

Panel 9: Cultivating the Wilds: Idioms and Experiences of Potency, Protection, and Profit in the Sustainable Use of *Materia Medica* in Transnational Asian Medicines

A panel in memory of Yeshe Choedron Lama (1971-2006)

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Panel Abstract:

This panel aims to integrate knowledge, methods, and field experience from a variety of disciplines and professional perspectives to explore the intersection of conservation and development agendas related to Asian *materia medica*. The panel begins with the assumption that the landscape of Asian medical production is undergoing a profound set of changes, from the increasing commoditization of medicinal and aromatic plants (MAPs) and an array of medicinal products derived from these raw materials to the design and implementation of complex regulatory structures (GAP, GMP, etc) related to the sourcing of medicinals and the production of medicines and other 'natural' products. Importantly linked to these changes are concerns over what 'sustainability' is, means, and does and how natural resources such as *materia medica* are valued in the intersection between local, regional, and transnational socio-economies. In addition, rising concerns about over-harvesting and concomitant approaches to cultivation of rare, endangered, and commonly used MAPs are giving rise to new possibilities for collaboration between local communities, traditional medicine practitioners, scientists, governmental and non-governmental organizations, and (social) entrepreneurs; yet they are also raising new issues, from the methods by which quality and efficacy of cultivated ingredients are determined to questions about how to equitably distribute resources (including access to medical care), determine 'ownership' of traditional knowledge, steward land, and connect to markets. All of these concerns point toward the intersection of cultural preservation, environmental protection, indigenous and non-indigenous ways of knowing about and interacting with the natural world, and the socio-economic pressures that are concomitant with modern life. They also present unique opportunities for innovative, cross-disciplinary and cross-cultural engagement. In this panel, we strive to offer grounded case studies (e.g. results of cultivation trials, ongoing efforts to create cooperative marketing/sourcing arrangements, models for community-bases medicinal plant conservation, etc.) with more critical or analytical approaches to these issues (e.g. approaches to thinking about IPR in this context, social and political obstacles to conservation, etc.). We also strive to have a balance of medical practitioners, researchers/scientists, and those engaged in conservation and development initiatives involved in this panel.

Panel Participants and Abstracts (in alphabetical order)

Karma Bhutia
Program Officer
The Mountain Institute, Kathmandu, Nepal

Sustainable Livelihoods and Medicinal Plants Conservation: The Mountain Institute's Work in the Kanchenjunga Landscape, Eastern Nepal, 2002-2008

This paper provides an overview of The Mountain Institute's (TMI's) medicinal and aromatic plants (MAPs) development programs in Rasuwa, Sankhuwasava, Ilam, Panchthar and Taplejung districts of eastern Nepal from 2001 to 2008. It discusses successes, challenges, and directions for the future of MAPs cultivation, harvesting, conservation, and trade. TMI began its work in the Kanchenjunga landscape with MAPs cultivation and conservation promotional programs. After these programs proved successful in creating locally-generated incomes and conserving wild MAPs resources, TMI began working in the related fields of pasture management, community and national forestry, and transboundary conservation programs. Although the MAPs project began by training a handful of villagers in a single Village Development Committee (VDC), there are now over 3,000 MAPs cultivating households in 17 VDCs across five districts in Nepal and two panchayats in Sikkim, India. The wild population of MAPs in the project area has increased by approximately 10% since 2002, and by the end of 2006, MAPs farmers generated an additional NRS 7,470,221 (US \$118,574) over their total combined income in the years 2002-2005.

Through its experience in the Kanchenjunga landscape, TMI learned important lessons about how to successfully promote the conservation and cultivation of MAP species. TMI has taken a grassroots approach by involving local communities in decision-making processes and building local institutions, such as local partner NGOs. In all of its project areas, TMI organized local and district-level Project Coordinating Committees (PCCs), which assist in project design and assess project impact, sustainability, and transparency. TMI helped develop and officially register MAPs cultivation and conservation groups and pasture and alpine management groups. These groups have taken their own initiative by developing their own local customary laws and formalizing conservation contracts in exchange for MAPs training, alpine management workshops, and micro construction projects that benefit the community. Because of its community-based approach, TMI was able to establish strong trust with local communities. This allowed it and its local partner NGOs to work in the project areas during the conflict between the Maoist People's Liberation Army and the Nepalese Government, at a time when no other NGOs or government line agencies were able to do so. TMI continues to face challenges in its MAPs cultivation and conservation programs, and envisions several directions for future work. Although the armed conflict has come to an end, the government's role in MAPs promotion and conservation still needs to be better developed. There is a lack of legal provisions and proper enforcement regarding MAPs/NTFPs. Additionally, the MAPs marketing system is inefficient. Future programs will aim to organize more cooperatives with the ability to improve MAPs farmers' incomes and conduct value-added processing. Additionally, efforts will be made to institutionalize local traditional knowledge in order to prevent its loss.

Amchi Gyatso Bista
Chairman, Himalayan Amchi Assn.
Kathmandu, Nepal

Conservation, Cultivation, and Sustainable Use of Medicinal Plants: Preliminary Report from Trials in Mustang, Nepal

The Himalayan Amchi Association (HAA) is a Kathmandu-based NGO founded in 1998 and registered with the Social Welfare Council. The HAA is comprised of more than 150 member amchi from 15 Nepali districts. HAA is dedicated to the preservation and development of Nepali *amchi* medicine and to networking with and mutually supporting *amchi* throughout the greater Himalayan and Central Asian

region. The HAA aims to provide local communities in Nepal with reliable health care, safeguard *amchi* knowledge, improve educational opportunities for *amchi*, and contribute to the conservation of medicinal plants and the fragile Himalayan ecosystems on which *amchi* medicine depends. One of the HAA's key areas of activity in recent years has been the identification of key species (rare, endangered, and crucial to medical production) in Nepal. With support from the GEF Small Grants Programme – Nepal (2007-2010), the HAA is now coordinating a project in Mustang District whose mission is to: Promote an integrated approach to biodiversity conservation, culturally appropriate healthcare (*amchi* medicine), sustainable harvesting, and income generation activities based on the use of medicinal plants, in line with *amchi* knowledge and practices, local needs and priorities, and, as possible, the innovative use of technology and scientific expertise. This project includes the trial cultivation of some of the species most vulnerable to over-harvesting grow at high altitude in specialised habitats of restricted occurrence, such as the Annapurna Conservation Area Project (ACAP) in Mustang. This presentation will report on the results of cultivation trials to date.

Calum Blaikie
Dept. of Anthropology
University of Kent, UK

Critically endangered? Himalayan medicinal plant conservation and diversity in medical cultures

The majority of medicinal plant conservation projects in the Himalayan region are based on versions of the 'integrated conservation and development' paradigm, combining biodiversity protection with economic and developmental objectives. Such projects interact with local medical systems in a variety of ways, but there is a marked tendency for them to favour urban and international market development and to contribute, either directly or indirectly, to processes of institutionalization and commodification. In this paper, I use material from Ladakh (India) and from elsewhere in the region to unpack some of the assumptions on which this paradigm rests and to examine the relationship between conservation activities and the change processes shaping healing systems.

Practitioners of Tibetan medicine (*amchi*) in Ladakh access *materia medica* through extensive networks that combine a range of exchange forms. In addition to collecting plants and purchasing materials for cash, *amchi* engage in non-monetary direct exchanges, they borrow and lend, and they give and receive materials as gifts. The economy of *materia medica* is embedded in complex social relationships that go beyond what is widely considered as the 'economic' sphere to include friendships, kinship ties and forms of knowledge transmission, as well as the activities of local *amchi* associations. In light of this, I ask: How are medicinal plant conservation activities affecting the social economy of *materia medica*? To what extent are they contributing to processes of institutionalization and commodification? And how are *amchi* in different social and geographic locations responding to these processes? I approach these questions with reference to three quite different conservation projects in Ladakh, as well as examples drawn from the wider literature on the subject.

Many Himalayan medicinal plant conservation programmes focus on market development and raising the incomes from cultivation and collection, or are explicitly connected to medical institutionalization agendas. The non-market, social dimensions of the economy of *materia medica*, as well as the interests of marginal or non-institutionalized practitioners, are often entirely overlooked. While some such projects have achieved considerable success according to their own indicators, their activities may also have other, more problematic implications for the ways in which practitioners access materials, produce medicines, transmit knowledge, and relate to one another and to their patients. I argue for an approach to conservation which provides more space for a range of social and economic relationships and practice forms, and which recognizes the intrinsic connections between biological and cultural diversity, rather than eroding elements of the latter in its efforts to protect the former.

Dr. Dawa

**Carroll Dunham
Wild Earth, Inc.
Kathmandu, Nepal**

From Wild to Cultivated: Can Valued Sowa Rigpa Medicinal Plants Meet Market Demands Sustainably and Benefit Local Communities?

The necessity to develop successful cultivation of valued Sowa Rigpa medicinal plants commonly wildcrafted throughout the Himalayas, has increased in the past few years with growing demands from an increasingly globalized marketplace, but especially from Chinese markets. With the development of Chinese roads into the northern Himalayas, creating greater access to wildcrafted herbs and placing increasing pressure on their sustainability, the necessity to properly understand the reproductive cycles and develop and share “good cultivation practices” for specific highly valued medicinal herbs is imperative. This paper will explore three of the top ten herbs identified by the Himalayan Amchi Association- Hong len (*Lagotis Picrochiza*), Ol mo 'se (*Podophyllum*) solo mar po (*Rhodiola himalensis*) reviewing what we know about their reproductive cycles, their usage, value and trade while sharing cultivation trials that have taken place in three different locations throughout the Himalayas pro-actively suggesting cultivation methods that benefit communities and meet increasing global demand without depleting sources in the wild.

**Tsewang Gonbo,
Project Supervisor,
Ladakh Society for Traditional Medicines, Leh (J&K), India**

An alternative approach to medicinal plant conservation in Ladakh, India

This paper considers Ladakh Society for Traditional Medicines' (LSTM) approach to medicinal plant conservation, which focuses primarily on community-based *in situ* methods and on meeting the everyday needs of local amchi (practitioners of Tibetan medicine). It outlines the reasons behind this approach, the activities being implemented and the impacts of the projects on village resource management and amchi practice. Amchi medicine is vital to the health status of the Ladakhi population and is an important part of the social fabric and cultural heritage of the region. LSTM was founded in 1998 with the mission of contributing to the revitalization of this medical system. Ensuring long-term sustainable access to medicinal plants is central to this mission, as the amchi largely rely on these plants to make their medicines. LSTM sees the survival of the amchi system as dependent not only on the protection of the region's rich natural plant biodiversity, but also on making the important plants affordably available to the amchi. Amchi prefer wild-harvested medicinal plants to cultivated ones, and many high-altitude plants are difficult to cultivate. LSTM's projects therefore focus on *in situ* management of wild plants, with *ex situ* cultivation accorded secondary importance. LSTM has constructed a detailed medicinal plants database and uses it to identify threatened species, select target areas and choose possible courses of action. The organisation has found that the best way to strengthen conservation is to raise awareness amongst the local people and create a sense of ownership, which encourages better management practices. This automatically leads to the involvement of local bodies, village authorities and religious institutions and develops a feeling of shared responsibility. The incorporation of medicinal plants into traditional resource management systems is strongly encouraged for most areas, with *in situ* conservation training provided to amchi and other key stakeholders, who then operate within the existing social structures. In areas of high diversity and commercial collection, special management committees have been formed, trained and supported to manage collection and protect against over-harvesting. Assistance is provided for amchi to cultivate important and endangered species on a small scale, and equitable exchange networks between amchi are also supported. Rather than taking an income-based approach to medicinal plant conservation, the LSTM programme thus focuses on healthcare access and medical survival in rural areas. So far the responses have been very favourable. This presentation aims to share these experiences and provide the basis for useful discussions with others concerned with both conservation and the promotion of local medical systems.

Alan Hamilton

**Manager, Plant Conservation and Livelihoods Programme
Plantlife International
UK**

Lessons learning from case studies in community-based conservation of medicinal plants

The paper will describe lessons learnt from ten small community-based projects on conservation of medicinal plants, funded by Allachy Awards from Plantlife International. Six of these projects have been in the Himalayas and four in East Africa. The analysis will benefit from three regional or international events held to share experiences on medicinal plant conservation. The analysis will be undertaken during summer 2008, so only preliminary comments are given here.

This involvement of Plantlife and its collaborators stems from our common concern about the decline of these resources. The principal causes include habitat change, over-harvesting for the market and over-harvesting for other products. Climate change is a looming threat. Our analysis will be designed to identify simple protocols for activists and extension workers working at field level with communities, and also suggestions for policy. The countries of the Allachy projects vary considerably in terms of their policies on healthcare, natural resource management and business responsibility. In many cases (it is suggested), these policies could be usefully developed to create better enabling environments for community-level development based on medicinal plants. Of course, our sample size is very small and the project sites very diverse in terms of socio-economies and culture. Within the understanding that every village should be approached as a unique entity, it will be interesting to see the extent to which similar models and protocols for community development can be recommended across these vast parts of the world.

The hobby of natural history (a foundation for plant conservation in countries like the UK) is poorly developed in the Himalayas and East Africa. On the other hand, there are many places where there is still a lot of knowledge about local medicinal plants, typically representing by far the biggest category of plant use in terms of numbers of species individually targeted. From the conservation perspective, this is an obvious platform upon which to build modern conservation initiatives, based on the strong motivations (actual or potential) that can be connected to medicinal plants, related in turn to people's basic interests in their own health, financial income and culture. Under these circumstances, activities undertaken in pursuit of conservation become largely a matter of finding ways to ensure the continuing availability of these resources in the local landscape. Many other species may also benefit, if the management of natural habitats is improved stimulated initially by particular concern about medicinal plants.

**Majid Hasanat
Agroforester
Petra, Jordan**

The current status of herbal medicine in the Middle Eastern Region, In particular in the southern part of Jordan. Historical and current studies indicate that the Eastern Region of the Mediterranean has been distinguished from other region regions by a rich inventory of complementary alternative medicine.

Surveys were made include that 200-250 herbs are used in treating human diseases and are sold or traded in market places in the study area, some of these native plants are rare and endangered species, regarding the importance of these kinds of plants it should be give this science more interest, on the other hand medicinal plants in the study area are become more and more rare due to the ongoing destruction of their natural habitat, environmental changes, and over harvesting of these native herbs, especially the rare ones, Infact, there is a real danger of the native herbs in the area, not only in the quantity, but also in the medicinal practices and knowledegmt related to herbs medicinal practices.

Almost a third of native plants are found in desert and dry areas such as the study area, this give more attention to initiating programs of preservation of the genetic resources of medicinal plants of the region, give more attention to establish Native Nurseries which will suggests the important of educating grower and identifying markets for native species, to give attention to establish especial Agricultural Laboratory deals

with propagation and Enhance Producing new varieties can overcome the environmental change, and in particular medicinal species, and to enhance practices skills present and find away to improve it and make it more economy and easy, to find a new ways to propagate these native plants, an over all study has to be done and determine and classified native plants In Presence Way, according to their presence in the study area from rare to wide presence, and to have schedules to run these plans and write down the experience to share it, Information Bank will be helpful in this case to share all information around the world. *Artemisia herba-alba* (Arabic name: Sheeh) an example of these native medicinal plants, which has widely use in Jordan and in the southern part of it, its semi shrubs, perennial plants with strong smell, it can propagate by dividing plant in winter and plant it, its to difficult to find this plant in nurseries, however some traditional habits reduce the amount of this plant in the area.

**Ma Jianzhong, The Nature Conservancy
Samdrup Tsering, Deqin Tibetan Medicine Research Association**

Medicinal Plants Conservation and Traditional Knowledge Transferring in Kawagebo Region

Tibetan medicine has a long history with comprehensive theories. It has insured Tibetan people's ability to live on the harsh Qinghai-Tibet plateau. The development of Tibetan medicine is closely linked with Tibetan people's ideology on environmental conservation, approaches on natural resource use, and their livelihood. However, with the rapid speed of marketization and commercialization, the protection of traditional Tibetan medicinal knowledge and their natural resources conservation are facing many challenges

Kawagebo is famous by its rich biodiversity and typical Kamba Tibetan culture. As an important holly mountain in Tibetan world, medicinal plants conservation and traditional medicinal knowledge transferring in this area is closely linked with Tibetan culture and local people's everyday life. By analysis the unique relationship between medicinal plants conservation, Tibetan culture and local economic situation, based on case study and project experience, an community-based approach on sustainable medicinal plants conservation and traditional knowledge transferring will be introduced by the author.

Anil Kumar

Bihar: the land of immense potential for cultivation of traditional medicinal herbs in India

India is blessed with incredible biodiversity. It is placed 10th among the plant –rich nations of the world and 4th among the Asian countries. India's biological richness is characterized by enormous genetic diversity as well. India's tribal and folklore traditions, particularly the traditional health care systems, are rich and unique. The classical Indian texts such as the Rigveda, Atharvaveda, Charak Samhita and Susruta Samhita describe health care systems that are largely dependent on local natural resources, particularly on the plant wealth of the area. About 1500 plants with medicinal uses are mentioned in ancient texts and around 800 plants have been used in traditional medicine. Traditional health care systems- Ayurveda, Unani, Siddha – operate alongside modern health care. Traditional medicine is often a more widely available and more affordable source of health care.

Bihar, occupying the fertile alluvial Indo-Gangetic Plain in the eastern part of the country (between 830-30' to 880-00' longitude) and having rich traditional knowledge base of local communities in the area of medicinal plants promises to emerge as a major cultivation center for medicinal herbs. It becomes particularly relevant when many important medicinal plants, which have been used for treatment of incurable diseases for centuries, are on verge of extinction as a result of natural habitat loss and over-harvesting from the wild. Arusa (*Adhatoda vasica*) could cure asthma while Kahu (*Terminalia arjuna*) and Babchi (*Psoralea coryfolia*) in treatment of leprosy. The gum of Salai plant (*Boswellia serrata*) is used in treatment of small pox while Bhui –avala (*Phyllanthus niruri*) is effective in jaundice. Kalmegh (*Andrographis paniculata*) can cure snake bite while Chirchiri (*Achyranthes aspera*) and Anantamul (*Hemidesmus indicus*) are effective in gum problems. Kutaj (*Holarrhena antidysentrica*) is the best drug for

diarrhea. Sarpagandha (*Rauvolfia serpentina*), Giloe (*Tinospora cordifolia*), Satawar (*Asparagus racemosus*), Gudmar (*Gymnema sylvestre*), Chitrak (*Plumbago zeylanica*), Dudhi (*Ichnocarpus frutescens*), Kalihari (*Gloriosa superba*), Safed-Musali (*Chlorophytum arundinaceum*), Kawanch (*Mucuna prurita*) and other herbs were abundantly found in Rajgir and Kaimur forests but systematic plundering has wiped them out. Urgent measures are needed to conserve these vital natural resources for the future. New strategies for the conservation of medicinal plants are being developed, including cultivating medicinal plants as crops to take the pressure off remaining wild stocks and conserving the knowledge of local peoples and indigenous cultures on the uses and value of plants for medicine. Moreover, cultivation of medicinal plants by local communities can provide sustainable source of income and lead to wealth creation.

On account of varied locations, specific agro-climatic conditions and soils (swamp soil, terai soil and the Gangetic alluvium) the state of Bihar has vast potential to grow medicinal and aromatic plants. Farmers of the State of Bihar adjacent to Indo-Nepal border area have taken up cultivation of herbal plants. The present communication envisages the documentation of the traditionally used rural herbal remedies and suitability and availability of cultivation practices of need-based herbal plants in specific agro-climatic situations of Bihar.

David Napier
University College London

Preserving Traditional Knowledge: The Effects of Globalization on Traditional Knowledge Ownership

The hurdles to preserving traditional knowledge as intellectual property are significant and well-studied. However, far less understood are the impacts of participating in global systems of knowledge protection on traditional notions of well-being and embodiment. Three tensions in particular are central to understanding how traditional forms of embodied meaning may be preserved in the face of internationally accepted intellectual property agreements based on systems of global capital exchange.

The first tension is manifested when individual ownership of intellectual property requires that knowledge be “non-obvious.” Because indigenous groups are not often incorporated, they must first argue that their knowledge is collectively shared, and shared knowledge cannot be owned individually except by corporate bodies. The second tension occurs when global systems of knowledge ownership require the isolation of knowledge as property. Identifying something as intellectual property separates that knowledge as owned property from the social, psychological, and religious contexts that integrate embodied knowledge environmentally and symbolically. Finally, the assimilation of previously autonomous forms of knowledge in global systems of understanding may lead to the legal protection of traditional knowledge, but it may also lead to the loss of how that knowledge was previously embodied. When embodied knowledge is distilled as capital its previous symbiotic content may be wholly forgotten, or sentimentalized in archival form.

Dr. Kalden Nyima
Medicinal Plants and Minerals Program
Nyima Association / PSTTM
Lhasa, TAR, China

Endangered Tibetan Medicinal Plants and Their Protection

1) Present situation of Tibetan natural environment

Tibet, being rich with minerals, has been lately facing an increased number of mines and mining; people dispose garbage, especially plastic, everywhere; snow mountains and glaciers are melting; desertification of grassland

2) Situation regarding medicinal plants on the Qinghai – Tibetan plateau

Number of pharmaceutical factories, producing Tibetan traditional medicine has been lately increasing, and so the number of people, collecting medicinal plants. It helps them generating more income, but the problem is, that most of them have no knowledge about collecting and thus cause damage to the environment and medicinal plants, decreasing their quantity and/or uprooting them. Experts have agreed, that endangered medicinal plants in Tibet can be put into 3 categories:

- 1st, the most endangered and nearly uprooted: 12 different medicinal plants (list with names and reasons attached)
- 2nd, severely endangered – about 60% uprooted: 12 different medicinal plants (list with names and reasons attached)
- 3rd, endangered – about 30% - 40% uprooted: 16 different medicinal plants (list with names and reason attached)

3) Work to be done to protect medicinal plants

- to establish in different areas of Tibet medicinal plants planting centers, do proper research, collect data and compare results

For your information: the project, that the author of this paper is a member of, so Nyma association – (PSTTM – Project for strengthening of Tibetan traditional medicine) has established a cooperation with TTM Medical college in Lhasa and TTM Hospital in Lhasa, organized several seminars for expert TTM doctors, where one of the topics was protection of medicinal plants and environment. The project also has a medicinal plants planting center, where 20 different medicinal plants are being planted, data collected.

- proper trainings in collecting medicinal plants and environmental protection for local people

4) Medicinal plants planting methods

Presenting data about planting and transplanting of medicinal plants, challenges, success, seeds, seedlings, altitude, temperature, type of soil, planting in greenhouses

5) Reflexion on protecting the environment and medicinal plants in the future

In the past, declaring a mountain, lake, area as holly, represented natural protection of medicinal plants and environment. In the future:

- proper law about protection of the whole environment, respect of the law, reporting about disrespect, fine of disrespect
- educate people about damage, caused by improper garbage disposal and how to do it in a proper way
- educate people about problems, caused by collecting yartsa gumpu (*Cordyceps sinensis*), that represents income generating at present, but might not be the case in the future, whereas protecting medicinal plants at present means sustainable income generating in the future
- conduct proper trainings for locals and publish materials about protection of medicinal plants, distributing them on a wider scale
- establishing of a good, solid relationship between local people and pharmaceutical factories in order to increase local people's income generating with medicinal plants
- continue planting medicinal plants in already established and/or new planting centers, continue with research of planting on high and low altitudes, sun/shadow, differences in quality and quantity
- fencing of places, where medicinal plants grow naturally (some cannot be planted or transplanted)
- production of Tibetan traditional medicine represents the 2nd biggest industry in Tibetan Autonomous Region (the biggest being tourism) so its resources/ingredients have to be specially protected in order to make this industry sustainable
- set up a network for sharing information and cooperation: availability of natural resources, their protection, producers

Jan Salick

Curator of Ethnobotany

Missouri Botanical Gardens, USA

Tibetan Medicine and Climate Change

Climate change in the Himalayas causes rapid glacial melting and treeline and shrubline advance, endangering high alpine medicinal plants such as the Snow Lotus (*Saussurea laniceps*). Tibetan health is threatened by climate change as these medicinal plants disappear, food spoils, diseases spread, and crops fail. Climate change becomes a religious and moral issue since Tibetans perceive mountains as the sacred manifestation of gods, feared to be retreating from Earth along with their glaciers. Senior Curator, Dr. Jan Salick and her Ethnobotany team study the effects of climate change on threatened alpine medicinal flora and on Tibetan people.

Martin Saxer
University of Oxford, UK

GMP and Notions of Quality in the Tibetan Medicine Industry

My contribution to this panel is an inquiry into the industrial or semi-industrial production of Tibetan pharmaceuticals, with a special focus on notions of quality and regulations on quality control. The most prominent set of regulations is certainly GMP, Good Manufacturing Practices, a standard for quality control in the pharmaceutical industry. Originally developed for the mainstream biomedical pharmaceutical industry, India and China have recently declared GMP compulsory also for traditional medicines. GMP regulates the storage of raw materials, production facilities and processes, packaging, labeling, and record keeping. In China GMP is a requirement for all pharmaceuticals sold nationally and internationally since 2005. This also applies to Tibetan medicine produced in Tibet. The consequences of this recent and quick introduction are still unfolding. In India GMP is compulsory for Ayurveda, Siddha and Unani medicines sold on the market since 2002, but compliance is somewhat less strictly enforced than in China. In Sowa Rigpa, which is not (yet) part of the 'Indian Systems of Medicine', GMP is currently approached proactively and will most probably be a requirement once it is officially acknowledged. The question if and how GMP rules can be adapted to the specific needs of Tibetan medicine or in which ways Tibetan medicine has to adapt to suit the regulations is of great importance.

In this paper I will present three case studies of Tibetan medicine factories in India and the Peoples Republic of China. I will compare their approaches to quality control and the ways GMP has altered or complemented existing systems of quality management. I will also document the manufacturers' efforts to improve quality that lie outside the GMP framework, including the challenges they face to find the best possible raw materials, their dealings with plant traders and wholesalers, their contacts with village cooperatives, their attempts at cultivating medicinal herbs, and their relations with the respective state agencies that oversee the manufacturing of pharmaceuticals. This research is based on the ongoing fieldwork for my PhD (Autumn 2007 to Spring 2009) and the IASTAM conference in Bhutan will be the first occasion to present my findings.

Mona Schrempf
Central Asian Seminar
Humboldt University Berlin

Globalisation of Traditional Chinese and Tibetan Medicines between China and Europe: An Interdisciplinary Research Agenda

Since Europe is now the world's largest market for herbal medicine products, and China is one of the largest producers of traditional Asian medicines, the interdisciplinary study of the rather recent globalisation of Tibetan medicinals is of crucial importance for both biodiversity and the development of traditional Tibetan medicine. Our approach is based on the comparative and analytical question of how certain chosen Chinese and Tibetan pharmaceuticals whose materia medica stems from the Tibetan Plateau become recontextualised as both globalised and localised authentic carriers of 'traditional' and 'modern'. These medicines will be analysed in their historical and socio-cultural recontextualisations, i.e. as not only having pharmaceutical but also 'social' lives (van der Geest, Hardon, Whyte 2002) that are influenced by local environmental, socio-economic and cultural as well as national and global parameters among

collectors, producers, medical doctors and patients. We will analyse how the historical, socio-political, medical and symbolic as well as cultural recontextualisations of these medicines are changing as they move through globalised and localised processes of environmental issues, wild materia medica collection on the Tibetan Plateau, recipe-making, standardisation, and finally their application and use in and between China and Europe.

Pei Shengji
Kunming Institute of Botany
Chinese Academy of Sciences
Yunnan, China

Medicinal Plants and Its Conservation in China with Reference in Chinese Himalayan Region

Use of herbal medicine in China has a long history, the Sheng-Nongs Herbal book 'Ben – tsao' (3,000BC) is suggested to be one of the earliest sources of folk knowledge on the usage of medicinal plants and the earliest literature on Tibetan medicine dated back to the eighth century AD. Since ancient time, plants are the main source of medicines for people's healthcare all over China. Today, medicinal plants are widely used in different medical systems including Traditional Chinese Medicine (TCM) and Tibetan Medicine (TM) for health care and functional food in China, and supplies of natural products for industry manufactures for international market.

In the last half century, great progress has been made in science and technology and there has been rapid development in socioeconomics. The impact of the rapid economic development and population pressures on medicinal plants from wild habitats is increased day by day. And the modernization policy of traditional medicine in China is seen as a challenge to the maintaining of traditional medical systems. The updated inventory of Chinese source materials for medicines accounts for 12,807 kinds, of which medicinal plants comprise 11,146 species, including 492 species under cultivation and the remaining 10,654 species from wild habitats. Chinese Himalayan Region covers five provinces (Tibet, Qinghai, Gansu, Sichuan and Yunnan) in west China with land area of 2 million km², including the Qinghai – Tibetan Plateau area in the west and the Hengduan Mountains in the southwest of China. The rich diversity of medicine plants of China and in the Chinese Himalayan Region and its distribution characteristics; Diversity of medicine plants utilization of China; Threatened medicinal plants and threats to medicinal plants; Conservation status of medicinal plants in China; and proposed strategic suggestions on conservation of medicinal plants and preservation of traditional medicinal systems in China are discussed in this paper.

Herbert Schwabl
PADMA, Ltd.
Switzerland

Tibetan Medicine in the European OTC-context

In the European context Tibetan Medicine is one of many disciplines of Complementary and Alternative medicine (CAM). Herbal formulas in the field of CAM are in most European countries treated as medicines for over the counter (OTC) use.

Starting in Switzerland in the 1960s a specific range of Tibetan Herbal formulas was introduced in Europe. Over the years the European regulatory framework escalated into a range rules. The various good practice guidelines (GMP, GLP, GACP), international treaties (CITES) and European laws (Traditional Medicine Guideline) shaped an ever demanding landscape for herbal products. In accordance to this rather challenging development the Tibetan herbal formulas in Europe had to evolve accordingly.

Also the rather narrow definition of evidence in western bio-medicine makes it very difficult to translate terms and indications from Tibetan medicine into this rigid frame.

This introduced and discussed during the lecture from a practical and European point of view, along the following examples and questions:

_ How exotic is a formula allowed to be in Europe?

- _ Cultivation vs. collecting in the wild: looking beyond CITES.
- _ Narratives of potency, from east to west.
- _ Western expectations of quality (GMP and GLP).

For those who work for the global approach of modern Tibetan medicine it is necessary to confront with these challenges. How far these modern demands should feed back to the Traditional setting of Tibetan medicine remains open for discussion.

Conservation of Wild Medicinal Plants Through Sustainable Wild-Harvesting and Propagation by Organic Agriculture Worldwide

Ed Smith

About 15,000 species of wild-growing medicinal plants are at risk of extinction due to loss of habitat, invasive species, pollution, climate change and over-harvesting. However, their extinction is not necessarily inevitable and this presentation will provide information and resources which can help save these endangered plants and enable their abundant supply as botanical medicines. The following topics will be presented: 1- Conservation and sustainable harvest ("wildcrafting") of at-risk and endangered medicinal plants in their natural wild habitat. 2- Conservation and propagation of at-risk and endangered medicinal plants through organic farming; procurement of seeds and cuttings; creating an "analogous wild habitat" for farm or garden cultivation; proper harvesting techniques and harvest times; proper plant drying and storage. 3- WHO Guidelines on Good Agricultural and Collection Practices (GACP) for Medicinal Plants and other resources available to developing countries from WHO, FAO, United Plant Savers and other organizations.

Surya Mani Tripathi

Challenges for Traditional Asian Medicines in the Era of Globalization

The developing global South is the home to the large majority of the earth's flora and the global North is owner of the capital and technology necessary to develop this natural wealth. Present communication deals with different biological and legal aspects of several challenges faced by traditional Asian Medicines in the era of globalization. The biological challenges are mainly encompasses the over exploitation, unregulated destructive harvesting of wild medicinal plants, degradation and loss of habitat which leads into resource depletion and resulted into endangering the very survival of these species. Whereas, the legal battles on Neem, Turmeric and Basmati has led to a fear in most of the developing countries and realization of an urgent need of protection measures which are defensive i.e. preventing outsiders from acquiring private rights over the traditional knowledge and positive rights which implies either a right to benefits from the commercial use of their traditional knowledge or a positive intellectual property in this regard. This communication discuss that enactment of The Convention on Biological Diversity (CBD) on International arena provide conservation of biological diversity, sustainable utilization of its components and fair and equitable sharing of the benefits arising out of the use of our biological resources particularly medicinal plants. The utilization of Traditional Knowledge Digital Library (TKDL) is quite helpful in preventing biopiracy of traditional Asian medicinal plants. The role of Sui generis system, TRIPs, The Biological Diversity Act 2002, National Biodiversity Authority (NBA) in regulation of access to medicinal wealth has also discussed.

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The Transmission of Literary Knowledge on Chinese Traditional Pharmaceuticals.

The globalization of traditional Asian medicines includes increasing use of Chinese traditional pharmaceutical substances in Western countries. Individual herbs as well as pre-packaged patent remedies

are exported from China to Europe and the United States. One of the questions that emerge in this context could be phrased as: what does the West need to know about the historical context of these substances and recipes? That is, does the West need to have access to ancient Chinese literary sources of pharmaceutical tradition? This presentation will examine the extent to which pre-modern Chinese pharmaceutical literary sources have been translated and edited in Western languages, and it will introduce the Berlin project to prepare a philological and annotated English version of the most comprehensive encyclopedia of Chinese materia medica, the *Bencao gang mu* of 1598. The *Bencao gang mu*, compiled by Li Shizhen (1518-1593), includes close to 1900 descriptions of therapeutic substances used or known in China until the 16th century. A complete translation into Japanese is available. Only very short excerpts have been translated into Western languages. The Berlin *Bencao gang mu* project serves various ends. By offering a complete translation it will permit, for the first time, access to a Chinese pharmaceutical standard work that has been influential beyond China in Asia for centuries. The cultural context of many substances appears in the individual descriptions and will stimulate, once accessible in English, a wide range of comparative research. The indications attributed to the individual substances and the 11 000 recipes interspersed in the main text of the *Bencao gang mu* will enable interested persons without command of pre-modern Chinese to look for patterns in the use of traditional Chinese materia medica that may offer hints at their possible usefulness in modern health care contexts. Finally, the project will produce a dictionary of the technical terminology of Chinese medicine and pharmaceuticals as found in the *Bencao gang mu*. This dictionary will be most valuable for future studies of contemporary and earlier Chinese medical literature. To conclude, globalisation of traditional Asian medicine should encompass not only the export/import of Chinese therapeutic substances and of Chinese medical concepts of health and health care. It should also comprise the dissemination of detailed literature-based knowledge so as to make possible dialogues between two equally well-informed partners, paralleling what has happened in the spread of Western biomedicine in an opposite direction.

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Yartsa Gunbu (*Cordyceps sinensis*: An Ancient Medicinal Fungus Transforming Rural Tibet

Nowadays, Yartsa Gunbu (*Cordyceps sinensis*, caterpillar fungus) is nearly as central to life as the yak. While yaks grazing the vast grasslands of High Asia are the backbone of the traditional subsistence economy, Yartsa Gunbu collected from these alpine pastures is enabling rural people to participate in the cash economy of the 21st Century. The market is driven by Chinese consumers, who use it as tonic, but also as a status symbol. Collection, trade and use of Yartsa Gunbu (*dbYar rTswa dGun 'Bu*), has a long-standing history in Rigpa Sowa where it is classified as "medicinal essences" (*rTsi sMan*). It is first mentioned by Zurkhar Nyamnyi Dorje [1439-1475] in "An Ocean of Aphrodisiacal Qualities - A special work". It was translated for the first time in cooperation with tibetologist Jakob Winkler. The four-folio text describes where to find it. The text instructs in detail how to prepare Yartsa Gunbu and describes its propensities.

From 1997 to 2007 prices have increased by 500%, on average of over 20% per year in Tibet. In 2007, 1 kg of dried Yartsa Gunbu costs in Lhasa from €2,000 to €8,000 depending on quality. In Chinese cities the best fungi can cost €24,000/kg, more than gold. In 2004 collection of *Cordyceps* is reported at 50t in TAR [overall production is estimated at 150-250t]; Collection and sale generated 40% of rural cash income. In prime production areas, income contribution reaches 70-90%. It has developed into the single most important source of cash for rural households. In 2004, Yartsa Gunbu contributed 8.5% to Tibet AR's GDP. In short, Tibet has a globally absolute unique fungally fuelled economy. *Cordyceps* derived cash is the main agent in the transformation of rural Tibet.

Due to its ever-increasing value, more and more people search for yartsa gunbu. In Dengchen (TAR) 60% of the inhabitants were mobilized to collect Yartsa Gunbu. As a result of a research cooperation of Beijing's Tibet Research Institute and the author, a policy advisory was submitted to the TAR government, which served as a basis for the first TAR-wide regulations on collection. The 2006 regulation includes

stipulation for surveying and development of a protection program, and an initiative to standardize the license system.

Sustainability of collection is of great concern. So far most collectors interviewed reported increased competition and not reduced production. Collection fees and licenses are widespread, but are not issued for resource protection per se. The question is if current pressure on natural populations of *Cordyceps sinensis* has undermined the resource yet. Production figures collected and collated from TAR and elsewhere on the Plateau do not indicate a population crash as suggested by some researchers. However, *Cordyceps*' very unique lifecycle and its dependence on hardly researched Thitarodes larvae do not allow transferring research on sustainability of other economically important fungi or medicinal plants. *Cordyceps sinensis* is still growing plentiful in areas where it has been collected for centuries, the ever increasing harvest pressure and the absence of reliable baseline data clearly necessitates more research to formulate sound management strategies to secure the long-term survival of *Cordyceps sinensis*, a valuable resource especially for marginalized Tibetan and Himalayan families.