

The ethyl acetate extract from *Sophora flavescense* Ait. had strong antimicrobial activity against *S. mutants*, *S. epidermidis*, *S. aureus* and *P. putida*. The extract was subfractionated by C18 reverse-phase silica gel chromatography with various solvents. The activity was retained in H<sub>2</sub>O: CH<sub>3</sub>CN, 1 : 3 fractions. The subfraction was further chromatographed on silica gel with MeOH : CHCl<sub>3</sub> and the maximum activity was found in the fraction eluted with 1 : 10 - 3 : 10 (5-4-5-4-3). The maximum MIC was 3.125  $\mu\text{g}/\text{ml}$  for *S. mutants*, *S. epidermidis* and *S. aureus* and 6.25  $\mu\text{g}/\text{ml}$  for *P. putida*. The 5-4-5-4-3 subfraction was further fractionated by silica gel column chromatography and recycle-high performance liquid chromatography. The isolation and NMR spectral data of (2s)-2'-methoxykurarinone and kurarinone were reported. They demonstrated antimicrobial activities in a broth dilution bioassay.

[PA1-32] [ 04/20/2001 (Fri) 10:30 - 11:30 / Hall 4 ]

### Flavonoids of *Inula britannica* attenuate the glutamate-induced toxicity in primary cultures of rat cortical cells

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We previously reported that twelve antioxidative flavonoids from the *n*-BuOH extract of *Inula britannica* (Asteraceae). This prompted us to investigate further whether these flavonoids also showed antioxidative activity in live cells of culture system. Among twelve flavonoids tested, only patuletin, nepetin and axillarin protected primary cultures of rat cortical cells from oxidative stress induced by glutamate. These flavonoids exerted more neuroprotective activity when pre-treated than post-treated after the oxidative stress. Treatment of these flavonoids maintained the activities of antioxidant enzymes such as catalase, glutathione-peroxidase, glutathione reductase which play important role in antioxidative defense mechanism. Moreover, these three flavonoids also attenuated the significant drops of GSH induced by glutamate through the inhibition of GSH diminution as a result of oxidative stress, which is demonstrated by using buthionine sulfoximine or diethyl maleate. However, these flavonoids did not stimulate the synthesis of GSH. Regarding the structure-activity relationship, our results indicated that 3',4'-hydroxyl groups in the B ring are crucial for the protection against the oxidative stress and glycosylation greatly reduced their protective activities. Collectively, these results indicated that patuletin, nepetin and axillarin strongly protect primary cultured neurons against glutamate-induced oxidative stress.

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### Antidiabetic effect and mechanism of Ginseng Radix Rubra, Ginseng Radix Alba, and Ginseng Radix Palva in KKAY mice

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To elucidate antidiabetic effect and mechanism of Ginseng Radix Rubra(GRR), Ginseng Radix Alba (GRA) and Ginseng Radix Palva(GRP) in hyperglycemic and hyperinsulinemic KKAY mice, GRR, GRA, GRP were administered orally for 4 weeks and effects on BMI, plasma glucose, HbA1c, insulin, total cholesterol, HDL, Triglyceride, genetic expressions of PPAR $\gamma$  in epididymal fat, intestinal sodium-glucose cotransporter (sGLT1) and glucose transporter in quadriceps muscle (GLUT4) were examined in this study. GRR, GRA, GRP lowered significantly plasma glucose from a week after treatment and the hypoglycemic activity was retained for 4 weeks. GRR, GRA, GRP also lowered insulin dramatically 4 weeks after treatment. GRR and GRA treated group reduced HbA1c level. We found no significant difference in BMI, total cholesterol, HDL, and triglyceride with any of treatments.  $\alpha$ -glucosidase