when cells were exposed to combination of LPS and WEP. At high dose of WEP (50 to 100 mg/ml) which has been prescribed for antiiniflammatory and analgesic purpose showed inhibition of NO production in LPS-stimulated macrophage. Besides cytokine production, NO release, surface molecule expression and cell morphologic antigen expression were increased in response to the stimulation by WEP. These results suggested WEP had the ability to activate the differential immunomodulatory effect on macrophage secretory and cellular activities. Such effect of WEP might play a role in vivo in the process lading activation of macrophage in immune system.

[PB4-2] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Activation of a mouse macrophage cell line RAW 264.7 by Salicornia herbacea

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Salicornia herbacea is an annual herb growing in salt marshes and on muddy seashores. In Korea, *Salicornia herbacea* grows naturally in the western coast area. *Salicornia herbacea* has been used as a fork medicine as well as a seasoned vegetable. In fork medicine, *Salicornia herbacea* has been used to treat constipation, obesity, hypertension, hypotension, diabetes, asthma, arthritis and cancer. However, the biological mechanisms of these activities have not been characterized, nor the active components. The present study was set out to define the immunomodulatory activity of *Salicornia herbacea*. The juice of *Salicornia herbacea* was prepared from the whole plant by passage through a fine screen. High molecular weight substances, SH-Ex, were then prepared from the juice by addition of 3 volumes of ethanol. Immunomodulatory activities of the juice and SH-Ex were examined on a mouse macrophage cell line, RAW 264.7 cells. We found that the juice as well as SH-Ex stimulates cytokine production, nitric oxide release, expression of surface molecules, and phagocytosis in a dose dependent manner. The juice as well as SH-Ex also induced further differentiation of slightly adherent RAW 264.7 cell into strongly adherent macrophages. These results indicate that *Salicornia herbacea* contains immunomodulator(s) that induces activation of macrophages

[PB4-3] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Allergenecity Test of Genetically Modified Soybean Extract in Rat

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Antigenicity of genetically modified soybean was evaluated in male Sprague Dawley rats. To confirm the genetically modified soybean used in these studies, the polymerase chain reaction (PCR) was performed using the DNA isolated from the soybean. The PCR clearly showed that the samples used in the present studies were genetically modified. The non-genetically modified control beans showed no signal in the PCR. To evaluate the antigenicity of genetically modified soybean, the homogenized soybean samples were sensitized subcutaneously three times a week for three weeks. The doses of soybean were 0, 2 and 20 mg/kg in the protein basis. A week after the last sensitization, sera were isolated from individual animals. When the sera were injected intradermally on the clipped back of unsensitized rats with various dilutions, followed by a challenge with 20 mg/kg of soybean homogenates in the presence of 1% Evans blue, no sign of passive cutaneous anaphylaxis reaction was observed. In addition, when the sera were treated to the cultures of peritoneal mast cells, the histamine release was not increased when compared to the cultures treated with sera isolated from vehicle-treated control rats. The present results indicate that the genetically modified soybean might not be antigenic in male Sprague Dawley rats.

[PB4-4] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Augmentation of Macrophage Antitumor Activities and Nitric Oxide Production by Oregonin

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Oregonin, a diarylheptanoid derivative from Alnus hirsuta Turcz, Betulaceae was evaluated on its antitumor activity. Oregonin is a novel immunomodulator augmenting macrophage activity, which associated with the anti-tumor functions. To investigate the cytotoxicity of oregonin on tumor cells, MTT assays and NO production tests have performed to examine the influence of oregonin on macrophage in detail. The tumoricidal activity was evaluated by the cell viability through the method of MTT assay. The measurement of cytotoxicity in the oregonin-treated group both in vitro and in vivo showed a significant difference from that of control group. In vivo, oregonin significantly increased NO production, dose-dependently. In addition, in vitro, thioglycolate-induced inflammatory macrophages increased NO production, dose-dependently after the incubation. These results may indicate that oregonin reacts similarly to both the inflammatory and non-inflammatory macrophages.

[PB4-5] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Enhancement of NK Cytotoxicity, Antimetastasis and Elongation Effect of Survival Time in B16-F10 Melanoma Cells by Oregonin

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Oregonin, a diarylheptanoid derivative purified from Alnus hirsuta Turcz, Betulaceae, was investigated to see about its antitumor activity. Oregonin is a novel immunomodulator, which augments the activation of natural killer cell that leads a powerful anti-tumor activity. To evaluste the cytotoxicity of oregonin against tumor cells, we examined the effectiveness of NK cell. During the course of study, we learnt that oregonin could increase the cytotoxicity of NK cell, and this was confirmed by MTT assay. In addition, the survival time of C57BL/6 mice were measured by inoculating B16-F10 melanoma cells via intra muscular (i.m.). Oregonin treatment after 10 hours of inoculation showed a significant extension of survival time by 51.32% comparing to control group at 10mg/kg dose. Moreover, oregonin significantly reduced the case of pulmonary metastasis being developed from B16-F10 melanoma cells. These findings suggest that oregonin may be classified as a new and novel immunomodulator due to its potential anti-tumor activity.

[PB4-6] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Truncation of N-terminal amino acid residues of leukotactin-1 increases agonistic potency on CCR1 and CCR3

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Leukotactin-1 (Lkn-1) is a human CC chemokine that binds to both CC chemokine receptor (CCR)1 and CCR3. Structurally, Lkn-1 is distinct from other human CC chemokines in that it has long amino acid residues preceding the first cysteine at the NH2-terminus, and contains an extra two cysteines. NH2-terminal amino acids of Lkn-1 were deleted serially and the effects of each deletion were investigated. In CCR1 expressing cells, serial deletion up to 20 amino acids (Δ20) did not change the calcium flux-inducing activity significantly. Deletion of 24 amino acids (Δ24), however, increased the agonistic potency approximately 100-fold. Deletion of 27 or 28 amino acids also increased the agonistic potency to the same level shown by Δ24. Deletion of one more amino acid (Δ29), however, abolished the agonistic activity almost completely showing that at least 3 amino acid residues preceding the first cysteine at the NH2-terminus are essential for the biological activity of Lkn-1. Loss of agonistic activity was due to impaired binding to CCR1. In CCR3 expressing cells, Δ24 was the only form of Lkn-1 which revealed increased agonistic potency. Our results indicate that postttranslational modification is a potential mechanism for the regulation of biological activitiy of Lkn-1.