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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

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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

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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