunomodulatory activity of Asparagus racemosus on systemic Th1/Th2 immunity: implications for immunoadjuvant potential.


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ETHNOPHARMACOLOGICAL RELEVANCE: Roots of Asparagus racemosus Willd (Shatavari in vernacular) are widely used in Ayurveda as Rasayana for immunostimulation, galactogogue as also in treatment of conditions like ulcers and cancer. Various studies have indicated immunomodulatory properties of Shatavari root extracts and formulations. AIM OF THE STUDY: To study the effect of standardized Asparagus racemosus root aqueous extract (ARE) on systemic Th1/Th2 immunity of SRBC sensitized animals. MATERIALS AND METHODS: We used HPTLC to quantify steroidal saponins (Shatavarin IV, Immunoside) and flow cytometry to study effects of ARE on immunomodulatory properties of Shatavari root extracts and formulations. AIM OF THE STUDY: To study the effect of standardized Asparagus racemosus root aqueous extract (ARE) on systemic Th1/Th2 immunity in vivo, using SRBC specific antibody titres and Th1/Th2 cytokines to measure the effect of ARE. RESULTS: ARE treated animals showed significant up-regulation of Th1 (IL-2, IFN-g) and Th2 (IL-4, IL-5) cytokines and specific antibody titres compared to controls. CONCLUSION: These results prove that the aqueous extract of the roots of Asparagus racemosus has the potential to act as an effective immunomodulatory agent.

PMID: 19038322

The effect of the aqueous extract of the roots of Asparagus racemosus on hepatocarcinogenesis initiated by diethylnitrosamine.


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Histopathological studies of the hepatic tissues of Wistar rats treated with diethylnitrosamine (DEN) (200 mg/kg b.wt., i.p.) once a week for 2 weeks, followed by treatment with DDT, a tumor promoter (0.05% in diet) for 2 weeks and kept under observation for another 18 weeks, demonstrated development of several tumor nodules. Pretreatment of Wistar rats with the aqueous extract of the roots of Asparagus racemosus prevented the incidence of hepatocarcinogenesis. Immunohistochemical staining of the hepatic tissues of rats treated with DEN showed the presence of p53+ foci (clusters of cells expressing the mutated p53 protein). In contrast, there was no evidence of p53+ foci in Wistar rats pretreated with the aqueous extract of Asparagus racemosus. The microsections of the hepatic tissues of rats treated with DEN followed by treatment with the aqueous extract of Asparagus racemosus showed an absence of p53+ foci. The results of the biochemical determinations also showed that pretreatment of Wistar rats with the aqueous extract of Asparagus racemosus leads to the amelioration of oxidative stress and hepatotoxicity brought about by treatment with DEN. These results proved that the aqueous extract of the roots of Asparagus racemosus has the potential to act as an effective formulation to prevent hepatocarcinogenesis induced by treatment with DEN.

PMID: 18729252


[Clinical effect of qyi yangyin jiedu decoction in treating patients with advanced non-small cell lung cancer]

[Article in Chinese]

Liu JX, Li CJ, Wei QL, Qi Q, Dai QS, Yang L, Nie FF, Lu N, Gong DD, Kong LY, Guo QL. Biochem Biophys Res Commun. 2009 Apr 17;381(4):760-5.

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between A and B was significant (P < 0.05). In Group C after treatment, CD(3)+ showed a rising trend (P = 0.05), different to that in
Group A and B (P < 0.05 and P < 0.01); CD(4)+ significantly increased (P < 0.05) and CD(4)+/CD(8)+ ratio showed increasing trend (P
= 0.06), while in Group B both were decreased significantly, showed significantly difference (P < 0.05). CD(8)+ CD(28)+ significantly
increased after treatment in Group A and C (P < 0.01 and P < 0.05), but showed decreasing trend (P = 0.06) in Group B, significant
difference was shown between B and C (P < 0.05). CONCLUSION: YYJD can ameliorate the qi-yin deficiency syndrome evidently in
advance lung cancer patients; improve their quality of life, the mechanism might be by way of enhancing T-lymphocyte activity and killer
T-cell function, to elevate the T-cell mediated immunity in a round way.
PMID: 18543492

Inhibitory action of Asparagus racemosus on DMBA-induced mammary carcinogenesis in rats.
PMID: 6796529