

[PC1-17] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

23-hydroxyursolic acid Induces Apoptosis of human leukemia HL-60 cells

Won JongHeon[○], Shin kyungmin, Seo BoRim, Park HeeJun, Choi JongWon, Lee KyungTae

College of pharmacy, Kyung-Hee University, Seoul,130-701

We found that 23-hydroxyursolic acid, triterpenoid was isolated from *Cussonia bancoensis* have a significant cytotoxic activity against HL-60 human promyelocytic leukemia cells. The IC of 23-hydroxyursolic acid was 32.83 μ M. These anti-proliferative activity was due to induction of apoptosis. The effect of apoptosis was identified by DNA laddering, DAPI assay, PI staining, and Annexin V-FITC binding assay. In order to explore the possible mechanism involved in 23-hydroxyursolic acid induced apoptosis, we examined apoptotic cellular molecules by western blotting. 23-hydroxyursolic acid activated pro-caspases 3. This compound also decreased anti-apoptotic Bcl-2 protein but increased pro-apoptotic Bax and Bid. These data suggest that 23-hydroxyursolic acid induced apoptosis of HL-60 cells through activation of caspase in conjunction with bcl-2 related proteins such as Bid, Bax, Bcl-2. Now we are further investigating the relationship with the mitochondrial potential.

[PC1-18] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Effects of cell viability and antioxidant enzyme activity of *Phellinus linteus* extract on Mouse melanoma cells(B16F10)

Cha EunJung, Kim AnKeun[○]

College of Pharmacy, Sookmyung Women's University

The effects of oxidative stress on the alterations of different antioxidant enzyme activity on mouse melanoma cells(B16F10) was investigated. Oxidative stress was induced by the exposure to hydrogen peroxide(H₂O₂). B16F10 cells were exposed *Phellinus linteus* Ex. in combination with H₂O₂ and measured the time course of changes in cell viability and antioxidant enzyme activity. CAT activity peaked at 12 hr. On the contrary, SOD and GPX activity was maximum at 6 hr. The cell viability of *Phellinus linteus* extracts in combination with hydrogen peroxide was higher than hydrogen peroxide alone.

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Peroxynitrite Scavenging Mechanism of Alaternin and Nor-rubrofusarin glucose from *Cassia tora*

Park TaeHyun[○]1, Jung HyunAh2, Choi JaeSue2, Chung HaeYoung1

1College of Pharmacy, Pusan National University, Busan 609-735, Korea. 2Faculty of Food Science and Biotechnology, Pukyong National University, Busan 608-737, Korea

Peroxynitrite(ONOO⁻), formed from the reaction of superoxide(⁻O₂⁻) and nitric oxide(⁻NO), is a potent oxidant that contributes to oxidation of various cellular constituents including lipids, amino acids, sulphhydryls and nucleotides. It can cause cellular injury such as DNA fragmentation and apoptotic cell death. Also, the toxicity of ONOO⁻ has been reported to be involved in inflammatory and neurodegenerative diseases such as Alzheimer's disease, Parkinson's disease, and atherosclerosis. Moreover, a necessity of the strong scavenger of ONOO⁻ has been increased due to the lack of endogenous enzyme against the damage by ONOO⁻. The aim of this study was to evaluate the ability of natural products to scavenge ONOO⁻ and to protect cells against ONOO⁻. We tested various plant extracts for their ONOO⁻ scavenging activities. Among them, extract from *Cassia tora* showed a potent activity in ONOO⁻ scavenging. In further analysis, the phenolic active components, alaternin and nor-rubrofusarin glucose were identified as potent ONOO⁻ scavengers. The data from spectrophotometric analysis demonstrated that alaternin and nor-rubrofusarin glucose led to the decrease of ONOO⁻-mediated nitration of tyrosine through electron donation. Alaternin, not nor-rubrofusarin glucose, also showed significant inhibition on

nitration of bovine serum albumin and low-density lipoprotein by ONOO⁻ in a dose-dependent manner. Its cytoprotective effect against ONOO⁻ is under further study. Alaternin and nor-rubrofusarin glucose can be developed as an effective ONOO⁻ scavenger for the prevention of the ONOO⁻-involved diseases.

[PC1-20] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Induction of apoptosis in human promyelocytic leukaemia HL-60 cells by yomogin involves release of cytochrome c and activation of caspase

Jeong SeoungHee[○], Koo SungJa, Ryu ShiYong, Park HeeJun, Lee KyungTae

College of Pharmacy, Dept. of Food and Nutrition, KyungHee University, Seoul, Korea
Research Institute of Chemical Technology, Yuseong, Dept. of Botanical Resources, SangJi University, Wonju

Yomogin, an eudesmane sesquiterpene isolated from *Artemisia princeps*, was found to induce apoptosis in human promyelocytic leukaemia, HL-60 cell with characteristic apoptotic features like nuclear condensation, apoptotic body formation, flipping of membrane phosphatidylserine, release of mitochondrial cytochrome c and caspase-8, -9, and -3 activation. Furthermore, early yomogin-induced cytochrome c release was not affected by the caspase inhibitor Z-VAD fmk and preceded loss of mitochondrial membrane potential. The results suggest that induction of apoptosis by yomogin may provide a pivotal mechanism for their cancer chemopreventive function.

[PC1-21] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Effects of chitosan on the decreased renal dipeptidase release by nitric oxide from renal proximal tubules

Hyun Joong Yoon[○], Eun Mi Park, Haeng Soon Park

College of Pharmacy, Chonnam National University, Kwangju 500-757, Korea

Chitin is a major component of the shells of crustacea such as crab, shrimp and crawfish. Renal dipeptidase (RDPase, EC 3.4.13.19), an ectoenzyme of renal proximal tubules, is covalently bound to outer leaflet of lipid bilayer via glycosylphosphatidylinositol (GPI)-anchor. The biological role of RDPase was suggested as the hydrolysis of dipeptide into free-amino acids before renal reabsorption. The underlying biochemical mechanism of decreased RDPase release was suggested as nitric oxide (NO) production. This study was investigated to examine the effect of chitosan, a deacetylated derivative of chitin which is the second most abundant natural biopolymer, on the decreased RDPase release by NO from renal proximal tubules. Porcine proximal tubules were prepared with the protocol of Taub et al (1990) and were treated with chitosan (0.01, 0.05 and 0.1%) in the presence of SNP (NO direct donor, 0.25mM) or L-Arginine (substrate of NO synthase, 10mM) for 30 min at 37 °C followed by centrifugation (18000g, 5min). The activity of released RDPase was assayed according to the fluorometric method of Ito et al (1984). It was observed that the decreased RDPase release by NO (SNP; 52.8%, L-Arg; 47%, control: 100%) was restored more than 80% as a function of chitosan concentration. We confirmed that the effect of chitosan was connected with NO-signal pathway. The results suggest that chitosan may elevate the renal function decreasing cyto-toxic effect of NO on the proximal tubule cells.

[PC1-22] [10/17/2002 (Thr) 13:30 - 16:30 / Hall C]

Antioxidative Enzymatic Activity of *Saururus Chinensis* Baill & *Houttuynia cordata* Thunb in the liver of rats treated with CCl₄

Park SunYi, Jung Haejin, Ha Baejin[○]

신라대학교 생명공학과

Saururus chinensis Baill (*Saururaceae*) is a perennial plant that has been used in the treatment of edema, jaundice and gonorrhoea in Korean folk medicine. *Houttuynia* sodium bisulphate (HSB), alpha hydroxyl-capryl-