

## miltiorrhiza

Ko JeongSuk<sup>0</sup>, Chung MiYeon, Ryu Shiyoung, Kang JongSeong, Rho MunChual, Lee HyunSun, Kim YoungKook

Laboratory of Lipid Metabolism, Korea Research Institute of Bioscience and Biotechnology, Korea Research Institute of Chemical Technology, and College of Pharmacy Chungnam National University

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  $\mu$ M(1), 23.8  $\mu$ M(2), 20.1  $\mu$ M(3) and 13.5  $\mu$ M(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  $\mu$ g/ml and 11.1  $\mu$ g/ml. However, tanshinone IIA and tanshinone I showed very weak inhibition (IC50 value: > 250  $\mu$ g/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.

Kwon YoungMin<sup>0</sup>, Yeom SeungHwan, Kim MinKi, Lee JaeHee, Lee MinWon

College of pharmacy Chung-Ang University

Phytochemical examination of Barks of *Ulmus macrocarpa* isolated two flavanone, three flavanone, three flavanone 3-ol and one procyanidin compounds. We also determined the antioxidative activity of these compounds by measuring the radical scavenging effect on 1,1-diphenyl-2-picrylhydrazyl (DPPH) radicals. Three flavanone 3-ol (catechin, epicatechin and catechin-7-O- $\beta$ -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<sub>450</sub>-dependent monooxygenase cDNA from *Panax ginseng* C.A. Meyer

Park Su Jung<sup>0</sup>, Jung Da-Woon, Sung Chung Ki

College of Pharmacy, Chonnam National University, Kwang Ju 500-757, Korea

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<sub>450</sub> cDNA from *Panax ginseng* treated methyl jasmonate (MeJ) which produces dammarane-type saponins by means of homology-based polymerase chain reaction (PCR) method. A sets of oligonucleotide primers were

designed at the regions which are highly conserved among known cytochrome P<sub>450</sub>s. One of these domains, close to the C-terminal end of the protein, is involved in binding the cytochrome P<sub>450</sub> heme group. This domain contains the highly conserved sequence ExxGxxxCxG which may be regarded as a fingerprint for cytochrome P<sub>450</sub> proteins. PCRs using these primers amplified the core fragment which the presence of two cytochrome P<sub>450</sub>-dependent monooxygenase cDNA fragments M13M4-1 and M13M4-2. Those two cDNA fragments exhibited 79% amino acid identity to each other. Sequence comparison of those cDNA fragments with other cytochrome P<sub>450</sub>s showed a high level of similarity. Specific amplification of each cDNA fragments by 3'-Rapid Amplification cDNA Ends (RACE) has been carried out to obtain the whole sequences of cytochrome P<sub>450</sub>-dependent monooxygenase cDNA.

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

#### A specific butyrylcholinesterase inhibitor from the fruits of *Evodia officinalis*

Kim YoungSup<sup>○</sup>, Kim JeoungSeob, Kim SeongKie, Heor Junghee, Lee WooLak, Lee BongHo, Choi ByoungWook, Ryu Geonseek, Park EunKyung, Ryu ShiYong

Korea Research Institute of Chemical Technology:Department of Chemical Technology Hanbat National University

Neuroscience and molecular biology studies show that inappropriate butyrylcholinesterase (BuChE) activity as well as acetylcholinesterase (AChE) activity increases the risk and/or progression of Alzheimer's disease. BuChE may also be regarded to participate in the transformation of Aβ (β-amyloid) from an initially benign form to an eventually malignant form associated with neuritic tissue degeneration and clinical dementia.

For the purpose of searching for the new classes of BuChE inhibitors which could be employed as an alternative therapy for the treatment of senile dementia or other neurodegenerative disease, we have recently evaluated the inhibitory effect of plant extracts on the horse serum butyrylcholinesterase (BuChE) over 80 species of Korean medicinal plants.

Among the tested materials, the MeOH extract of *Evodiae Fructus*, *Coptidis Rhizoma*, *Phellodendri Cortex* and of *Zedoariae Rhizoma* were found to exhibit a significant inhibition upon the BuChE in a dose dependent manner, respectively. The extensive bioassay-guided fractionation process with the MeOH extract of *Evodiae Fructus* finally yielded an alkaloidal component, evodiamine as a specific BuChE inhibitor together with other alkaloids which demonstrated a significant inhibition upon both on AChE and on BuChE.

[PD2-31] [ 10/17/2002 (Thr) 09:30 - 12:30 / Hall C ]

#### Antioxidant compounds from the twig of the *Morus alba* L.

Jin WenYi<sup>○</sup>, Na MinKyun, An RenBo, Lee HyunYong, Bae KiHWan

College of Pharmacy, Chungnam National University, Taejeon 305-764

Abstract - The MeOH extract of the twig of *Morus alba* L. (Moraceae) inhibited strong lipid peroxidation activity. Five antioxidative compounds were isolated through activity-guided fractionation, and identified as 6-geranylapiogenin (1), 6-geranylroscartocarpetin(2), resveratrol (3), oxyresveratrol (4), quercetin (5) by physicochemical and spectrometric methods. In order to evaluate the antioxidant effect of these compounds, the lipid peroxidation inhibitory activity test were performed. Compounds 1-5 showed greater activity than tocopherol.

[PD2-32] [ 10/17/2002 (Thr) 09:30 - 12:30 / Hall C ]

#### Inhibition of HIV-1 Protease by isoflavonoids from *Erythrina senegalensis*

Lee JiSuk<sup>○</sup>, Ma Chaomei, Hattori Masao, Oh WonKeun, Ahn JongSeog, Kim YongHae, Tanyi MbaforJ., Wandji