



Home
What is the RCHM?
About Chinese herbal medicine
Latest news
Find a member
Bristol Chinese Herb Garden
News from the garden
Garden courses
How to find the garden
Sponsors of the garden
Research
Members area
RCHM database website
How can I train in CHM?
College arena
Frequently asked questions
Did you know?
Become a friend
Media responses
Links
Contact us

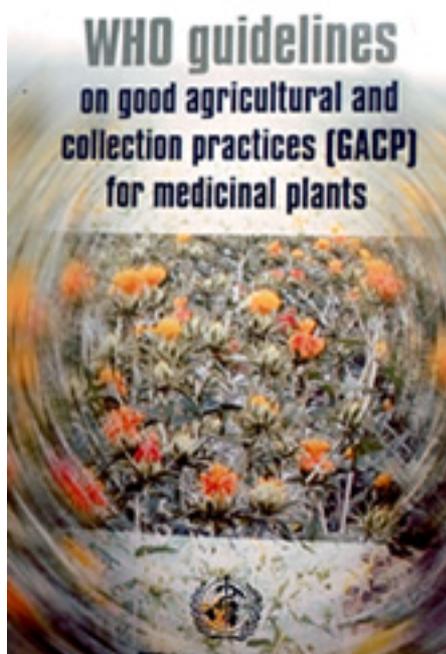
News from Bristol Chinese Herb Garden

CHINESE HERB GARDEN NEWSLETTER 2 - November 2007

In this Newsletter, we will focus on the role of the Chinese Herb Garden in conservation. One of these roles is to impart accurate and up to date information and therefore it is largely concerned with feedback from our attendance at the latest Conference on Ethnobotany and Medicinal Plants held in Nanjing on 13-15 th November 2006.

The Chinese Herb Garden is developing a Conservation Programme for the source plants used in Chinese medicine.

According to the Chinese Academy of Chinese Medicine, demand for Chinese herbs has doubled between 1985 and 2005 to a figure exceeding 1.5 million tons annually. A total of 11,146 species are used in herbal products. Considering that around 80% of the herbs are wild collected, the pressure on many species has become intolerable.



The situation is being reflected in the steady rise in species being included on CITES restrictions and the Red book of endangered species.



According to the WWF (2004), 20 % of known herbs are thought to be endangered worldwide, a trend which is true in China.

Report on Ethnobotany Conference 2006

The conference represented the 2nd Asian Pacific forum on Ethnobotany hosted by Nanjing Botanic Gardens.

Proceedings were published under reference ISBN 7-5641-0592-5. Most of the papers are in Chinese but there are short English abstracts at the back of the book.

Speakers attended from all over China, with some international speakers, including the RCHM. China has been a leader in the development of ethnobotany since 1982. Some discussion was given to the new methods and derivatives of this field. The applications in relation to medicinal plants could be seen in 3 main areas:

1) Folk Ethnobotany

There are 56 ethnic groups in China. Over 26 of these are in the Yunan province. Professor Pei Shengji from the Kunming Institute of Botany gave an excellent account of studies of the Honghe/ Yi and Miao people.

Analysis of the botanical verification of common herbs and their uses has yielded important medicinal data. But perhaps even more revealing was the cultural context.



In this region, the tribes have a very complex ritual of market dates, based on the calendar. These are related to the stems and branches of Chinese medicine. Cultural dimensions are a central area of study with respect to ethnobotany in China.

Of the plants used, several were endangered. These included well known species from the UK materia medica including *Bletilla formosana* and other orchid species, the fern *Cibotium barometz*, *Coptis chinensis* and all species of *Paris*.

Another important region for medicinal plant use is Mongolia. Several papers were presented by institutes from this region. Research into the seed viability of *Cistanches deserticola* and other species of this genus is being conducted at the Inner Mongolia University. This is a recent entry into the CITES list and, being a saprophytic plant dependent on specific micorrhizal fungi, it is quite a challenge. But it is no more difficult than the orchid *Gastrodia elata*. A National prize was awarded to the scientific work leading to cultivation of *Gastrodia*, so the problem of cultivation of *Cistanches* will be solved.

The University of Xinjiang is experimenting on the mass propagation of *Glycyrrhiza uralensis*, by cultivating the root hairs in a nutrient 'broth'. These are very modern techniques being used to combat the retreat of this species into a final distribution in Xinjiang. It is in Xinjiang province that the next Conference has been planned in 2009.

2) Conservation Ethnobotany

The Chinese national government isolated 6 key areas in 1994 in relation to conservation of medicinal plants in China:

(i) Conservation plan 2006 in collaboration with the Ministry of Education. This included the protection of 'di dao' areas where the quality of a herb is at its highest.

(ii) Guidelines for Good agricultural practice (GAP) for the cultivation of crude herbs.

(iii) Wild collection practice (GACP) for *Artemisia annua*.

(iv) Individual conservation projects for key plants used as herbs.

(v) Establishing key labs for 160 species of herb. These will examine the cultivation/disease and the genetic strains of the species.

(vi) Establishing the Beijing national medicinal seed bank.



Conservation is now seen as a high priority in China. A budget of 10,000,000 Yuan (£650,000) has been allocated purely for conservation research into *Fritillary* species (bei mu).

Mr. Zhang Bengang of the Institute of Medicinal Plant Development (IMPLAD) in Beijing outlined his work with remote sensing of *Glycyrrhiza* species. The use of satellite Landsat images, coupled with field work on the ground is a valuable tool in assessing plant resources.



Using this system is 90% accurate and can even differentiate vegetation comprising mixed sophora/glycyrrhiza ground cover. It is also being employed for other species including *Panax ginseng* and *P. notoginseng*, *Fritillary* and *Dendrobium* species.

But the results are less encouraging; they show a retreat of habitat for *Glycyrrhiza* of 1000 km in the past 10 years from east to west through Mongolia.

3) Medicinal Ethno pharmacology

There was a very strong message coming from the whole conference - that it is time that Chinese herbal medicine (TCM) was modernized.

This often took the form of scientific analysis of the chemistry of the plants and relating this to their potential usage for treating diseases or for the final extraction of pharmaceutical drugs. Traditional information from the ethnic groups was being run through this test to 'validate' the claims. In some ways, the pressure on maintaining traditional use is as high, if not higher, than in the UK, as the old is swept up in the drive for 'modernization'. Despite this danger, there were some interesting studies using chemical assessment of herb quality.

One of these was presented by Prof. He Shan'an, a former director of the Nanjing Botanic Garden.

One plant which has been studied extensively at this garden is the genus *Dioscorea*, primarily in relation to the content of diosgenin. In 1970, the average content of diosgenin in wild plants was 5%. In 2006, this has reduced to 3%. This reduction in quality is thought to arise by selective over-harvesting of the plant from the di dao areas, leaving inferior wild chemo types. Hence the chemistry can be used to assess harvesting pressure on the medicinal quality of the wild plants.



The Conservation role of the Bristol Chinese Herb Garden

The paper presented by the RCHM Chinese Herb Garden illustrated our experience gained in importation of 'organic' herbs from the Liu Ba region of China. This was discussed briefly in an article by Paul Skipworth in the RCHM Journal June 2005 Vol: 4(2).



The talk noted the considerable success that had been achieved in the cultivation of herbs and the recent trend towards 'semi wild' cultivation in China. The story of *Gastrodia elata* was used as a model of how even the most difficult plants can be cultivated and how this can be used not only to ease demand on wild harvesting, but actually to increase the wild stock. This requires co-operation and training and also a market for the finished product. The problems derived from drying on a small farm scale to meet the increasing demands of GAP, was also discussed.

The RCHM Herb Garden can play a small role in this conservation. It is a global problem. This can take several forms:

(i) Through collaboration with institutions in China

The conference enabled contact with several institutes in China which are working on conservation

and regulation. These are international issues which require international co-operation.

A visit to Professor Qin Lu ping at the Second Military Medical University in Shanghai after the conference had the added surprise of finding an active Chinese herb garden. How many military hospitals in this country would be able to show you round an established garden of UK herbs?



It was here that I first saw the elusive *Stephania tetrandra* (fang ji), collected on a trip to Yunan province.



One day we hope to have one in our glasshouse in Bristol as part of the fang ji collection.

There are many avenues for collaboration with Chinese partners to enable transfer of skills and up to date information.

(ii) Influencing markets

Herbalists, suppliers and patients are all interested in sourcing 'sustainable' herbs. One way to encourage this is to have some independent audit of sourcing and a chain of supply which is monitored. The problem is similar to that of kite marking sustainable hardwood timber. It was such a scheme that we were investigating in the Liu Ba visit. Opening markets for guaranteed sustainable herbs could be assisted through a network of international bodies similar to the RCHM. This would not only provide an income for the farmers or wild collectors, but serve to educate the users.

Funding for such kite marking schemes is becoming possible.

(iii) Education

Conservation is a core subject at a Botanic Garden for interpretation on all levels from schools/public/university and professional herbalist levels. The garden already operates the Dispensary and Pharmacognosy course to student herbalists. You can find information of this on our [Garden Courses page](#).

Interpretation and education are the next stage in the garden development once the landscaping and planting is finalized.

(iv) Research

Research programs will be developed to meet the evolution of this field. At present this is concerned with gathering data and translation. Comparisons between the taxonomy and chemistry of European and Chinese species in the same genus will be another area of study.



Substitutions can be found for endangered herbs, but this process is not always as simple as it may sound. The substituted herb will never exactly match the quality of the original. It takes careful research and experience to enable effective and safe substitution and all the skills available in the partnership between the Register of Chinese Herbal Medicine and the University of Bristol.

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In the Next Newsletter:

- Progress on the External Display Bed
- Linking with the Nanjing Botanic Garden
- Lotus Diary

You can view previous newsletters by clicking on the archive pages below:

Winter 2004

Newsletter 1 - Spring 2007