

Pharmacognosy in the curriculum: a critical need that still needs to be met

A forum which attracted over 400 participants from over 30 different countries discussed the importance of teaching pharmacognosy in the pharmacy undergraduate programme. **Peter Houghton** and **Joanne Barnes** report

An anomalous situation exists now in many countries where pharmacognosy has all but disappeared from the undergraduate pharmacy syllabus, but where its unique blend of skills and expertise is increasingly required in the wider pharmaceutical community. This thought, expressed by Roy Upton, editor, 'American Herbal Pharmacopoeia', introduced a special forum entitled "The critical need for pharmacognosy in pharmacy curricula".

Germination and growth

Mr Upton stated that the idea for the meeting had germinated three years previously because of the belief of many pharmacognosists that only their skills could address most of the issues raised by the growth in sales and use of herbal products in most parts of the world and the renewed interest in natural products for drug discovery. At the same time, there was grave concern at the disappearance of the teaching of those skills and the multidisciplinary mindset of pharmacognosy in the undergraduate pharmacy syllabus in many countries. Pharmacists should be those who had received a basis in their education for being able to perform quality control on herbal products, to carry out research to validate claims made for such products and to offer professional scientifically based advice on their proper use.

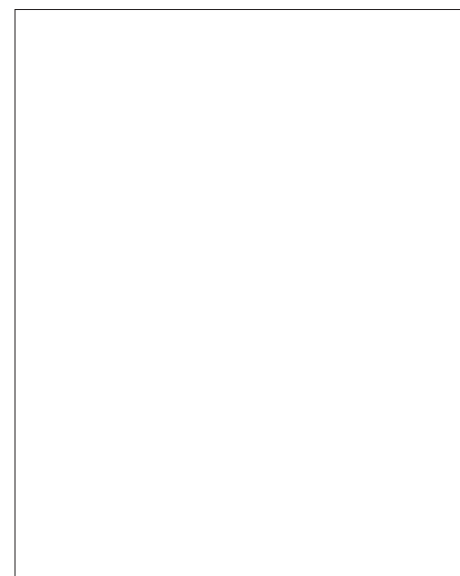
A variety of well-known pharmacognosists from North America and Europe gave presentations on the history and techniques of pharmacognosy. Wolfgang Kubelka, Institute of Pharmacognosy, University of Vienna, Austria, outlined the development of pharmacognosy in Europe since it was coined as a term by Schmidt, a friend of the composer Beethoven, in 1812. At that time, the term was used to describe the comprehensive knowledge of medicines from plants, animals and minerals and was largely descriptive. Pharmacognosy had gone through various metamorphoses in seeking to evolve as a

true experimental and investigative science and in this respect the last 50 years had witnessed a considerable transformation in the subject.

Rising from the ashes

Hildebert Wagner, department of pharmacy, Ludwig-Maximilians University, Munich, Germany, emphasised this in referring to the appropriateness of the meeting being held in Phoenix, the mythical bird that rose anew from the ashes of its own pyre. He mentioned that the "old" skills, such as microscopy and thin-layer chromatography, could still be useful, as illustrated well by a lecture by Sabine Glasl, Institute of Pharmacognosy, University of Vienna, Austria, who described its application in distinguishing between authentic Chinese drugs and toxic or worthless adulterants with similar appearances.

Professor Wagner, however, emphasised the more recent approaches of combining pharmacological and molecular biology with phytochemistry and how these were putting modern pharmacognosy in a good position to exploit the paradigm shift that was occurring in medicine from monodrug, monotherapy to a multi-targeted, multi-therapeutic approach. Professor Wagner explained how herbal medicine had done this in an empirical way and it was only in the past few years that increasingly well-designed clinical studies were being conducted with defined extracts that showed the value of such remedies compared with standard drugs. Examples quoted included extracts of saw palmetto (*Serenoa serrulata* Hook, F) fruit for benign prostate hyperplasia, St John's wort (*Hypericum perforatum* L.) herb in mild to moderate depression and black cohosh (*Cimicifuga racemosa* Nutt.) root/rhizome for treating postmenopausal conditions. Pharmacognosy's continued and increased legitimacy depended on its ability to integrate standardisation methods, elucidation of total



St John's wort: well-designed clinical studies conducted

chemical and pharmacological profiles and clinically proven treatments into the development of phytomedicines that could be used with confidence in medical regimens, as well as laying a much more scientific basis to the claims made for "health foods", "dietary supplements" and "complementary/alternative medicines".

Similar thoughts were expressed by Lars Bohlin, division of pharmacognosy, University of Uppsala, Sweden, who concentrated more on the possibility of pharmacognosy research in the introduction of new therapeutic agents. In recent years natural products such as galantamine, artemisinin, paclitaxel and etoposide have been introduced and the use of screening techniques using bioassays as well as modern methods of isolation and structure elucidation have made available a large number of novel compounds and structural types.

WHO initiatives in traditional medicines

The importance of pharmacognostical analytical methods in helping draw up monographs for "herbal" medicinal products was discussed by several speakers. Samuel Page, World Health Organization, Geneva, Switzerland, described how analytical methods were becoming more important as devel-

oping countries sought to exploit and regulate the quality of their traditional medicines as well as introducing them to other parts of the world. Safety aspects were closely linked with good quality and were a critical part of the framework of the 19 WHO collaborative centres in traditional medicine worldwide.

Details
The forum was part of the **International Congress on Natural Products Research**, organised by the American Society of Pharmacognosy, the Society for Medicinal Plant Research, the Phytochemical Society of Europe and the Francophone Association for Research in Pharmacognosy. It took place on 31 July in Phoenix, Arizona

Importance in clinical research

Marilyn Barrett, Pharmacognosy Consulting Services, California, underlined remarks made by several other speakers when she spoke about the importance of pharmacognosy in defining the extracts and plant materials used in the clinical trials on natural substances and extracts which are increasingly being reported in scientific and medical journals.

Too often, an interesting study was rendered practically worthless because the material used was not characterised and so, if the study were to be repeated, there would

be no guarantee that the preparation tested would contain the same ingredients or the same concentration and profile of "actives". Reference books and similar literature also often took no account of this when assessing the efficacy and safety of particular products.

If no pharmacognosists were available, it would be difficult to see who would be able to hold together the necessary skills and insight to contribute to the important factor of characterisation.

Status of pharmacognosy in UK universities

The symposium rounded up with workshops, including one on educational programme needs co-chaired by Gail Mahady, College of Pharmacy, University of Illinois at Chicago, and Joanne Barnes, School of Pharmacy, University of London. Reporting back on the situation in the UK, Dr Barnes said that several established schools of pharmacy still had strong research and teaching activities in pharmacognosy and that the discipline at the school at the University of London had undergone a revival in recent

years. However, generally, the picture was one of continuing decline and this was leading to generations of practising pharmacists who had little understanding or knowledge of herbal medicinal products, and a lack of pharmacists undertaking research in pharmacognosy.

Also, there were several new schools of pharmacy in the UK and it remained to be seen whether or not their heads would allocate resources to the discipline and, if so, at what stage.

Afterthought . . .

After hearing all these stimulating ideas, we returned to the UK to read comments from outside the profession (see *PJ*, 7 August, pp197–8), echoing those of pharmacist-pharmacognosists over more than 20 years,^{1–3} about the vital part that pharmacists should play in giving good advice to the public about herbal and complementary medicines.

It is difficult to see how this can be achieved without the consolidation, revival and, in some cases, introduction, of pharmacognosy in its modern form into the undergraduate syllabus in UK schools of pharmacy. — *Peter Houghton, professor of pharmacognosy, Department of Pharmacy, King's College London, and Joanne Barnes, lecturer in phytopharmacy, Centre for Pharmacognosy and Phytotherapy, School of Pharmacy, University of London.*

References

1. Green pharmacy. More pharmacognosy teaching needed. *The Pharmaceutical Journal* 1982;229: 519–21.
2. Phillipson JD. New drugs from nature. It could be yew. *Phytotherapy Research* 1999;13:1–7.
3. Barnes J. The pharmacist and complementary medicine. In: *Directory and Yearbook 2000*. London: Royal Pharmaceutical Society of Great Britain; 2000.