

[PD2-29] [04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3]]

Phenylpropanoids from *Scrophularia buergeriana* Protect Cultured Rat Cortical Neurons from Glutamate-Induced Neurotoxicity

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We previously reported phenylpropanoids isolated from *Scrophularia buergeriana* Miquel (Scrophulariaceae) attenuate glutamate-induced neurotoxicity in primary cultures of rat cortical neurons. In the present study, we investigated their neuroprotective mechanisms *in vitro* culture system. Phenylpropanoids isolated from *S. buergeriana* diminished the calcium influx that routinely follows glutamate neurotoxicity, and inhibited subsequent overproduction of NO in glutamate-treated cells. The neuroprotective compounds were more potent against the toxicity induced by N-methyl-D-aspartate than that mediated by kainate. These results demonstrate that phenylpropanoids isolated from *S. buergeriana*: (1) exerted significant neuroprotective effects on cultured cortical neurons; and (2) may be efficacious in protecting neurons from oxidative damage produced by exposure to L-glutamate.

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Anti-HIV-1 Protease Activity and Phytochemical Study on the Aerial Parts of *Orostachys japonicus*

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Inhibitory effect on Human Immunodeficiency Virus Type 1 protease (PR) and phytochemical study on the aerial parts of *Orostachys japonicus* A. Berger (Crassulaceae), which is used as the antitumor agents in Korean folklore medicine were investigated. The PR inhibitory activity was determined by incubating the extract in a reaction mixture containing PR and substrate His-Lys-Ala-Arg-Val-Leu-(pNO₂-Phe)-Glu-Ala-Nle-Ser-NH₂ at pH 5.0 to perform proteolytic cleavage reaction. The cleaved product was measured by reverse-phase HPLC, using a gradient of acetonitrile/0.1% trifluoroacetic acid as a mobile phase. The methanol extract of title plant showed a strong inhibition at 0.1 mg/ml. The methanol extract from aerial parts of *O. japonicus* was fractionated into dichloromethane, ethyl acetate, n-butanol and aqueous fractions. Column chromatography of ethyl acetate and n-butanol soluble fractions afforded four aromatic acids and five flavonoid compounds.

[PD2-31] [04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3]]

Antioxidative and Antihepatic Effects of Galla Rhois(*Rhus javanica* Linne)

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Reactive oxygen species(ROS) are produced at a high rate continuously as a by-product of aerobic metabolism. A major portion of living organisms has defense system as superoxide dismutase or catalase against damage produced by ROS. Several lines of evidence provided that ROS appears to

cause to develop aging and various adult diseases. Development of antioxidants to reduce or prevent the diseases associated with free radical have been widely investigated. This studied was carried out to investigate the antioxidative and antihepatic activities of Galla Rhois (*Rhus javanica* Linne). The major components were isolated from the *n*-Hexane, EtOAc and BuOH extract of Galla Rhois. Their strutures were characterized as syringic acid, gallic acid, gallic acid methyl ester, protocatechuic acid and 1,2,3,4,6-penta-O-galloyl- β -D-glucose by chemical and physical analysis. Five ompounds were tested for antihepatic protective effects on CCl₄ induced cytotoxicity in primary cultured rat hepatocytes and antioxidative effect on DPPH, ferric-thiocyanate method and TBA method.

[PD2-32] [04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3]]

Curcumin-Induced Inhibition of Microglial Activation

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Microglia, brain resident macrophages, play a central role in the inflammatory responses of the brain and are activated in brain injuries and several neurodegenerative diseases such as Alzheimer's and Huntington's disease, thereby aggravating the course of these diseases. In this study, the effect of plant-derived compounds such as curcumin or gingerol on the microglial activation was examined. Microglial cultures were prepared from 2~3 week mixed primary glial cultures obtained from the cerebral cortex of 1~2 day old rats and identified by immunocytochemistry using microglial-specific antibody OX-42. Microglia were activated by lipopolysaccharide(LPS) and interferon- γ (IFN- γ) and the effect of curcumin or 6-gingerol on the microglial activation was examined. Specific parameters measured to monitor microglial activation were nitric oxide(NO) release, prostaglandin E2(PGE2) release and tumor necrosis factor- α (TNF- α) release. Curcumin(1~10 μ M) inhibited NO release induced by LPS and IFN- γ in a dose-dependent manner whreas 6-gingerol(2~20 μ M) did not have effect on LPS plus IFN- γ -induced NO release. The levels of PGE2 and TNF- α induced by LPS and IFN- γ were also inhibited by 1~10 μ M curcumin in a dose-dependent manner. These results showed that curcumin could modulate microglial activation.

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Potential Protective Effects of Phytochemicals on the Apoptosis induced by Ultraviolet Irradiation and Oxidative Stress

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Exposure to ultraviolet (UV) irradiation and oxidative stress like reactive oxygen species (ROS) induce a cellular injury involving an apoptotic cell death in living organisms. Therefore, the removal of ROS and the inhibition of apoptotic cell death might be a critical step for preventing some pathological conditions including aging and cancer. In this study we examined some phytochemicals to find out whether they had an effect on scavenging of hydroxyl radical or superoxide anion and inhibiting of H₂O₂- or UV-induced apoptosis. The extract of aloe, *Rhus verniciflua* (MU2) and *Ulmus davidiana* showed the protective effects for the hydroxyl radical-induced DNA strand break and the dose-dependent scavenging effects for hydroxyl radical and superoxide anion. Aloin showed the protective effect for DNA strand break and aloesin for hydroxyl radicals, respectively. The effects on the oxidative stress-induced apoptosis in NIH 3T3 fibroblast had been examined. Aloe extract, Aloesin and MU2 showed inhibition for the H₂O₂-induced apoptosis, which were consistent with the