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It has been known that the oleanolic acid, triterpenoid saponins produced fromsoem oriental herbs, have anti-inflammatory activity. IL-1β, IL-6, and TNF-α are major proinflammatory cytokines inducing the synthesis and release of many inflammatory mediators. They are involved in immune regulation, autoimmune diseases, and inflammation. In this study, the effects of oleanolic acid on the expression of proinflammatory cytokines were investigated in mouse peritoneal macrophages. Oleanolic acid alone significantly increased IL-1β, IL-6, and TNF-α production and the expression of their genes as determined by immunoassay and reverse transcription-polymerase chain reaction analysis, respectively. However, when murine macrophages stimulated with bacterial lipopolysaccharide were treated with oleanolic acid, the production of these proinflammatory cytokines and their gene expression were suppressed in a dose-dependent manner. Taken together, these data indicate that oleanolic acid has potent anti-inflammatory and immunomodulatory ef-fects by regulating IL-1β, IL-6, and TNF-α production. [Supported by KOSEF Grant 1999-2-214-001-5]

[PD3-12] [ 10/19/2000 (Thr) 15:00 - 16:00 / [Hall B] ]

## Regulation of inducible nitric oxide synthase gene expression by oleanolic acid in murine macrophage RAW 264.7 cells

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The effect of oleanolic acid on the inducible nitric oxide synthase (iNOS) gene expression was investigated in the mouse macrophage cell line RAW 264.7. Oleanolic acid significantly induces nitric oxide production and iNOS level in dose dependent manner. Quantitative reverse transcription-polymerase chain reaction analysis demonstrated that inducible nitric oxide synthase gene expression is increased by oleanolic acid treatment. Since iNOS transcription has recently been shown to be under the control of NF-kB family of transcription factors, we assessed the effect of oleanolic acid on NF-kB activation using a transient transfection assay and electrophoretic mobility shift assay (EMSA). Transient expression assays with NF-kB binding sites linked to the luciferase gene suggest that the oleanolic acid-induced increase in transcription is mediated by the NF-kB transcription factors. Using DNA fragments containing the NF-kB binding sequence, oleanolic acid was found to activate protein/DNA binding of NF-kB to its cognate site as measured by EMSA. Collectively, this series of experiments indicate that oleanolic acid up-regulates iNOS gene expression through activation of NF-kB. [Supported by KOSEF Grant 1999-2-214-001-5]

[PD3-13] [ 10/19/2000 (Thr) 15:00 - 16:00 / [Hall B] ]

## Hepatoprotective Effects and Acute Toxicity Test of the Extract of Jejo, the powder of Protaetia brevitarsis

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"Jejo" is the powder of Protaetia brevitarsis and known to be effective on hepatitis and hepatic disorder in folk remedy. We performed hepatoprotective and acute toxicity test .
Hepatoprotective effects were tested in Sprague-Dawley rats with 70% ethanol extract of Jejo and

its subfractions, butanol fraction, n-hexane and H2O fraction, by D-galactosamine induced hepatitis model. We analyzed s-GOT and s-GPT activities. In this experiment, 70% ethanol extract showed the hepatoprotective effect at the dose of from 25 to 200 mg/kg, especially maximum effect was observed at the dose of 50 mg/kg. In addition, acute hepatitis was ameliorated by butanol fraction. However, it was aggravated by hexane fraction.
Acute oral toxicity test was also performed with the butanol and hexane subfraction of Jejo. We administrated orally doses of 1.25, 2.5 and 5 g/kg of both fractions in ICR mice. In these experiments, there were no death, clinical changes and abnormal autopsy finding. In acute intraperitoneal toxicity test, we administrated intraperitoneally doses of 0.25, 0.5 and 1.0 g/kg of both subfractions in ICR mice. There were no death and clinical changes. However, hexane fraction showed intraperitoneal adhesion in autopsy finding
In conclusion, these results suggested that ethanol extract of Jejo and butanol subfraction of thereof contain the hepatoprotective components and hexane fraction have the toxic components of Jejo.

[PD3-14] [ 10/19/2000 (Thr) 15:00 - 16:00 / [Hall B] ]

## Anti-anemic effects of Sa-Mul-Tang (Si-Wu-Tang), a traditional chinese formulation, on phenylhydrazine-induced anemic rats.

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Sa-Mul-Tang (Si-Wu-Tang, SMT), a kind of Chinese medicine, has been used for the hemato-deficient disease for hundreds of years. In this work, investigations on the anti-anemic activity of an aqueous extracts of SMT were undertaken in order to find the pharmacological basis for the ethnomedical use of the formulation. Three kinds of Angelicae species, such as Angelica gigas, Angelica chinensis, and Angelica acutiloba, were used for preparing the water extracts of SMT. Anemic model rats were induced by the treatment of phenylhydrazine (40 mg/kg/day, i.p.) for 4 days. After the treatment of phenylhydrazine, rats were divided into several groups for their different treatment of three kinds of SMT. Oral administration of SMT (1 g/kg/day) for 14 days did not affect any kinds of blood cell types compared with those of phenylhydrazine-treated group. However, the administration of SMT improved the erythrocyte deformability in phenylhydrazine-treated group ($p<0.01$). Especially, these effect was high in the Angelica chinensis group. These results suggest that SMT has an ameliorative effect on blood rheology related to the blood stasis syndrome in oriental diagnostics.[Supported by Kyung Hee University Grant 2000-1U0100010]

[PD3-15] [ 10/19/2000 (Thr) 15:00 - 16:00 / [Hall B] ]

## Molecular authentication of Panax ginseng species by RAPD analysis and PCR-RFLP

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In order to develop convenient and reproducible methods for identification of ginseng drugs at a DNA level, RAPD(Randomly amplified polymorphic DNA) and PCR-RFLP(PCR-Restriction fragment length polymorphism) analyses were applied within Panax species. To authenticate Panax ginseng among Chinese and Korean ginseng population RAPD analysis were carried out using 20 mer-random primer. The similarity coefficients among the DNA of ginseng plants analyzed were low, ranging from 0.197 to 0.491. In addition, using PCR-RFLP analysis, very different fingerprints were obtained within Korean ginseng plants. These results suggest that these methods are able to authenticate the concerned Panax species. Broader application of this approach to authenticate