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### Limonoids and Alkaloids from the bark of *Phellodendron amurense*

Min YoungDeuk<sup>o</sup>, Kwon HakCheol, Choi SangZin, Lee SungOck, Lee WonBin, Yang MinCheol, Chung AeKyung, Lee ChongSoon, Lee KangRo

Natural Products Laboratory, College of Pharmacy, SungKyunKwan University, Suwon 440-746 and Dept. of Biochemistry, YoungNam University, KyungSan, 712-749, Korea

As part of our program to isolate bioactive compounds from Korean natural sources, we have screened ca. 20 medicinal plants to inhibit topoisomerase I. Of them, the methanolic extract of *Phellodendron amurense* Rupr. was found to be active. So, the MeOH extract was partitioned between n-hexane, chloroform, BuOH and water. The activity was concentrated into the chloroform extract. The extract was subjected to silica gel column chromatography and resulted in the isolation of 8 compounds (3 limonoids and 5 alkaloids). Their structures were determined by physicochemical and spectroscopic methods. The bioactivity study of the isolated compounds is under going.

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### Sessiline, a New Alkaloid from the Fruits of *Acanthopanax sessiliflorum*

Lee Sanghyun<sup>o</sup>, Shin KukHyun, Ji Jun, Jung SangHoon, Kim BakKwang<sup>1</sup>

Natural Products Research Institute, Seoul National University, <sup>1</sup>College of Pharmacy, Seoul National University

A new alkaloid, sessiline, was isolated from the fruits of *Acanthopanax sessiliflorum*. Its EIMS and CIMS showed  $[M]^+$  at  $m/z$  209 and  $[M+H]^+$  at  $m/z$  210, respectively. HRCIMS showed  $[M+H]^+$  at  $m/z$  210.0776 for the molecular formula  $C_{10}H_{11}O_4N$ . IR spectrum showed absorption bands for amine at 3184 and 3116  $cm^{-1}$ , aldehyde at 1698  $cm^{-1}$ , lactam C=O at 1669  $cm^{-1}$  and C-O at 1060 and 1033  $cm^{-1}$ . In <sup>1</sup>H-NMR spectrum, the typical furan ring protons were observed at  $\delta$  6.73 and  $\delta$  7.51, together with an aldehyde at  $\delta$  9.58 and oxymethylene at  $\delta$  4.59 and  $\delta$  4.49. Two methylene protons at  $\delta$  2.29,  $\delta$  2.21,  $\delta$  2.05 and  $\delta$  1.89, and oxymethine proton at  $\delta$  5.01 were observed. Its <sup>13</sup>C-NMR spectrum showed an aldehyde at  $\delta$  178.1, a carbonyl of lactam at  $\delta$  178.0 and an oxymethylene at  $\delta$  60.7, respectively. On the basis of spectral evidence, the structure of sessiline was elucidated as 5-(5'- $\alpha$ -pyrrolidonyloxymethyl)furanaldehyde.

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### Lectin from the larvae of *Allomyrina dichotoma* as immunomodulator and antitumor agent

Jeune Kyung Hee Jung Mi Yeun Lee Seung Ho

College of Science and College of Pharmacy, Yeungnam University

LECTIN FROM THE LARVAE OF ALLOMYRINA DICHOTOMA AS IMMUNOMODULATOR AND ANTITUMOR AGENT

Kyung Hee Jeune, Mi Yeun Jung, Seung Ho Lee\* and See Ryun Chung\*  
College of Science and \*College of Pharmacy, Yeungnam University, Kyongsan 712-749, Korea

A new lectin was purified from the larvae of *Allomyrina dichotoma* by physiological saline extraction, salt fractionation, anion exchange column chromatography on DEAE Sephadex A-50 and gel filtration column on Sephadex G-200. This purified lectin was designated as ADL. Several biochemical properties of ADL were characterized as follows: ADL showed single band on SDS-PAGE and agglutinated the erythrocytes of human and rabbit. Agglutination-ability was relatively stable at basic pH, temperature below 40°C, and was not affected by metal ions. This lectin was proved to be a glycoprotein containing 0.47% of sugars. The molecular weight of ADL was estimated to be 97,000 by SDS-PAGE. The gene expressions of 5 cytokines (IL-1, IL-2, IL-6, IFN $\gamma$ , TNF $\alpha$ ) from human peripheral blood mononuclear cells, stimulated with ADL, were investigated by RT-PCR and the productions of the cytokines were measured by ELISA. ADL induced the highest secretion of IL-2 at 8hr, TNF $\alpha$  at 4hr, and IFN $\gamma$  at 24hr, respectively. This lectin was proved to be a potent agglutinin for cancer cells such as HeLa, L929 and L1210.

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### **Antioxidative activity screening of Herbal drugs**

Kim SeongEun<sup>o</sup>, Son HyeJung, Kang EunYoung, Jang HyunJin, Yang KiSook

College of Pharmacy, Sookmyung Women's University

Recently, oxygen free radical injury and lipid peroxidation have been suggested as major causes of atherosclerosis, cancer, liver disease and the aging process. In order to search for antioxidants from the plants, MeOH extracts from about 80 herbal medicines were investigated. The DPPH radical scavenging activity and lipid peroxidation inhibitory activity of each extracts were measured. As a result, *Ulmus parvifolia macrocarpa*, *Trogopterus xanthipes*, *Myristica fragrans*, *Amomum tsao-ko* showed relatively strong antioxidative activities.

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### **Free Radical Scavenging and Hepatoprotective Compounds in vitro of Mori Ramulus**

Ko EunKyung<sup>o</sup>, Oh HyunCheol, Kim MiHee, Lee ByungHoon, Sohn DongHwan, An NyunHyeong, Kim YounChul

MRRC and College of Pharmacy, Wonkwang University, Professional Graduate School of Oriental Medicine, Wonkwang University

Isolation and structure elucidation of free radical scavenging and hepatoprotective compounds of Mori Ramulus was investigated. 1,1-Diphenyl-2-picrylhydrazyl (DPPH) was used for free radical scavenging activity, and protective effect against tacrine-induced cytotoxicity in human liver-derived Hep G2 cells was used for hepatoprotective activity. Assay-guided fractionation of an EtOH extract of Mori Ramulus furnished three compounds which are two prenylated flavonoids and a stilbene.

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### **Hepatoprotective constituents from *Hedyotis diffusa* and *Gardenia jasminoides***

Kim Chul Young, Yoon Kee Dong, Kim Jinwoong, Lee Eun Ju, Kim Seung Hyun, Kim Young Choong

College of Pharmacy, Seoul National University