Peroxynitrite Scavenging Activity of Sinapic Acid from Brassica juncea

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Peroxynitrite ($ONOO^-$), formed from the reaction of superoxide ($O_2\cdot^-$) and nitric oxide (·NO), is one of cytotoxic species that can oxidize several cellular components such as proteins, lipids, and DNA. It has been reported to be implicated in diseases such as Alzheimer's disease, rheumatoid arthritis, cancer, and atherosclérosis. Due to the lack of endogenous enzymes responsible for $ONOO^-$ inactivation, to develop a specific $ONOO^-$ scavenger is of considerable importance. The aim of this study was to evaluate the ability of natural products to scavenge $ONOO^-$ and to protect cells against $ONOO^-$. More than 100 plant-extracts were tested for their $ONOO^-$ scavenging activity. Among them, extracts from *Brassica juncea* showed higher activity in $ONOO^-$ scavenging. In further analysis, the active components sinapic acid and its glucoside, kinds of phenolic compounds, were identified as potent $ONOO^-$ scavengers. Specially, the aglycone type sinapic acid was more effective than its glucoside. The data from spectrophotomitric analysis demonstrated that sinapic acid led to the decrease of $ONOO^-$ mediated nitration of tyrosine through electron donation. Sinapic acid 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. Sinapic acid can be developed as an effective $ONOO^-$ scavenger for the prevention of the $ONOO^-$-involved diseases.

[PC1-21] [10/19/2001 (Fri) 09:00 - 12:00 / Hall D]

The chestnut inner shell extract enhances the expression of adhesion molecules, fibronectin and vitronectin, of skin fibroblasts in culture

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The ethanol extract of chestnut inner shell has been used for anti-wrinkle/skin firming agent in East Asia, and this extract was found to prevent the cell detachment of skin fibroblasts from cell culture plate in preliminary experiment. In order to elucidate the molecular mechanisms underlying this phenomenon, effects on adhesion molecules such as fibronectin and vitronectin were investigated. The chestnut inner shell extract enhanced the expression level of fibronectin and vitronectin without enhancing other protein levels(b뺐ctin) from mouse skin fibroblast(NIH/3T3). The enhancement of these protein expression was verified by fixed-cell ELISA, western blot and immunostaining. Scoparone (6,7-dimethoxycoumarin) isolated from the extract also possessed similar property. These findings strongly suggest that the enhanced expression of adhesion molecules may be, at least in part, one of molecular mechanisms of the chestnut inner shell extract preventing the cell detachment and may be also responsible for its anti-wrinkle/skin firming effect when topically applied.

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Inhibition of TPA-induced cyclooxygenase-2 expression and skin inflammation in mice by wogonin, a plant flavone from Scutellaria radix

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