Inflammation is a frequent radiation-induced following therapeutic irradiation. Since the upregulation of adhesion molecules on endothelial cell surface has been known to be associated with inflammation, interfering with the expression of adhesion molecules is an important therapeutic target. We examined the effect if allicin, a major component of garlic, on the induction of intercellular adhesion molecule-1 (ICAM-1) by gamma-irradiation and the mechanisms of its effect in gamma-irradiated human umbilical vein endothelial cells (HUVECs). The inhibitory effect of allicin on ICAM-1 expression in gamma-irradiated HUVECs was assessed by ELISA and RT-PCR analysis, respectively. Also, the effects of allicin on transcription factors were determined by electrophoretic mobility shift assay (EMSA). Our data indicated that allicin significantly inhibited the surface expression of ICAM-1 and ICAM mRNA in a dose dependent manner. In EMSA analysis, AP-1 was activated in HUVECs by gamma-irradiation, whereas NF-kB was not. In addition, treatment with allicin resulted in the decrease of AP-1 activation. The data showed that treatment of JNK and p38 inhibitors were decreased radiation-induced expression of ICAM-1 by Western Blotting. We further investigated the effect of allicin on JNK and p38 MAP Kinase, and demonstrated that ICAM-1 expression induced by gamma irradiation was reduced by allicin in a dose dependant manner. And allicin decreases the level of p-p38 and p-pJNK in gamma-irradiated HUVCEs. These results suggest that allicin modulates expression of ICAM-1 via AP-1 dependent pathway in gamma-irradiated HUVECs and has therapeutic potential for the treatment of various inflammatory disorders associated with an increase of endothelial leukocyte adhesion molecules.

[PB4-6] [2003-10-10 09:00 - 13:00 / Grand Ballroom Pre-function]

Enhancing Effect and Action Mechanism of Interleukin-4 Production in Activated T Cells by Phytoestrogens

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Phytoestrogens are naturally occurring compounds derived from plants. Structurally, some phytoestrogens resemble endogenous estrogen of humans and animals. Phytoestrogens exhibit estrogen agonist/antagonist properties and have many biological effects such as prevention of hormone-dependent breast cancer, anti-oxidative activity, inhibition of tyrosine kinase activities and inhibition of angiogenesis. In this study we investigated whether biochanin A, a phytoestrogen, and its metabolites such genistein, p-ethylphenol and phenolic acid affect IL-4 production in EL-4 thymoma cell-line and primary lymph node cells. Biochanin A, genistein and p-ethylphenol significantly enhanced PMA-stimulated IL-4 production from EL-4 T cells in a dose-dependent manner while phenolic acid did not. This effect was not observed in primary lymph node cells. Biochanin A, genistein and p-ethylphenol induced IL-4 promoter activity in EL-4 T cells transiently transfected with IL-4 gene promoter constructs, but this effect was impaired in EL-4 T cells transfected with an IL-4 promoter construct deleted of P4 site carrying NF-AT and AP-1 binding sites. Furthermore, biochanin A, genistein and p-ethylphenol increased both NF-AT and AP-1 DNA binding activities, as demonstrated by electrophoretic mobility shift assay. The enhancing effects on IL-4 production and NF-AT/AP-1 DNA binding activities were, respectively, abrogated by specific inhibitors for PI3-K, PKC and p38 MAPK, indicating that biochanin A, genistein and p-ethylphenol might enhance IL-4 production by cross-talk between NFAT and AP-1 through PI3K/PKC or PKC/p38 MAPK signaling pathway. These results suggest that phytoestrogens and some their metabolites may increase allergic responses via enhancement of IL-4 production in T cells.

[PB4-7] [2003-10-10 09:00 - 13:00 / Grand Ballroom Pre-function]

A small carbohydrate fraction from Artemisia Folium suppresses death of the mouse thymocytes in vitro by down-regulating the Fas death receptor gene

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Artemisia Folium is a preparation of dried leaves from Artemisia species and has been used traditionally to prevent or treat various kinds of woman's diseases. A similar preparation called Chinese Moxa has been used to