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According to recent studies, cefodizime, a third generation cephalosporin antibiotic agent, may potentially have the capability of stimulating chemotactic activity of neutrophils and monocytes as well as the strong immuno-modulator. We have studied to see if cefodizime can be a potential substance inducing an Immunological activities on immune cells, such as dendritic cells and macrophages.

In experimental process, dendritic cell and macrophage were taken from mice and mixed with 10 μ g/ml, 50 μ g/ml, 100 μ g/ml cefodizime and 1 μ g/ml IFN- γ 10U/ml + LPS. These mixtures were then incubated for 4, 8, 12, 24 hours to see if cytokines would be released to an analytical extent by assessing RT-PCR for IL-1 β mRNAs.

As a result, we have found that both dendritic cells and macrophage released cytokines, IL-1 β , even though the amounts were not that significantly enough. This result may suggest that both cells when treated with cefodizime can show an increase of IL-1 β . From these results, we have learned that cefodizime may be a potential immuno-modulator as well as an antibiotic activity. Importantly, this study is considered to be a basic knowledge for elucidating the properties of dendritic cells and macrophage when taking cefodizime for immunological application in future study.

[PB4-5] [10/17/2002 (Thu) 13:30 - 16:30 / Hall C]

Alliin reduces expression of Intercellular Adhesion Molecule-1 (ICAM-1) in gamma-irradiated endothelial cells: Involvement of p38 MAP kinase signalling pathway.

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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 of 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). In the present study, the relative inhibitory effects of allicin on ICAM-1 expression under gamma-irradiated HUVEC was assessed by ELISA and RT-PCR analysis. Our data indicated that allicin significantly inhibited the surface expression of vascular cell ICAM-1 and ICAM mRNA in a dose dependent manner. This induction of ICAM-1 may require the transcription factor such as NF- κ B and AP-1. In EMSA analysis, NF- κ B and AP-1 were not activated in HUVEC by gamma-irradiation. In addition, treatment with p38 inhibitor resulted in the decrease of expression of ICAM-1 mRNA by gamma-irradiation. These results suggest that allicin reduces expression of ICAM-1 via p38 dependent pathway in gamma-irradiated HUVEC.

[PB4-6] [10/17/2002 (Thu) 13:30 - 16:30 / Hall C]

Immunomodulatory activity of acharan sulfate isolated from Achatina fulica

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Acharan sulfate, a new glycosaminoglycan(GAG) isolated from the giant African snail Achatina fulica, was shown to have antitumor activity in vivo. To elucidate the mechanisms for the antitumor activity, we examined its impact on professional antigen presenting cells such as macrophages and dendritic cells (DCs). Acharan sulfate stimulated cytokine production (TNF- α and IL-1 β), nitric oxide release, and morphological changes in a dose dependent manner on a macrophage cell line, Raw 264.7 cells. The differentiation-inducing activity of acharan sulfate was examined on immature DCs. Immature DCs were generated from mouse bone marrow (BM) cells by culturing with GM-CSF and IL-4, and then stimulated with acharan sulfate. The resultant DCs were then examined for functional and phenotypic properties. It was found that acharan sulfate could induce functional maturation of

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

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In drugs for neutropenia, which suppress bone 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 bone 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.

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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- α 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

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