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Purpose: It is generally accepted the fact that pharmacological activity would be different in terms of the method of extraction. Antidiabetic activities between SP water extract and 70% ethanol extract were compared in streptozotocin (STZ)-induced diabetic rats.
Experimental methods: SP water or ethanol extract, 1 g/kg each, was administered orally 3 days before intraperitoneal injection of STZ (Day 0). Until Day 5, 20 mg/kg of STZ, which is dissolved in 100 mM citrate buffer (pH 4.5), was injected once a day. SP extracts were administered for 3-week period, and plasma glucose level and body weight change were determined periodically. At the end of the treatment, plasma levels of total cholesterol, triglyceride and free fatty acid were investigated. Urinary glucose and albumin excretion levels were also determined at 2 and 3weeks. Kidney hypertrophy and mesangium expansion were compared between groups using PAS staining and immunohistochemical analyses.
Results: SP water- and ethanol extract-treated groups both significantly reduced the plasma glucose levels at 3rd week as compared with the diabetic control group. Water intakes in SP water- and ethanol treated-groups were also improved as compared with the diabetic control group. SP ethanol extract treated group showed more potent kidney hypertrophy protection activity than water extract-treated group. SP ethanol extract treated group also had more urine albumin and glucose lowering activity than water extract treated group.
Taken toghter, we may conclude that SP ethanol extract treated group showed more potent antidiabetic activity in STZ-induced diabetic rats than water extract treated group.

[PA1-42] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Antiangiogenic activities of isoflavonoids isolated from the rhizomes of Belamcanda chinensis

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Many evidences proved the correlation between angiogenesis and tumor growth, therefore, searching for natural or synthetic angiogenic inhibitors as potential anti-cancer drugs has been extensively carried out, and it has recently been reported that COX-2 induces angiogenesis, which is essential for tumor growth. Increased prostaglandin production and enhanced release of angiogenic growth factor by COX-2 may induce neovascularization.
In the previous study, we reported that tectoridin and tectorigenin, two isoflavonoids, isolated from the rhizomes of *Belamcanda chinensis* inhibited PGE_2 production in TPA- or thapsigargin stimulated rat peritoneal macrophages by inhibiting the induction of COX-2 protein.
Based on these results, the present study was carried out to clarify whether tectorigenin and tectoridin, inhibit angiogenesis by experimental method *in vitro* and *in vivo*. As a results, both compounds were found to exhibit a significant antiangiogenic activity when measured by chorioallantoic membrane (CAM) assay and by its effect on the proliferation of calf pulmonary arterial endothelial cells. Both compounds were also found to possess matrix metalloproteinase inhibitory activity *in vitro*. *In vivo*, a matrigel plug assay showed that both compounds suppressed basic fibroblast growth factor (bFGF)-stimulated angiogenesis and lowered the hemoglobin content inside the plug.
From these experimental data, it is suggested that tectorigenin is attributed to be a promising compound for the prevention and/or treatment of angiogenesis.

[PA1-43] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Isolation of Aldose Reductase Inhibitors from the Rhizomes of Belamcanda chinensis

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Aldose reductase, the key enzyme of the polyol pathway, is known to play important roles in the diabetic complication. The inhibitors of aldose reductase, therefore, would be a most promising drug for the

prevention of diabetic complications.
To evaluate active principles for the inhibition of aldose reductase from the rhizomes of *Belamcanda chinensis*, systematic fractionations were carried out and led to isolation of 12 phenolic compounds, among which tectoridin and tectorigenin, two isoflavonoids, were found to possess the strongest rat lens aldose reductase inhibitory activity *in vitro*, their IC_{50} values, being 1.08×10^{-6} M and 1.12×10^{-6} M, respectively, while the IC_{50} value of tetramethylene glutaric acid, a positive reference drug, being 0.63×10^{-6} M for DL-glyceraldehyde as a substrate.
Both compounds, when administered orally to streptozotocin-induced diabetic rats, caused a significant inhibition of sorbitol accumulation in the tissues such as lens, sciatic nerves and red blood cells. Tectorigenin showed a stronger inhibitory activity than tectoridin.
From these experimental data, it is suggested that tectorigenin is attributed to be a promising compound for the prevention and/or treatment of diabetic complications.

[PA1-44] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

A New Derivative of Ursolic Acid from the Roots of Chaenomeles japonica

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Chaenomeles japonica (Thunb.) Lindl. (Rosaceae), distributed over the southern parts of Korean peninsula as well as Japan, commonly grown in gardens, is a small shrub with thorns on the branches. Fruit parts of this plant have been used in the traditional medicine as a stomachic and astringent. So far no chemical and biological work has been carried out on the root parts of this plant. Searching for biologically active natural products, we investigated the constituents of the root parts of *C. japonica* and isolated a novel derivative of ursolic acid (1) together with prunasin, (-)-epicatechin, daucosterol and three other triterpenes, ursolic acid, oleanolic acid and pomolic acid. All these compounds except (-)-epicatechin were isolated from this plant for the first time. Compound 1 was determined to be 3-O-(*E*)-3',5'-dihydroxycinnamoyl ursolic acid on the basis of IR, NMR and FAB-MS spectra, and to our knowledge, which is the second example of acylated triterpenes possessing the pentacyclic triterpenes with an unusual phenylpropanoid, (*E*)-3,5-dihydroxycinnamic acid moiety.

[PA1-45] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

The ELISA systems based on transcriptional mechanism of PPARs to detect potential agents of metabolic disease

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The PPAR family is a nuclear hormone receptor that is known to control the expression of genes involved in lipid homeostasis, energy balance and related to metabolic diseases including obesity, diabetes and cancers. The PPARs as transcriptional regulators are able to bind endo- or exogenous ligands by their ligand binding domain. The PPAR ligands are concerned as potential agents of therapy of metabolic diseases in the current day. The ligand-bound PPARs are converted to an activated mode or non-activated mode in the nucleus. These modes are decided by binding of ligands and co-regulators. The agonist binding to their PPARs recruits co-activator such as steroid receptor co-activator-1 (SRC-1), and then triggers transcription. While the antagonist binding to their PPARs recruits co-repressor such as nuclear hormone receptor corepressor (N-CoR), and then inhibits transcription. This transcriptional activity is due to the change of ligand-dependent conformation. In this study, we applied this mechanism to the development of a novel PPAR enzyme-linked immunosorbent assay (ELISA) system. These systems are optimized for the mass screening of potential drugs. This screening system can be a promising system in the development of drugs for metabolic disorders such as obesity, type2 diabetes and cancers.