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**SCIENCE AND
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FOR PEOPLE**

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PROGRAMME & Book of Abstracts

CONTENTS

Welcome

Committees

Getting Around

Congress at a Glance

Opening Session

Colloquia

Symposia

Seminars

Thematic Sessions

Workshops

Tours & Social Programme

Exhibition

Horticultural Brokerage Event

List of Sponsors

List of Authors

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Great burnet (*Sanguisorba officinalis* L.) is a perennial belonging to *Rosaceae* family. In Poland it usually occurs on the wet piedmont meadows. In the people medicine the herb and undergrounds organs of these plants were used as hemostatic in gastrointestinal disorders. Nowadays the extracts from the great burnet are applied in the treatment of hemorrhage and in diarrhoea. The main active compounds of the great burnet are tannins and phenolic acids. The aim of investigation was to compare ten populations of great burnet wild growing in different areas of Poland in respect of phenolic compounds accumulation. Quantitative and qualitative analysis was performed by HPLC. The investigated populations differed distinctly in the content of particular phenolic compounds. Differences between underground and aboveground organs also were found. Catechin, epigallocatechin, epicatechin, epigallocatechin gallate, gallic and ellagic acid were found in the roots whereas rosmarinic, caffeic, chlorogenic, elagic and gallic acids in aboveground organs.

Sm08.210

Poppy Cultivation in the Slovak Republic

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Poppy (*Papaver somniferum* L.) is a traditional crop in Slovak Republic and its cultivation has long-standing history. The recent conditions of poppy cultivation modify the Law 139 from 1998 about narcotic and psychotropic components and products. In order to this rule it is possible to cultivate of poppy on land more than 100 m² on a base of permission from the Slovak Ministry of Health. The large-scale cultivation of this special crop is concentrated in the West Slovakia, in nearness of the pharmaceutical company Zentiva, Co. in Hlohovec. Farmers prefer a combination method of poppy production: seeds for food purposes and dry capsules for pharmaceutical industry. Poppy production areas were from 386 to 2,714 hectares during last 10 years. Yield of seed are usually from 0.28 to 0.73 ton per hectare. Good agricultural practice and own Slovakian poppy varieties are very suitable background for a high yield potential of seeds (about 2 tons per hectare). Poppy capsules are as a secondary product, which is very important raw-material to our pharmaceutical industry. Their yields fluctuate according to the season and customer requests from 300 to 500 kg per hectare. Purchases of poppy straw material were from 55.3 to 1,191.5 tons annual during years 1990 and 2006. The processing capacity of the Slovakian pharmaceutical industry is much higher, about 4,000 tons, and the miss raw materials are imported from Czech Republic. The cultivate varieties of poppy are suitable accumulate from 0.4 to 0.6% of morphine. However the purchase straw material contents in average only 0.3% of morphine, statistics from 1970 to 2005 years. The influence of the vegetation season and harvest technology is affected on these results.

Sm08.211

Phytochemical Characterization of Essential Oils from *Laurus nobilis* from Brazil and Turkey

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The aim of this work was to evaluate the yield and chemical composition of essential oil of laurel (*Laurus nobilis* L.) from Turkey and Brazil. Laurel leaves were collected at four properties in Paty do Alferes district (Rio de Janeiro State) in winter (07/26/2008), and dried at room temperature (25 °C) at shade conditions. Samples from Turkey were donated by a private company. Essential oils were obtained by hydrodistillation in a Clevenger-type apparatus for 4h and analyzed by GC-MS (Shimadzu, QP 5050, with DB-5 capillary column - 30 m × 0.25 mm × 0.25 μm). Carrier gas was Helium (1.7 mL/min); split ratio: 1:20. Temperature program: 60 °C, rising to 240 °C at 3 °C/min. Injector temperature: 240 °C and detector temperature: 260 °C. Identifications of chemical compounds were made by matching their mass spectra and Kovar's indices (IK) values with known com-

pounds reported in the literature. The average of essential oil yield obtained was 1.4% (Paty A and D samples), 1.5% and 1.1% (Paty B and C samples, respectively) and 2% (Turkey sample). Lower yield of Brazilian essential oils' may have occurred because the leaves were harvested in winter. Further studies will be conducted to verify the seasonal variation of laurel. Even smaller, they are within the acceptable market standard. Analysis by GC-MS of the essential oils has identified 16 compounds. The essential oil from Turkey presented a slightly higher content of 1.8 cineole (major compound), but it doesn't presented linalool, methyl eugenol and myrcene, compounds founded in Brazilian essential oils. These results showed the high quality of Brazilian essential oils' tested that indicates marketing potential to the consumer industry, without the onus of an import process. Brazilian and Turkey essential oils' presented similar quality and the first can supply the needs of internal Brazilian marketing, reducing costs of raw material and logistics.

Sm08.212

Eucalyptus from Mata Experimental do Escaroupim (Portugal): Evaluation of the Essential Oil Composition from Sixteen Species

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The introduction of *eucalyptus* in Portugal seems to have been part of a general movement, by the mid-nineteenth century, of ordering exotic plants to beautify parks and gardens. Nevertheless, given the favourable edaphoclimatic conditions and *Eucalyptus globulus* particular characteristics, this species was fast in becoming an unavoidable element of the Portuguese forest [1]. The Mata Experimental do Escaroupim (Salvaterra de Magos, Portugal), is an area of protected forest tutored by Autoridade Florestal Nacional, which includes an arboretum with an identified, and documented, collection of 125 different eucalyptus species, considered to be the most complete in Europe [2]. In the present work, the essential oils isolated from the aerial parts of sixteen *Eucalyptus* species of this arboretum were studied. The essential oils were isolated and analyzed by GC and GC-MS as in [3], and the percentage composition of the volatiles was used to determine the oils relationship by cluster analysis [4]. Despite the monoterpene fraction being dominant in all oils (62-97%), major differences were found in essential oils composition. Essential oil cluster analysis showed only a high correlation (Scorr≥0.78) among eleven species (*E. cinerea*, *E. cordieri*, *E. bosistoana*, *E. botryoides*, *E. camaldulensis*, *E. globulus*, *E. polyanthemus*, *E. radiata*, *E. saligna*, *E. smithii* and *E. viminalis*), mainly due to their richness in 1,8-cineole (27-83%). The remaining five species were dominated by citronellal (36%, *E. citriodora*), piperitone (40%, *E. dives*), limonene and α-pinene (41% and 44%, respectively, *E. ficifolia*), α-pinene (82%, *E. pauciflora*) and α-phellandrene (45%, *E. urophylla*).

Sm08.213

Seed Germination and Dormancy Breaking Techniques for (*Echinacea purpurea* L. Moench)

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Echinacea purpurea (*Asteraceae*) is an important medicinal plant known as a disinfectant. Its germination percentage and germination rate is generally low due to dormancy. Dormancy and germination requirements were investigated in this plant. Seeds of *Echinacea purpurea* were subjected to different treatments including various levels of GA₃ (100, 200 and 300 ppm) and KNO₃ (0.5, 1 and 1.5 percentage) for 2 hours and prechilling (50 °C) for 1, 2, 3 and 4 weeks. The germination percentage and germination rate significantly increased in all of treatments. The highest germination and germination rate were obtained in prechilling treatment that induced over 90% germination. The mean germination time also improved in all of treatments and shortest mean germination time also was observed in prechilling treatment.