

Even though radiotherapy and chemotherapy, which have been generally used in anti-cancer treatment, show a superior inhibition effect on cancer cells, those are very toxic to normal tissues and body organs, which cause a secondary side effect. In order to see the effects of an impact to hematopoietic cells, the hematopoietic effect of ginsenoside Rg3 by segregating the study levels in matured cells both in bone marrow cell and splenocyte were examined. As a result, these compounds increased the number of hematopoietic cells in dose dependent manner, and a case to treat with cyclophosphamide (CTX), there has been shown a decrease of side effect of CTX from a certain concentration. In addition, these compounds were maintained in a same level as stationary phase of normal cell proliferation curve or even in a bit more by rapidly proliferating cells in advance of the log phase in normal cells with a decrease after 48 hours. In conclusion, ginsenoside Rg3, may reduce the CTX-mediated bone marrow suppression and are found to promote or modulate the growth and proliferation of splenocytes and bone marrow cells through cytokine-dependent pathway, which may lead to a hematopoiesis.

[PB4-10] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

The modulating activity of Ginsan on radiation-induced disturbance of antioxidant defense systems

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Ginsan, a polysaccharide extracted from *Panax ginseng*, was earlier scrutinized for a biological-response modifier. We further studied the protective and restorative activity of Ginsan against sublethal dose irradiation owing to increase production of endogenous hematopoietic growth factors such as IL-1, TNF- α , IL-6, GM-CSF, which induce strong redox-enzyme elevation. Exposing to radiation induces reactive oxygen species (ROS), which play an important causative role in radiation damage. In this study, we have examined the regulation of some antioxidant enzyme activities by Ginsan in irradiated mice. (450cGy, 60Co). Five days after gamma irradiation, the administration of Ginsan significantly increased the number of spleen cells 1.8 fold more than that of PBS-treated mice. Splenocytes of irradiated mice expressed only marginally increased levels of Mn-SOD and γ -glutamyl cystein synthase (γ -GCS) mRNA. By contrast, Cu/Zn-SOD and thioredoxine reductase (TR) mRNAs were significantly decreased (120-200%), while catalase and glutathion peroxidase (GPX) were not affected. In vivo treatment of Ginsan (2mg/mouse, i.p) had no significant effect on the normal condition itself except for GPX mRNA (135% increase vs. control), however, the combination of irradiation with Ginsan increased the SODs and GPX production more effectively. These results indicate that the induction of antioxidant enzymes might be one of the mechanism responsible for the radioprotective activity of Ginsan.

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Expression and Characterization of Escherichia coli Adhesin Protein Linked to Cholera Toxin A2/B Subunits in Escherichia coli

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The FimH subunit of type 1-fimbriated *Escherichia coli* has been determined as a major cause of urinary tract infection. To produce a possible vaccine antigen against urinary tract infection, the fimH gene was genetically coupled to the ctxa2b gene, which was then cloned into pMAL-p2E expression vector. The chimaeric construction of pMALfimH/ctxa2b was transformed into *Escherichia coli* TB1 and its N-terminal amino acid sequence was analyzed. Fusion protein, the adhesin fused to the cholera toxin subunit A2B (CTXA2B), was induced for 4 hr with 0.01mM isopropyl- β -D-thiogalactoside (IPTG) at 37°C, to yield soluble fusion protein. The expressed fusion protein was confirmed by SDS-PAGE, western blotting, and GM1-ganglioside ELISA using antibodies for maltose binding protein (MBP) and cholera toxin subunit B (CTXB). The results indicate that the fusion protein is an Adhesin/CTXA2B protein containing GM1-ganglioside binding activity of CTXB. The Adhesin/CTXA2B protein may be used as a candidate antigen for oral immunization against uropathogenic *E. coli*