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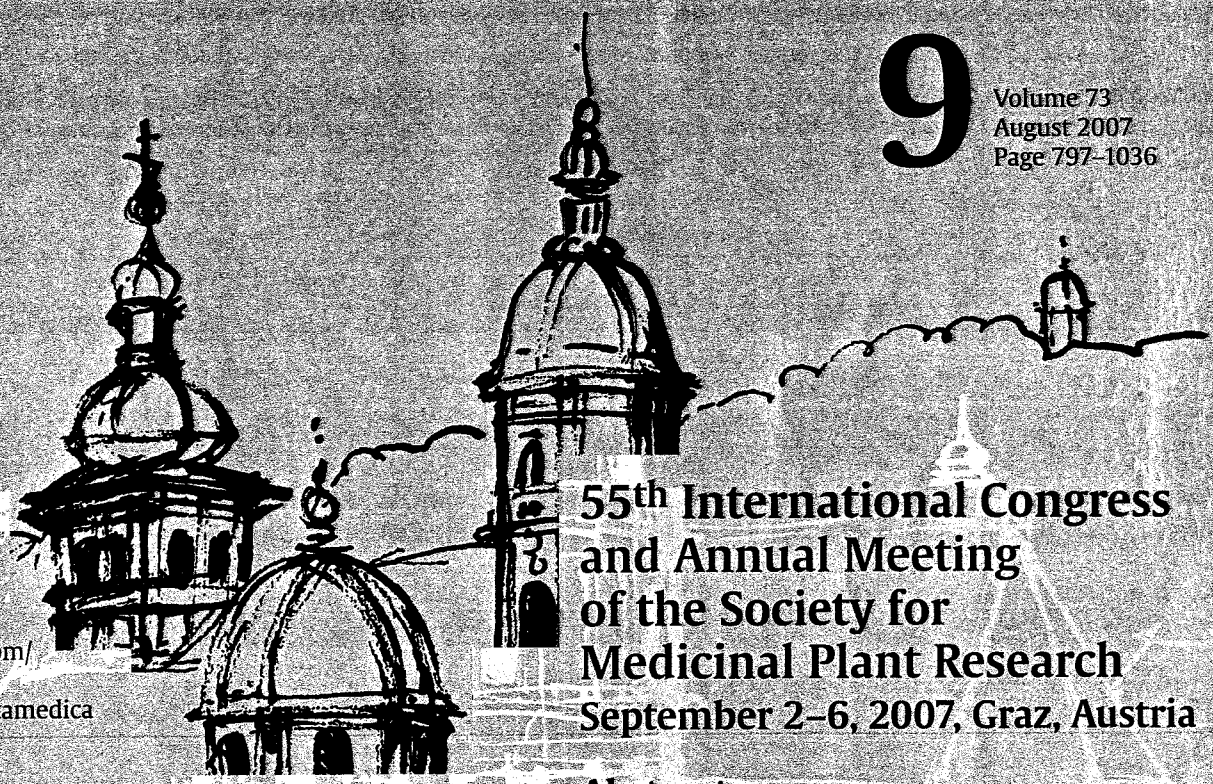

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Abstracts

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and accurate identification of *G. paludosa*. *Acknowledgment:* Support for this research was provided by the Natural Science Foundation of China (NSFC) (Project 30200018) and the Natural Science Foundation of Yunnan (NSFY) (Project 2006C0050M). **References:** [1] Yang YC, (1991) Tibetan Medicines. p.111. [2] Wang HD, Tan CY et al., (2006) J. Etnnopharmacol.105: 114–117. [3] Tai-Wai Lau D, Shaw PC, (2001) Planta Med. 67: 456–60.

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Biochemical studies on the volatile oils of *Laurus nobilis* L. plants grown in Egypt

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As a part of an intensive screening program to introduce new species of medicinal and aromatic plants to Egyptian cultivation and industry, the plant Bay laurel (*Laurus nobilis* L.- Lauraceae) [1] was analysed. The chemical composition of the fresh essential oil isolated by hydrodistillation was investigated by GC and GC-MS [2].The fresh oil was obtained in 0.5–0.8% (v/w). It consisted mainly of (50.38%) 1,8 cineole. Additionally other oxygenated monoterpenes were identified. The principal compound were α-terpinenyl acetate (19.97%) and terpineol 4- (6.48%), accounted for 26.45% of the oil. Additional oil constituents found in concentrations above 1% include α-terpinene, eudsmol γ, α-terpineol and 3-carene. Experiments were carried out to test qualitative and quantitative differences on the oil stored under cold storage conditions (4 °C) for one year. Minor variations in the content of the oil were obtained using cold storage conditions. Increases of 1,8 cineole, α-terpinene, terpinolene and α-terpineol and decreases of terpinen-4-ol, α-terpinenyl acetate and γ-eudesmol content were observed. The antimicrobial activities of the two oils were tested using the inverted petriplate method. The volatile oils showed prominent antimicrobial activities against fungi, Gram positive and Gram negative bacteria at a very low concentration (10 µl). **References:** [1] Mabey R., McIntyre M., Michael P., Duff G. and Stevens J. (1988). "The New Age Herbalist". Collier Books Macmillan Publishing Company New York. p.76. [2] Adams, R. P.(1989) Identification of Essential oils by Ion Trap Mass Spectroscopy. Academic Press, New York.

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Sumac: An underutilized plant in rural communities of Khorasan

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Sumac (*Rhus coriaria* L.) belonging to the Anacardiaceae family is a small tree or shrub. It grows widely in Mediterranean countries, North Africa, South Europ, Afghanistan and Iran (1). *R. coriaria* is a medicinal plant popularly known to people in Iran due to its multiple applications such as pharmaceutical, condimental and industrial properties. Its main medicinal effect is related to tannins. Also it has multiple biological effects including antibacterial, antimicrobial and antioxidant (1,2). Dehbar county in Khorasan province is one of the main natural habitats of *R. coriaria* in Iran, where in autumn fruits are collected wildly from its natural habitat by rural people. This species is critical to the livelihood of many rural people of the area and has the potential to alleviate poverty being a source of income generation for local communities. Fruits being accepted as 'wild organic product' are collected by local communities on the basis of cooperative systems. In such cases, natural resource authorities of the area allow the rural people to collect the fruits and share the benefits. This has lead to proper protection of this plant in the vicinity of villages. Morphological characteristics and yield differ between northern and southern slopes where in northern slopes, shrubs have an average plant height of 157 cm, crown area of 232 cm, plant density of 14375 plant/ha and fruit yield of 1507 kg/ha compared to southern slopes with an average plant height of 112 cm, crown area of 203 cm, plant density of 14500 plant/ha and fruit yield of 789 kg/ha. Better understanding of habitat and plant criteria based on autecological studies and also means of propagation provide insights to better utilization. **References:** 1. Ozcan, M. et al. 2004. Bulg. J. Plant Physiol. 30:74–84. 2. Lauk, L. et al. 1998. Phytotherapy Res.12:s152-s153.

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The effect of Cu^{2+} on the accumulation of daidzein, genistein and coumestrol in the tuberous roots of White Kwao Krua [*Pueraria candollei* Grah. *var. mirifica* (Airy Shaw et Suvatabandhu) Niyomdham]

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The White Kwao Krua [*Pueraria candollei* Grah. *var. mirifica* (Airy Shaw et Suvatabandhu) Niyomdham] is a famous medicinal plant of Thailand. Its tuberous roots accumulate estrogen like substances such as daidzein, genistein and coumestrol. The purpose of this study was to investigate the form and concentration of Cu^{2+} that can maximise daidzein, genistein and coumestrol in the tuberous roots of the White Kwao Krua. Two experiments were conducted on 1 and 3 year old plants of White Kwao Krua during 2001–2004 at Suranaree University of Technology. Experiment 1 was a 3^3 factorial in RCBD with 4 replications. The forms of Cu^{2+} compounds used were $CuCl_2$, $CuSO_4$ and Cu-EDTA. The concentrations of Cu^{2+} were set at 0, 100, 300 and 500 ppm. The extraction and the analysis of daidzein and genistein were done according to the method of Murphy [1] and Frank et al. [2] by a HPLC technique. Experiment 2 was RCBD with 4 treatments and 4 replications. The treatment were $CuCl_2$, $MnCl_2$ and $FeCl_2$ at 1,000 ppm each, and distilled water was used as control. The amount of coumestrol was examined using the method of Khanna et al. [3] by TLC technique. The Cu^{2+} at 300 ppm showed the highest amount of daidzein (44.69 ppm) and genistein (28.45 ppm). All treatments with Cu^{2+} compounds gave more daidzein and genistein than the control. $CuCl_2$ at 1,000 ppm resulted in the highest amount of coumestrol. $CuCl_2$, $MnCl_2$ and $FeCl_2$ at 1,000 ppm can stimulate coumestrol accumulation. *Acknowledgements:* Suranaree University of Technology and the Thailand Research Fund (TRF). **References:** [1] Murphy, P. A. (1981) J. Chromatogr. 211: 166–169. [2] Frank et al., (1994) J. Agri. Food Chem. 42: 1905–1913. [3] Khanna et al., (1999) Transactions of the Illinois State Academic of Science. 92: 167–179.

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Self-mating effect on growth traits and silymarin production for some selected lines among milk thistle (*Silybum marianum* L.) varieties

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Ten selected lines for each purple and white head flower varieties of milk thistle, *Silybum marianum* were assessed for five growth traits and silymarin production among three generations: open parents, selfing progenies and selfing offspring. Highly significant variations existed between lines, varieties and generations as well as their interactions in all tested traits. The line characters for each variety were subjected to analysis of variance only for open parents opposite to selfing offspring, and seemed highly significant variablities. The selfing offspring generation produced higher mean value in all purple variety traits except no. of flower heads. Contrarily, the parent generation produced higher values in all white variety traits