Prunus serrulata var. spontanea (Rosaceae) is a large sized tree widely distributed throughout Korea. The red fruits are edible and are used in traditional folk medicine against heart failure from beriberi, dropsy, mastitis, an emmenagogue, and toothache. Also, the bark of P. serrulata var. spontanea has been used for detoxification, and relaxation, and as an antitussive in traditional korea medicine. A new triterpenoid, 2a, 3a, 24-trihydroxy-urs-12-en-28-O-β-D-glucopyranoside (5), along with five known triterpenoids, ursolic acid (1), 2a-hydroxyursolic acid (2), 2a, 3b, 24-trihydroxy-urs-12-en-28-oic acid (3), 1b, 2a, 3a, 24-tetrahydroxy-urs-12-en-28-oic acid (4), and 2a, 3a, 19u, 24-tetrahydroxy-urs-12-en-28-O-β-D-glucopyranoside (6) were isolated from the leaves of P. serrulata var. spontanea. The structural identifications of these compounds were elucidated by 1D (1H- and 13C-NMR) and 2D NMR (HMQC, HMBC, COSY, and NOESY) spectral data. We also evaluated the antioxidant capacities of these isolated triterpenoids 1–6 on DPPH radical, total ROS and the ONOO− scavenging potential. All isolated compounds 1–6 showed no activity as DPPH radical scavenger, whereas high scavenging activity on total ROS in the order of compound 2 > compound 3 ≥ compound 1 > Trolox (as positive control) > compound 5 ≥ compound 4 ≥ compound 6. Compounds 3 and 6 showed high peroxynitrite scavenging activities with IC50 (50% inhibition concentration) 4.90±0.38 µM and IC50 6.88±0.46 mM, respectively, by positive control penicillinamide with IC50 5.11±0.23 µM. Compounds 4 and 5 had peroxynitrite scavenging activity with IC50 25.18 ±2.68 µM and 82.05±2.80 µM, respectively, whereas compound 1 and 2 showed no activities.

[PD2–36] [10/17/2002 (Thur) 09:30 - 12:30 / Hall C]

Screening of Compounds Isolated from the Roots of Juglans mandshurica for DNA Topoisomerases I and II Inhibitory Activity

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Abstract: As described previously, we reported twenty two compounds including one naphthoquinone, eight diarylheptanoids, two tetralone, one sesquiterpenoid, one diarylheptanoid glucoside, two tetralone glucosides, one naphthalene carboxylic acid glucoside and six naphthalenyl glycosides were isolated from the roots of Juglans mandshurica (17–22). Here we report that all of these compounds and a known triterpene are tested for the inhibitory effects against DNA topoisomerases I and II activities. Compound 16 showed strong inhibitory effects for DNA topoisomerase I at the concentration of 5 µg/ml and compound 23 showed strong inhibitory effect for DNA topoisomerase II at the concentration of 5 µg/ml. In addition, compounds 1, 3, 5, 6, 10, 14 and 16 exhibited moderate cytotoxicities in ranges of IC50 from 0.8 to 25 µg/ml against human colon carcinoma. Compounds 1 and 10 have IC50 values of 1.2 µg/ml and 22.1 µg/ml against human breast carcinoma cell line.

[PD2–37] [10/17/2002 (Thur) 09:30 - 12:30 / Hall C]

Neuroprotective effect of extract of Angelicae tenuissimae on ischemic damage after oxygen and glucose deprivation (OGD) in rat organotypic hippocampal slice

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Angelicae tenuissimae ia a plant often used in traditional Korean medicine. It has been used as analgesic, antipyretic and anti-inflammatory agent. However its component and precise modes of neuropharmacological action have not been reported. In the present study, we investigated the protective effects of A. tenuissimae and its component on ischemic damage induced by oxygen and glucose deprivation in rat hippocampal slice. Especially, the reduction in the supply of glucose and oxygen to the brains leads to a complex cascade of cellular event as ATP depletion, lactate release, glutamate release and radical production, resulted in delayed neuron cell death. After treatment with A. tenuissimae, we measured the recovery of ATP depletion in hippocampal slice after oxygen and glucose deprivation. Also A. tenuissimae and its component showed the reduction of PI (propidium iodide) uptake, indicator of neuronal membrane integrity and cell viability from ischemic brain damage in organotypic hippocampal slice culture.