College of Pharmacy, Chungnam National University, Taejon 305-764, Korea *Korea Research Institute of Bioscience and Biotechnology, Taejon 305-333, Korea

There have been increasing evidences that oxidative modification of low density lipoprotein leads to the formation of cholesterol deposits in foam cell, which is related to atherogenesis. Although various antioxidants have been employed to prevent against LDL oxidation, the study concerning the effect of antioxidants on the early phase of LDL oxidation is limited. Here, the effects of flavonoids and phenolic acids, possessing a o-dihydroxy moiety, were studied on Cu^{2+}(10 μM)-catalyzed LDL oxidation in early stage (20 min) by measuring the formation of peroxide by chemiluminescence method. The order of antioxidant activity was catechin > quercetin = caffeic acid > luteolin > gallic acid, with catechin (IC_{50}, 0.21 μM) being the most potent. Separately, the antioxidant action was evaluated by measuring the TBA value during 4 hr LDL oxidation. Generally, there was a good correlationship of potency betweeen peroxide value in early stage and TBA value during 4 hr oxidation, the antioxidant activity seemed to be stronger (approximately 5-folds) in early step than late step. Especially, the antioxidant action of some antioxidants differed greatly according to oxidation time. Further studies remain to be performed in order to assess the combinational effect of flavonoids and phenolic acids on the early phase of Cu^{2+}-catalyzed LDL oxidation.

[PC1-9] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Peroxynitrite Scavenging Activity of Sinapic Acid

Zou YaNi°, Kim AeRa, Kim JungEun, Park TaeHyun, Choi JaeSue, Chung HaeYoung

College of Pharmacy, Pusan National University, Pusan 609-735, Korea, and Food Science and Biotechnology, Pukyong National University, Pusan 608-737, Korea

Peroxynitrite (ONOO-), formed from a reaction of superoxide (O2. -) and nitric oxide (.NO), is one of most potent cytotoxic species that are known to oxide cellular constitutes including essential proteins, lipids and DNA . In this study, the ability of sinapic acid (3,5-dimethoxy-4-hydroxycinnamic acid), isolated from Brassica juncea, to scavenge ONOO- was investigated. The data obtained show that sinapic acid can efficiently scavenge native ONOO- as well as ONOO- derived from peroxynitrite donor 3-morpholinosydnonimine hydrochloride (SIN-1). Spectrophotometric analyses revealed that sinapic acid suppressed the formation of ONOO--mediated tyrosine nitration through electron donation mechanism. In further studies, sinapic acid also showed a significant ability inhibiting nitration of bovine serum albumin (BSA) and low-density lipoprotein (LDL) in a dose-dependent manner. Sinapic acid decreased the LDL peroxidation induced by SIN-1-derived ONOO-. The present study documented that sinapic acid has an efficient ONOO- scavenging ability, which may be a potent ONOO- oxidant scavenger for the protection of the cellular defense activity against the ONOO--involved diseases.

[PC1-10] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Effect of Carvacrol, a Terpenoid of Black Cumin Oil on the Arachidonic Acid Metabolism in Rabbit Platelet Aggregation

Son DongJu°, Im KyungHa, Satoshi Akiba*, Takashi Sato*, Park YoungHyun

College of Natural Sciences, Soonchunhyang University, Asan, Korea * Department of Pathological Biochemistry, Kyoto Pharmaceutical University, Kyoto, Japan

Black cumin, the seeds of *Nigella sativa L.*, has been used in Arab countries as food and traditional medicine, which has therapeutic effects on various diseases such as asthma, flatulence, polio, kidney stones and abdominal pain. The immunopotentiation, anti-tumor, anti-inflammatory, anti-hypertension, hypoglycemia, respiratory stimulation, anti-oxytocic, and anti-bacterial effects were reported. In this study, the effects of carvacrol, a terpenoid of black cumin oil, on platelet aggregation and arachidonic acid (AA) metabolism have been investigated using washed rabbit platelets. AA liberation and generation of thromboxane B_2 (TXB_2), prostaglandin D_2 (PGD_2), and 12-hydroxyeicosatetraenoic acid (12-HETE) were evaluated by radio-chromatographic analysis with washed rabbit platelet in vitro. Carvacrol inhibited

collagen- and AA-stimulated platelet aggregation in a dose-dependent manner, but did not affect U46619-, or thrombin-stimulated platelet aggregation. Carvacrol did not suppress collagen-induced arachidonic acid liberation from [^{3}H]AA-labeled platelets, indicating that it has no effect on phospholipase A_2 (FLA_2) activation in response to collagen. Furthermore, carvacrol significantly suppressed the TXB_2 generation induced by addition of [^{3}H]AA, but had no influence on PGD_2 and 12-HETE generation.
These results suggest that carvacrol inhibits collagen- and AA-stimulated platelet aggregation probably through suppression of TXB_2 generation.

[PC1-11] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Cell cycle arrest effect of manassatin B on human leukemia cell line HL-60

Seo borim°, Lee kyungtae

College of Pharmacy, Kyung Hee University, Seoul 130-701, Korea

Manassatin B, isolated from Saururus chinensis, showed significant dose-and time-dependent antiproliferative activity against HL-60 cell by BrdU incorporation assay. At 5 ug/ml manassatin B treated cells, G1 phase cell cycle was mainly arrested via p21Waf1 induction, not p27Kip1. Futhermore, we investigate the downstream signal transduction following such accumulation. The protein level of cdk6, cyclin D1 was markedly reduced, but there is no change in CDK 2/4 and cyclin D/E protein expression level. Cdk 2 activity was significantly inhibited in manassatin-treated cell, these effect was closely associated with the upregulation of p21. Immunoprecipitation experiments verified that p21 was indeed complexed with cdk 2.
These results suggest that decreased cdk 6, cyclin D1 protein level and increased p21WAF1 associated with CDK2 induce pRb dephosphorylation. In turn, hypophosphorylated pRb are mainly complexed with E2F and then G1 to S phase transition is inhibited. So, Manassatin has a strong cell cycle arrest effect in G1 phase on human leukemic HL-60 cell.

[PC1-12] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

The inhibitory effects of six natural products on tyrosinase activity

Cha EunJung°, Kim AnKeun

Sookmyung Women's University, Colleage of Pharmacy

To identify inhibitors of melanogenesis, we compared the effects of 6 natural products on mushroom tyrosinase, human melanocytic tyrosinase activity. The cytotoxicity of the products were also tested on cultured B16F10 mouse melanoma cells.
Each extract significantly inhibited tyrosinase activity in vitro and B16F10 melanoma cell line. In B16F10 cell lines, extracts of watermelon's inner shell(1mg/ml), morning glory's seed(0.25mg/ml), licorice root (0.25mg/ml) inhibited tyrosinase activity as strong as kojic acid(1mg/ml).
They were strong inhibitors of tyrosinase activity in B16 mouse melanoma cell lines at less than 1mg/ml concentration.
These results show that extract of watermelon's inner shells, morning glory's seeds, licorice roots, ginkoes, lettuces could be developed as skin whitening component of cosmetics.

[PC1-13] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Effects of chitosan on renal dipeptidase release from renal proximal tubules

Hyun Joong Yoon°, En Mi Park, Haeng Soon Park

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