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# CONFERENCE REPORT

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## Lead Compounds from Higher Plants

### International Symposium of the Phytochemical Society of Europe

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The University of Lausanne was recently the venue for an important meeting concerned with the study of higher plant constituents. This three-day symposium, the fourth Phytochemical Society of Europe (PSE) event to be organised in Lausanne by *Prof. Kurt Hostettmann*, director of the Institute of Pharmacognosy and Phytochemistry, attracted around 300 participants from 44 different countries. Both universities and industry were well represented, and the meeting included a large number of young scientists. The scientific content was provided by 14 plenary lectures, 180 posters and a number of short oral presentations.

The highlight of the event was the opening lecture given by Her Royal Highness Prof. Dr. *Princess Chulabhorn of Thailand*.

HRH Princess Chulabhorn, youngest daughter of Their Majesties the King of Thailand and Queen Sirikit, is the head of the prestigious Chulabhorn Research Institute in Bangkok, Thailand. The Princess, herself an organic chemist, has personally contributed a great deal to the development of scientific research in Thai-

land and S.E. Asia and has wide-ranging interests in the protection of the environment, biodiversity and the utilisation of traditional knowledge. Princess Chulabhorn presented a fascinating talk on research currently underway in her institute. Among other aspects of this work, she described the investigation of Thai



Her Royal Highness Prof. Dr. Princess Chulabhorn of Thailand in discussion with Prof. K. Hostettmann, organizer of the 2001 Lausanne PSE Symposium.

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plants for cytotoxic activity. Certain of these (*e.g. Gloriosa superba*, Liliaceae) furnish the known antitumour agent colchicine and an extensive programme for the testing of analogues is in progress. The lecture was also effectively used to demonstrate the potential of lead compounds from plants as compared with other sources of molecules: from genetic engineering, targeted drug design and combinatorial chemistry.

**Prof. K. Hostettmann** then gave an overview of the isolation of new plant constituents with reference to work achieved at the Institute of Pharmacognosy and Phytochemistry (IPP) of the University of Lausanne over the last 20 years. This lecture gave an insight into all aspects of the search for lead compounds: chemical analysis of plant extracts using modern hyphenated HPLC techniques, the choice of suitable bioassays, separation methods and recent results obtained from plants of various origins. Hyphenated methods, such as LC-UV, LC-MS, LC-MS<sup>n</sup>, LC-NMR are a very powerful tool for phytochemists and are used for the early detection of chemical entities in crude extracts and for dereplication (avoiding the isolation of known compounds). They are extremely important for the rapid identification of toxic compounds in medicinal plants. Concerning future perspectives, the IPP is engaging in a study of genetically modified organisms (GMO), in order to compare the secondary metabolite patterns of normal and genetically modified plants, as these may

have important considerations for the safety of GMO.

Further results involving hyphenated techniques were presented by **Prof. G. Briggmann** (Würzburg University, Germany). This talk concerned LC-MS, LC-NMR and the novel addition of another dimension, HPLC coupled with circular dichroism (LC-CD). This elegant 'triad' allows on-line analysis of plant extracts, with the extra possibility of determining absolute configurations of individual compounds, *via* quantum chemical CD calculations. Examples of different classes of natural products were given, including the pharmacologically active naphthylisoquinoline alkaloids.

Despite the fact that the PSE is basically a society of European scientists, the organizers ensured that researchers from other parts of the world, and notably from developing countries, participated at the meeting. For example, the African continent was well represented and participants were able to appreciate some of the recent impressive progress made by African university groups. **Prof. B.M. Abegaz** (University of Botswana), one of the foremost chemists in Africa, described investigations of plant material found in local markets. A series of different classes of chemical compounds with various biological activities have been isolated from these plants. In certain cases, their synthesis has been successfully achieved.

**Prof. J.O. Midiwo** (University of Nairobi, Kenya) emphasised compounds deposited on the outside of aerial parts of

plants. Representatives from plants of the Polygonaceae, Myrsinaceae and Leguminosae were enumerated.

Two lectures involved the well-known medicinal plant *Hypericum perforatum* (Guttiferae). **Prof. L. Verotta** (University of Milan, Italy) reported on analogues of phloroglucinol metabolites from the plant, while **Dr. P. Morazzoni** (Indena SpA, Milan, Italy) emphasised the potential use of another constituent, hyperforin.

One session was dedicated to the search for new compounds for the control of tropical parasitic diseases. Highlights of this research were given by **Prof. P.C. Vieira** (University of Sao Carlos, Brazil), **Dr. S.L. Croft** (London School of Hygiene and Tropical Medicine), and **Prof. P. Rasoanaivo** (IMRA, Antananarivo, Madagascar).

Other highlights of the meeting included an update on biologically active plant polysaccharides by **Prof. B.S. Paulsen** (University of Oslo, Norway) and several contributions on cancer and plants: chemoprevention aspects (**Prof. H. Becker**, University of Saarland, Germany; **Dr. C. Gerhäuser**, German Cancer Research Centre, Heidelberg, Germany) and antitumour activity (**Prof. F. Tillequin**, University René Descartes, Paris, France).

During the symposium, the Phytochemical Society of Europe/Pierre-Fabre Award was presented to **Prof. R.J. Nash** of MolecularNature, Aberystwyth, Wales. In his award lecture, Professor Nash described his involvement in the development of highly water-soluble polyhydroxylated alkaloids as potential therapeutics for the treatment of diabetes, cancers and bacterial infections.

The symposium was preceded by a satellite symposium on different aspects of the phytopharmaceutical *Ginkgo biloba* (Ginkgoaceae), a drug widely used for treating cerebral insufficiency and for improvement of cognitive performance. Various topics concerning the analysis, pharmacology and clinical efficacy of *Ginkgo* were presented.

In summary, the symposium provided a broad palette of topics relative to the analysis, isolation and bioactivities of lead compounds from higher plants from many different countries. Judging from the number of participants and posters, a broad-based forum was provided for discussion and evaluation of the work presently being undertaken in this area – emphasising the potential that plants have for the future.



Prof. B.M. Abegaz, of the University of Botswana, presenting his results on African medicinal plants.