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 $CCl_4$ 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

Jung KK°, Yi SW, Kang SY, Kim TG, Kang JH, Kim SH and Han HM

Dept. of Pharmacology, NITR, KFDA

Microglia, brain resident macrophages, play a central role in the inflammatory responses of the brain and are activated in brain injuries and several neurodegerative diseases such as Alzheimer's and Huntington's disease, thereby aggrevating 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(1~10μM) inhibited NO release induced by LPS and IFN-γ in a dose-dependent manner whreas 6-gingerol(2~20μM) 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 1~10μM curcumin in a dose-dependent manner. These results showed that curcumin could modulate microglial activation.

[PD2-33] [ 04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3] ]

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

Kim TG°, Park HJ, Han HM, Kang SY, Jung KK, Kang JH, Lee EA and Kim SH

Dept. of Pharmacology, NITR, KFDA

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 fibloblast had been examined. Aloe extract, Aloesin and MU2 showed inhibition for the H2O2-induced apoptosis, which were consistent with the

scavenging effects of hydroxyl radical or superoxide anion by these phytochemicals.

[PD2-34] [ 04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3] ]

## Aristolactam Alkaloids from Saururus chinensis Protect Cultured Rat Cortical Neurons from Glutamate-Induced Neurodegeneration

Sung SH°, Kim SR, Huh H, Kim YC

Collge of Pharmacy, Seoul National University

In the course of our search for neruoprotective compounds against glutamate-induced toxicity from natural sources,a methanolic extract from the dried roots of *Saururus chinensis* (Saururaceae) significantly mitigated glutamate-induced neurotoxicity in primary cultures of rat cortical neurons. Activity-guided fractionation using several chromatographic techniques resulted in the isolation of two neuroprotective alkaloids, saurolactam and aristolactam BII. These alkaloids isolated from *S. chinensis* attenuated glutamate-induced neurotoxicity in primary cultures of rat cortical cells at concentrations ranging from 0.1 – 10.0 μM. Furthermore, saurolactam and aristolactam BII inhibited overproduction of NO and lipid perxidation in glutamate-treated cells. These results demonstrate that aristolactam alkaloids isolated from *S. chinensis* exerted significant neuroprotective effects on cultured cortical neurons and may be efficacious in protecting neurons from oxidative damage produced by L-glutamate.

[PD2-35] [ 04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3] ]

## Effects of Polyoxypregnane Constituents from the Roots of Cynanchum caudatum on the Aldehyde Oxidase Activity and Lipid Peroxidation

Lee NJ°, Park CH, Kang SI, Lee DU

Department of Biochemistry, Dongguk University, Kyongju, Kyongbuk 780-714, Korea

The roots of Cynanchum caudatum have been used in traditional medicine in Japan and China for the prevention and treatment of geriatric diseases, beriberi, and so forth, and also as a cardiotonic agent. Constituents of this plant have mainly been examined for glycosides: besides two steroidal alkaloids, gagaminine and gagamine which was firstly isolated and named by us, more than 30 polyoxypregnane glycosides and aglycones have been isolated. Gagaminine inhibits potently the hepatic aldehyde oxidase activity(IC50=0.8μM) and lipid peroxidation in an in vitro assay. In order to explain the structure-activity relationships of gagaminine which contains cinnamoyl- and nicotinoyl groups, we previously compared its activities with four related compounds - two polyoxypregnanes, cinnamic acid, and nicotinic acid. The present work deals with the comparison of antioxidative activities of gagamine, a new pregnane alkaloid, two isolated polyoxypregnanes and one synthetic natural derivative which contain a keto group at C-20 with those of gagaminine, a potent antioxidant. The results of this study further prove that the cinnamoyl group in the structure of gagaminine is critical in inhibition of the aldehyde oxidase activity while the nicotinoyl group may be necessary for anti-lipid peroxidation of this type of compound. Besides that, the keto compounds having no ester group at C-12 were more active than the others except gagaminine.

[PD2-36] [ 04/21/2000 (Fri) 14:50 - 15:50 / [1st Fl, Bldg 3] ]

## The hepatoprotective and antioxidative effects of methanol extract and its fractions of Phellinus linteus in Hep G2 cells