Phytochemical constituents from *Cacalia koraiensis* Nakai

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As part of a research program on the bioactive terpene constituents of Korean compositae plants, we have investigated *Cacalia koraiensis* (compositae), collected from Gangwon Province on August 2001. On reviewing the literatures of this species, triterpenes and pyrrolizidine alkaloids were isolated[1)] and some pharmacological activities were investigated. This species have been used for tinea and spasmolysis[2)]. However, chemical constituents of this plant have not been reported. The aerial parts of this plant (1.9kg) were extracted with MeOH three times at room temperature. The extract (110g) was fractionated with n-hexane, methylene chloride, ethyl acetate and BuOH. The repeated column chromatographic separation of the fractions resulted in the isolation of five terpenoids and three compounds. Structures of isolated compounds have been established by chemical and spectroscopic means. In this poster, we demonstrate the isolation and the structure determination of the compounds from *Cacalia koraiensis*.

1)Suoming Z., Guiling Z., Rong L., Guoqiang L., Eremophilan sesquiterpenes from *Cacalia roborowskii*. *Phytochemistry*,48(3),519-524 (1998)
2)Lee, C. B., Illustrated Flora of Korea, Hyangmoonsa, Seoul, pp.750,1979

[PD2-25] [10/17/2002 (Thr) 09:30 - 12:30 / Hall C]

Chemical constituents of *Synurus deltoides* (Aiton) Nakai

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S.deltoides (Compositae) distributed widely in Korea, China. It is edible as a food additive, but there has been no study on chemical constituents. Therefore, we isolated nine compounds from *S.deltoides*. On the basis of spectroscopic evidence, the structure of these compouds were characterized as lupeol(1), α-amyrin(2), β-amyrin (3), ursolic acid(4), nonacosanol(5), nonacosanoic acid(6), mixture of β-sitosterol, stigmasterol and campesterol (7), β-sitosteryl-3-O-β-D-glucopyranoside(8), stigmasteryl-3-O-β-D-glucopyranoside(9). They were first isolated from *S.deltoides*.

[PD2-26] [10/17/2002 (Thr) 09:30 - 12:30 / Hall C]

Butyrylcholineesterase(BChE) Inhibitors from a Brown Alga *Sargassum* sp.

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In continuing search for BChE-inhibitory compounds from Korean marine algae, we found a highly potent inhibitory activity in the methanolic extract of *Sargassum* species. After partition of the MeOH extract between $CHCl_3$ and 30% MeOH, the former layer was subjected to a series of ODS flash chromatography, silica column chromatography, and preparative TLC to afford three compounds (1-3). Detailed structural elucidation of them is in progress. Compound 1 showed potent BChE-inhibitory activity with IC_{50} values of 11 ng/mL.

[PD2-27] [10/17/2002 (Thr) 09:30 - 12:30 / Hall C]

Diacylglycerol Acyltransferase Inhibitors from the Fruits of Evodia rutaecarpa and the Root of Salvia

miltiorrhiza

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Acyl CoA:diacylglycerol acyltransferase (DGAT) is a key enzyme involved in triacylglycerol synthesis. Too much accumulation of triacylglycerol in certain organs and tissues of the body causes high risk conditions of fatty liver, obesity and hypertriglyceridemia, leading to serious diseases of atherosclerosis. Therefore, DGAT inhibition may be worthwhile strategy for the treatment of triglyceride metabolism disorders, such as obesity or hypertriglyceridemia.
Four quinolone alkaloids, 1-methyl-2-tetradecyl-4(1H)-quinolone(1), evocarpine(2),1-methyl-2-[(4Z,7Z)-4,7-decadienyl]-4(1H)-quinolone(3) and 1-methyl-2-[(6Z,9Z)-6,9-pentadecadienyl]-4(1H)-quinolone(4), 1-4 isolated from the E. rutaecarpa. They inhibited DGAT activity dose-dependently with IC50 values of alkaloid, 69.5 uM(1), 23.8 uM(2), 20.1uM(3) and 13.5 uM(4).
Four tanshinones from S. miltiorrhiza were isolated as DGAT inhibitors. The cryptotanshinone and 15,16-dihydrotanshinone I exhibited potent DGAT inhibitory activities dose-dependently with IC50 values of 10.5 ug/ml and 11.1 ug/ml . However, tanshinone IIA and tanshinone I showed very weak inhibition (IC50 value: > 250 ug/ml). The compounds with a dihydrofuran moiety were found to be more potent than the corresponding compounds with a furan moiety and a dihydrofuran moiety was seemed to be responsible for the stronger inhibitory activity.

[PD2-28] [10/17/2002 (Thr) 09:30 - 12:30 / Hall C]

Phenolic Compounds from Barks of *Ulmus macrocarpa* and Their Antioxidative Activities.

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Phytochemical examination of Barks of Ulmus macrocarpa isolated two flavanone, three flavanonol, three flavan 3-ol and one procyanidin compounds. We also determinated the antioxidative activity of these compounds by measuring the radical scavenging effect on 1,1-diphenyl-2-picrylhydrazyl (DPPH) radicals. Three flavan 3-ol (catechin, epicatechin and catechin-7-O-β-D-xylopyranoside) and procyanidin B1 showed significant antioxidative activity. These result suggested that these phenolic compounds from Barks of Ulmus macrocarpa might be developed to antioxidative agent.

[PD2-29] [10/17/2002 (Thr) 09:30 - 12:30 / Hall C]

Molecular cloning of a cytochrome P_{450}-dependent monooxygenase cDNA from *Panax ginseng* C.A. Meyer

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Some of the dammarane-type saponins, ginsenosides of *Panax ginseng* C.A. Meyer (Araliaceae) are now well established as a potent chemotherapeutic agent against a wide variety of ailments. Its various pharmacological and biological activities have been thoroughly reviewed (S. Shibata, 2001). The limited supply of the drug from the original source, the hairy root of the *Panax ginseng* promoted intense efforts to develop alternate sources and means of production. Total synthesis of dammarane-type saponin has been achieved by several innovative routes, but the yields are too low to be commercially feasible.
Therefore, we wish to gain insight in the mechanisms controlling ginseng saponins, ginsenoside production at the gene level by studying gene coding for key biosynthetic enzymes. Here we describe the isolation of cytochrome P_{450} cDNA from *Panax ginseng* treated methyl jasmonate (MeJ) which produces dammarane-type sapogenins by means of homology-based polymerase chain reaction (PCR) method. A sets of oligonucleotide primers were