immature DCs as determined by increased allogenic mixed lymphocyte reaction (MLR) and IL-12 production. Phenotypic analysis for the expression of class II MHC molecules and major co-stimulatory molecules such as B7-1, B7-2 and CD40 also confirmed that acharan sulfate could induce maturation of immature DCs. These results suggest that the antitumor activity of acharan sulfate is at least in part due to activation and induction of differentiation of professional antigen presenting cells.

[PB4-7] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Proliferation of Hematopoietic Cells by Phellinus linteus polysaccharide

Joo SeongSoo, Kang Hee Chul, Lee Dolk[O]

Division of Immunology, College of Pharmacy, Chung Ang University, Seoul, Korea

In drugs for neutropenia, which suppress born marrow and which are needed to control their dosage and the therapy periods, there has been lots of emphasis on drug development to increase blood cells. In order to see the effects of an impact to hematopoietic cells, the hematopoietic effect of Phellinus linteus polysaccharide by segregating the study levels in matured cells both in born marrow cell and splenocyte were examined. As a result, these compounds increased the number of hematopoietic cells in both case to treated group with cyclophosphamide (CTX) and non-treated group. In addition, these compounds were maintained 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, Phellinus linteus polysaccharide may reduce the CTX-mediated bone marrow suppression and are found to promote or modulate the growth and proliferation of splenocytes and bone marrow cell. These results suggest that Phellinus linteus polysaccharide would be valuable in use as an adjuvant therapy in combination with radio and chemotherapy.

[PB4-8] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Activation of mouse macrophage cell line by aloe gel components : The carbohydrate fraction from Aloe vera gel.

Han ShinHa[O] Kim YoungSoo No YoungIl Chung GiHawn Pyo ChungHawn Choi UnChung Yim DongSool Lee SookYeon Ha NamJoo Kim KyungJae

Department of Pharmacy, Sahmyook University, Seoul

Tissue macrophages produce at least two groups of protein mediators of inflammation, interleukin 1(IL-1) and tumor necrosis factor (TNF) when they were activated. Recent studies have emphasized that TNF and IL-1 modulate the inflammatory function of endothelial cells, leukocytes, and fibroblasts.
Aloe vera has been claimed to have several important therapeutic properties including acceleration of wound healing, immune stimulation, anti-cancer and anti-viral effects. However, the biological mechanisms of these activities are unclear. Therefore we studied on what simple component from aloe vera was able to improve immune system. We used five different fractions (F1, F2, F3, F4, F5), which are different molecular weight fractions separated from aloe vera. The effects of aloe fractions on the mouse macrophages cell line, RAW 264.7, were investigated. It was found that F5 could stimulate macrophage cytokine production, TNF-a and F3 could also stimulate macrophage cytokine (IL-1) production. F1, 2 could induce nitric oxide release. F 3, 4, 5 were found to show inhibitory activity against nitric oxide (NO) production in macrophages.
These results suggest that aloe fraction may function, at least in part, through macrophage activation.

[PB4-9] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Proliferation of Splenocytes and Bone-marrow Cells by Rg3, A Compound of Ginsenoside

Joo SeongSoo, Park Jeong Hwan, Lee Dolk[O]

Division of Immunology, College of Pharmacy, Chung Ang University, Seoul, Korea

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 born 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

Son Soo Jung°, Song JieYoung, Kim ChanWha, Yun YeonSook

Laboratory of Immunology, Korea Cancer Center Hospital, 215-4, Gongneung-dong, Nowon-Ku, 139-706, Seoul, Korea:Laboratory of Biopharmaceutical Processes, Korea University, Anam-dong, Sungbuk-ku, 136-701, Seoul, Korea

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.

[PB4-11] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

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

Lee YongHwa°, Ryu DongKyun, Rhee DongKwon, Pyo SuhkNeung

College of Pharmacy, Sungkyunkwan University, Suwon, 440-746, Kyunggi-Do, South Korea

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