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The root of *Angelica gigas* Nakai. (Umbelliferae) has been used as an analgesic and fever remedy, and for treatment of blood pressure in Chinese medicine, whereas the freshly young shoots are used for edible food. The fresh leaves have unique flavor and the components of essential oil were determined. However, there are no further chemical works nor are there any reports on biological activity of extracts from leaves of this species. This experiment describes isolate and elucidate structure of the components from leaves and to evaluate the radical Scavenging activity on DPPH radical for antioxidant effect. Bioassay guided fractionation of MeOH extract afforded active EtOAc and BuOH fractions. The most active EtOAc fraction was repeatedly chromatographed over silica and Sephadex LH-20 to afford six flavonoid compounds. Studies on the antioxidant activity of these constituents show that quercetin was the most active of these compounds. Luteolin and kaempferol are also active. These results suggested that the antioxidant activity of leaves of *Angelica gigas* may be due to flavonoid components. All the compounds were identified by spectroscopic methods and are the first report from leaves of *Angelica gigas* Nakai.

[PD2-16] [ 04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3] ]

### New Bioactive Furanosesterterpenes from a Dictyoceratid Sponge

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Five new and two known furanosesterterpenes were isolated from unidentified Dictyoceratid sponge by bioactivity guided fractionation. These compounds showed a significant toxicity to brine shrimp larvae. The gross structures were established by spectroscopic methods, the absolute stereochemistry were not determined.

[PD2-17] [ 04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3] ]

### Cytotoxic Constituents from *Notopterygium incisum*

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*Notopterygium incisum* is a perennial herb growing widely in Asian countries. In the search for novel antitumor agents from Vietnamese medicinal plants we found that the methanol (MeOH) extract of *N. incisum* showed a strong cytotoxicity against B16 murine melanoma cell line. The MeOH extract was sequentially fractionated against ethyl acetate (EA) and butanol (BuOH). Subsequent bioassay revealed the antitumor cytotoxicity was almost located in the EA fraction. Bioassay-guided fractionation and isolation afforded three furanocoumarins including bergamottin, isoimperatorin, notopterol and one polyacetylenic compound (falcarindiol) together with one phenylpropanoid (caffeic acid methyl ester) and one triterpenoid (pregnenolone). This is the first report on the presence of caffeic acid methyl ester from *N. incisum*. All isolates were evaluated for cytotoxic activity against a small panel of cancer cell lines including B16 (murine melanoma), P388 (murine lymphocytic leukemia), A549 (human lung carcinoma), and SK-OV-3 (human ovarian cancer). It was found that all furanocoumarins and pregnenolone were inactive. Falcarindiol, which had been found to be a cytotoxic compound previously, showed a significant cytotoxic activity in all tested cell lines. It is noteworthy that caffeic acid methyl ester exhibited a significant cytotoxicity profile. Its cytotoxicity was higher than that of 5-FU and comparable to the cytotoxicity of etoposide but lower

than that of adriamycin.

[PD2-18] [ 04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3] ]

### Studies on the constituents of *Rhodiola rosea*

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*Rhodiola rosea* (Crassulaceae) is mainly distributed in the high cold region of China. The root of this plant has been prescribed for hemostatic, antitumor and tonic purposes in Chinese traditional preparations and used as an endermic liniment for burns and contusions. The aqueous extract of this crude drug showed the antioxidative effect in DPPH radical scavenging method. For the isolation of antioxidative constituents, an aqueous extract subjected to a Amberlite XAD-2 column chromatography to afford H<sub>2</sub>O and methanol elution fractions. Methanol fraction was purified by Sephadex LH-20 and silica gel column chromatography to obtain 4 compounds. The structure elucidation and biological activities of these compounds will be discussed.

[PD2-19] [ 04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3] ]

### Isolation of Tissue Factor Inhibitors from *Amaranthus deflexus* and the Changes of Tissue Factor Inhibition by Blanching

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Tissue Factor(TF), tissue thromboplastin, is a membrane-bound glycoprotein which can be found mainly in brain, lung, placenta tissues and which triggers both intrinsic and extrinsic pathway of blood clotting cascade. Many edible plants, seaweed, legumes, cereals, soy paste, traditional pharmaceuticals were screened for TF inhibitory activity. Among them, *Amaranthus deflexus* was selected for isolation of TF inhibitors. From a water fraction, compound I was isolated and was proved to be allantoin. Unknown compound X which behaved with tryptophan was isolated from a butyl alcohol fraction but not identified. IC<sub>50</sub>/TF unit of allantoin and tryptophan were measured as 4.3 and 421 µg, respectively. Allantoin content in water extract of *A. deflexus* was measured by HPLC with Lichrosorb RP-18 column and with gradient solution of acetonitrile and water as mobile phase. Maximum amount was achieved at 60min extraction at 95°C in dry basis. The higher temperature or the longer extraction time, the more allantoin was eluted. Allantoin amount and total TF inhibitory activity were significantly correlated.

[PD2-20] [ 04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3] ]

### Chemical constituents of *Adonis amurensis* and their inhibition of tube-like formation of HUVE Cells

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Several plant materials collected in Keryong mountain were tested for antiangiogenic effect on